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EDITORIAL

Railway Age

EDITORIAL

Publishers' Costs Increase

ON JULY 1 the law went into effect establishing a system of zone postal rates on all publications. It provides for eight zones radiating from the place of publication with progressively higher rates in each zone. These rates will be increased each year for four years, until increases have been effected ranging from 50 per cent to 900 per cent higher than the present flat rate of one cent a pound. Few, if any, publications will be able to stand these extra costs, and if they are to continue in existence the additional postal charges will have to be collected from the readers and advertisers. We hope that the present Congress may yet take steps to remedy the situation and for the next few months at least no readjustment will be made in our rates in the hope that it may not be necessary. It hardly seems possible that Congress will allow to continue in effect a law which tends to penalize the dissemination of intelligence, and in these days, especially, when the publications are doing such splendid work in helping to win the war, it would seem to be positively dangerous to cripple them.

That automatic signals, properly installed, will expedite traffic goes without question. The advantage of the automatic block system over the manual block has been discussed before and need not be referred to again. It appears that some roads are not making the best use of the automatic block

Expediting Railway Traffic

signals installed on their lines, in that the movement of trains may be materially improved by the elimination of certain forms of written train orders, conveying such information to the engineman by means of signal indication. It remained for the Erie, after an installation of automatic block signals on the Susquehanna division, to change its telegraph train despatchers' wire over to telephone train despatching and to locate three-position power-operated train order signals on automatic block signals controlling line sidings and cross-overs at certain points over the division. These train order signals are controlled from open train order offices on instructions from the despatcher to the operator at that point. These signals may be located a mile or more from the point of control, and give the information to the engineman at the point where he is to act upon it. This eliminates the necessity of a train slowing down or stopping to receive orders for it to proceed. Telephones are located at all points where train order signals are placed enabling the trainmen to communicate with the despatcher at such points. A few simple rules are all that are required to put into effect such a method of train operation. The use of this system in connection with automatic signals has produced such excellent results in the operation of trains on the Erie that it is worthy of the careful consideration of other roads. In this connection it would seem that traffic can be handled to still better advan-

tage by the use of low voltage switch movements at certain locations in connection with the train order signals.

Since the government took over the railways there has been much talk about drastic reductions of the salaries of the

Salaries on the Railroads

higher officers. The prospects of such reduction has been regarded with apprehension by officers of all ranks who naturally have felt that drastic reduction of the higher salaries would deprive ambitious men of large prizes to work for, and that it might also practically compel reduction of the salaries of many officers of lower rank. The Railroad Administration has not announced the policy it is following in fixing salaries, but the salaries fixed have leaked out in several cases, and definite information which the *Railway Age* has indicates that higher, and, in some cases, much higher amounts are going to be paid than has heretofore been expected. It would appear that the Administration is finding that in the matter of salaries, as in the matter of wages, it must meet competition if it is going to keep good men in the service. It has been exposed to competition from other industries which are engaged in war work and from the railway companies, which naturally have desired to keep able men in their service to deal with the Railroad Administration. In consequence, while no definite figures can be published, it can be said that doubtless so long as the Railroad Administration continues to recognize the fact that it is essential to efficient operation that it shall have able men in important positions there will be numerous large prizes in railway service for ambitious men to work for; and it would appear that so long as the present director general is in charge the fact that brains and experience are necessary to efficient operation will be recognized. Generally speaking, however, federal managers probably will not be paid as much as railway presidents have been and many former presidents who are accepting the appointments as federal managers have to make financial sacrifices to do so.

Conditions are changing so rapidly with respect to railway labor and particularly the unskilled labor employed so largely

The Labor Panorama

in maintenance of way work, that it is difficult for one to keep abreast with the latest phases of the situation. There is one condition which remains permanent, namely that there is not enough labor to satisfy the demands. The roads are suffering acutely from the existing shortage of labor as manifested by the limited output of work. The situation differs little from that of other large industries except in degree. The roads are handicapped in their competition for men with these industries by their inability to raise wages sufficiently to secure their share of the men. In general this inability to compete for men through increased wages is limited by the earnings of the roads although in the west it is limited even more rigidly by the fixing of maximum wage rates by the regional directors. This measure eliminates the competition between roads. It does not, however, prevent a contractor or an industry from taking men from the roads through the offer of higher wages. In an endeavor to stop

losses of this character the Railroad Administration only a short time ago requested the United States Department of Labor to assist in preventing the disorganization of the labor market by competing government contractors. At that time it was said that the department did not then possess the necessary authority to eliminate this practice. Since then regulations have been issued requiring all industries employing more than 100 men to secure their common labor through the United States Employment Service after August. In this way the Department of Labor is endeavoring to eliminate private competition for laborers through independent labor recruiting activities which have demoralized the labor market and caused a tremendous labor turnover during recent months.

Another development of the last few days is an order issued by the Secretary of the United States Department of Labor waiving the literacy test and the head tax to permit the temporary admission of Mexican laborers who could not otherwise enter this country, for employment in maintenance of way work on railroads. While this measure is surrounded with complicated restrictions, it will undoubtedly be possible to bring a considerable number of men from that country into the Southwest. The classification of certain industries as non-essential and the prohibition of men of draft age from employment on the non-essentials is also releasing some men for railway work. While none of these measures in themselves is sufficient to relieve the shortage which now exists and while all of them are coming so late in the season that they will result in only limited relief on the roads, they will, nevertheless, have some influence of a beneficial character.

Centralized Buying for Railroads

It need hardly be said that selling to railways at present is a somewhat different thing from what selling to them was when they were under private management. This applies especially to the selling of new cars and locomotives and of the specialties to be used on them.

When the railways were under private management there were many railway companies, both large and small, which were buying new cars and locomotives and the specialties for them. There will continue to be many railway companies to sell to, since the Railroad Administration has decided to return to private control a large number of short line railroads. It will, however, retain all the large roads. It has centralized the purchase of cars and locomotives and of specialties for them in the hands of a single committee and so long as this committee retains its present authority it will have practically a monopoly of the purchase of cars and locomotives and of their specialties, while the numerous equipment supply companies will be in the position of competing with each other for the orders which the committee places.

The centralization of the buying of equipment and of equipment specialties puts on those to whom this function has been delegated most important duties and very heavy responsibilities. The design of the equipment, and the specifications of the specialties which might be bought, were assigned by the director general to a committee of railway mechanical officers. This committee made lists of specialties of each kind which it believed the Purchasing Committee should select from. It would appear, however, that the mechanical committee did not very definitely indicate what it considered to be the relative values of the different specialties listed, for it is evident that the Purchasing Committee in doing the buying has been governed mainly by consideration of price. Furthermore, the list of approved specialties was so made up as to exclude from consideration a not inconsiderable number of devices which had been used on some important railways, and the outcome was that some companies which had been getting a good business from the rail-

roads got none at all, and in many cases the orders were divided between different competing companies on radically different bases from those on which they were divided when the individual companies were doing their own buying.

It may be that when future orders for equipment and equipment specialties are placed the orders will be divided differently and that in the long run all legitimate concerns in the supply business having good products to sell will get amounts of business not radically different relatively from the amounts they have secured in the past. There are certain reflections, however, which the way in which recent orders were placed very forcibly suggests. One of these is that when men of technical training and experience have comparatively as little to say, and men of purely purchasing training and experience so much to say about the things that shall be bought, as was the case with respect to the recent purchases, price is almost certain to be given more weight than quality, and that the tendency will be to give the bulk of the business, not to the best bidder, but to the lowest bidder. Now, while this policy will enable the Railroad Administration to make a better immediate showing, it will inevitably cause a deterioration of the equipment and supplies made, and, in consequence, a deterioration of the equipment placed upon the railroads. Whatever deteriorates the equipment will necessarily reduce the length of its life and increase the cost of maintaining it, and in the long run, reduce the economy and efficiency of the railways.

Another reflection which recent developments forcibly suggest is that such centralization of purchases as has occurred has put an enormous power over the future of the railway equipment and supply companies and of the railways themselves in the hands of a few men—that is, the Director of Purchases and the three members of the Central Purchasing Committee. Formerly, if a locomotive or car builder or a manufacturer of specialties could not convince the purchasing department of an individual railway that it should buy from him he had hundreds of other purchasing departments which he had a chance to convince. At present, if he cannot convince the Central Purchasing Committee and the Director of Purchases that they should buy from him he has got to get out of business so far as new equipment is concerned. Now, the railway equipment and equipment supply business of this country is an enormous industry, and it seems to be very questionable whether it is fair or wise to place it largely at the mercy of a few men in Washington who, after they have been there awhile, are certain to get out of touch with actual conditions on the railroads. As to the railways, if these few men in Washington make mistakes in buying, the effect is going to be felt not merely for a short time, but for years to come, on every road in the United States. In other words, these few men may easily make mistakes of judgment which will be ruinous to many legitimate businesses, which will be greatly injurious to the railways as a whole, and which, in the long run, may cost the people of the United States hundreds of millions of dollars.

In view of these and many other considerations which might be mentioned the *Railway Age* is very strongly of the opinion that the question whether the present system of designing cars and locomotives and of specifying and of buying specialties for them is sound, is one which should be given very serious study by the director general and all the important men in his organization. We believe its soundness is open to most serious question, that some very unwise things are being done, that the system itself, rather than individuals in the organization, is mainly at fault, and that the system must be radically changed or great harm will be done to the railway equipment and supply companies, to the railways and through them to the public. It is a system which is much better adapted to cause the buying of poor equipment and to interrupt progress in the technical development of the railways than it is to produce any lasting good results.

The Circus Train Disaster

THE rear collision at Ivanhoe, Ind., on the Michigan Central on June 22 (reported in our issue of June 28), is the most disastrous train wreck that has occurred in America, measuring by the number of persons killed, since March 1, 1910, when 90 persons were killed and 16 injured at Wellington, Wash., where a train was swept down the side of a mountain by an avalanche. This collision* is like that at Mount Union, Pa., in February, 1917, and a number of others, in that it occurred on a road which is well provided with signals and is reputed to maintain good discipline. Neither the engineman nor the fireman was dead or visibly incapacitated, though it appears, at the present writing, that the engineman was asleep or dozing. The immediate question, therefore, is that of the general reliability of enginemen. The automatic train stop, which obviates disaster when the human pilot fails us, is used on the very busy lines of the subways in New York and London, and to a limited extent elsewhere; but is not in general use. Roads like the Michigan Central, and others of that class, justify themselves in its non-use because of the high relative safety of their train operations without such a complicated and costly safeguard. (Competent and careful signal engineers estimate that a complete automatic stop system would add 100 per cent to their present large investment in signal apparatus.)

The best American locomotive enginemen make high records for safety. One element in this safety is the rule, included in the train-rule codes of substantially all large railroads, that the fireman shall act as a monitor for the engineman; that both fireman and engineman shall see each fixed signal as they approach it, and shall make sure that the matter has not been forgotten, by speaking to each other. This rule, properly carried out, is a check on sleepiness or inattention. It ought to be a useful check and, no doubt has, many a time, brought back to a sense of immediate duty an engineman whose mind was wandering; but the rule has not proved itself reliable. It has failed too many times. No manager can place definite dependence upon it. Every superintendent or trainmaster who rides much in the cabs of locomotives can testify that well-disposed enginemen—let alone the dull or conscienceless—carry out the rule in a way that leaves much to be desired. To make this safeguard of real value, of such value as to be an element in the manager's night-and-day confidence in the safety of his railroad, the engineman must be a high grade man, well educated in "safety-first"; and he must have a well-trained and conscientious fireman. Further than this, he and his fireman both need very frequently to have their vigilance and their judgment tested by a road foreman. The percentage, on a large road, of engine crews which in one or more of these conditions is lacking, is far too large for the reputation of this rule. Accidents like Mount Union, Shepherdsville, Schodack Landing (reported last week) and Ivanhoe must be taken as warnings that it cannot be depended on.

How often and for how long must such warnings be repeated? Railroad officers admit, in private conversation, that the logic of our accident records forces the conclusion that an automatic train stop, or, at least, an automatic audible warning, is the only satisfactory answer to the demand for the safe transportation of persons and property and the protection of trainmen's lives. When is this feeling going to be crystalized into something that will mark definite progress? There is a report, in another column, of a new automatic train stop which has been tried at Barto, Pa., on the Philadelphia & Reading. This trial calls attention to the fact that the subject of automatic stops is not dead and abandoned, although at times such may seem to be the case.

Letters to the Editor

How to Cut Down Switching Costs

CHARLESTON, S. C.

TO THE EDITOR:

Certainly needless service is one of the worst kinds of waste of fuel and man-power, but now that the timetable has been pretty well trimmed, attention should be directed to unnecessary moves made by road and yard engines while switching in the yard. It is practically impossible to estimate the waste of fuel and wear on man and machinery in this service, but it is an enormous figure.

The marked saving realized since Progressive Examinations have been provided for locomotive firemen, suggests the idea of extending some suitable examination for the trainmen and switchmen. Several general yardmasters have estimated that 10 per cent of the moves made by locomotives in yard service are unnecessary; of course this would be less for hump yards. The writer recently rode a yard engine in a small yard where there were probably twenty cars on eight tracks; we went in on each track several different times and shuffled the cars like a deck of cards. I was not checking unnecessary moves, but the waste was so glaring I finally asked the engineer if they were killing time. He replied: "No, this is the usual procedure; it takes all of the conductors but one three hours to switch this yard; this other conductor can switch it in about 40 minutes."

This may be an unusual case, but since then I have made inquiries that lead me to believe that it is a very common one, and it is not surprising when one considers the qualifications necessary for a good switchman, and the haphazard methods followed in employing them. They are put on the road with no training, except what they get on a few student trips, probably with young inexperienced men who have never heard of fuel economy. In this way the job has been cheapened. They say, "anyone can switch cars." That is true, but they cannot make up and brake up trains with a minimum number of moves. Proper training of these men before they are employed would place the job on a higher plane, and a better class of men would enter this branch of the service.

The training should consist of switching cars on a chart in a miniature yard, or by actual demonstration in the train yard. The latter would prove expensive and limited yard room would prohibit it in most places. The miniature yard is most practicable. They should also be taught how the railroad wants them to meet the public. These men talk with some of the largest shippers daily, and some of them much oftener than the superintendent. When they are promoted to passenger service they meet the families of the very best people, so it is of the utmost importance that they be properly trained in talking business, and under all circumstances to be courteous.

Heating and ventilating cars should also be touched on, for it is well known that this feature is not properly taken care of by our trainmen, although some of them are willing. New passenger cars are placed in service with new style ventilators and steam heat valves, and no instructions are given the trainmen; this results in numerous complaints from the passengers because the cars are either too hot or too cold. A number of the roads require very rigid physical examination; if they will direct the same amount of attention to the mental training, the twenty-five cents per car for switching service, which most of them are now paying, would be reduced considerably and the public would be kept in a much better frame of mind.

J. S. BREYER.

* The most recent collisions which may be classed as rear collisions are the following: East, S. C. February 1, 1918, 1 person killed; Shepherdsville, Ky. December 30, 1917, 42 persons killed; Schodack Landing, Schodack, N. Y. September 28, 1917, 25 persons killed; Mount Union, Pa. February 1, 1917, 24 persons killed.

The Caution Signal

PITTSFIELD, MASS.

TO THE EDITOR:

In his article entitled, "Relation Between Train Handling and the Caution Signal," which appeared in the *Railway Age* of May 24, 1918, F. H. Nicholson, of the signal department of the New Haven, proves by means of charts and diagrams that wherever train speed is properly limited the interpretation of the caution signal should be, "Reduce speed at once and proceed with caution."

This conclusion is amply justified on grounds of safety alone; but in addition it can also be shown that to reduce speed immediately upon passing a signal set at caution is the best practice from considerations of economy in time, in fuel required to get the train over the road, and in wear and tear of equipment.

There is nothing made by running at full speed as far as you can past the caution signal. There is neither economy in fuel nor saving in time; while the practice always entails more or less uncertainty as to the safety of the train, as experience has plentifully demonstrated in the past.

When the speed of a train, running, say, at the rate of 60 miles an hour at the instant the locomotive reaches a caution signal, is promptly and continuously reduced to a rate of 25 miles an hour, that train may then be said to be under control; for with brakes of average efficiency a passenger train may be stopped from a speed of 25 miles an hour, easily, with the service brake, within a visual distance as small as 150 ft. A train moving through the remainder of the block at the reduced rate of speed allows more time for the stop signal to go to "clear," if it is to clear at all, than if it approached it at higher speed; thus we reduce the likelihood of having to come to a complete stop at that signal.

If a stop signal clears while a train approaches it at about 25 miles an hour it may be accelerated again to high speed

engine man to proceed continuously at such rate of speed as the circumstances of each case warrant; have him run under the conditions that he is now required to observe when he enters a block under permissive restrictions.

There can be but little doubt that if the signal engineers of our railroads were to go carefully into this matter they could easily suggest many revisions and modifications of the signal operating rules that, if put in force, would make for economy in consumption of fuel and in saving of time, without in the least encroaching upon the safety of train operation.

JOHN P. KELLY.

The Chinese Railways

NEW YORK.

TO THE EDITOR:

I have just had an opportunity to read the article on the Chinese railways in your issue of March 29.

The statement in regard to the financial position of the government railways, which includes practically all the railways in China, is perhaps liable to create the impression that the railways, on the whole, are not financially successful, and as a matter of interest, I beg to enclose herewith a statement showing the earnings and expenses per mile for the year ending December 31, 1915, which you may think of importance enough to publish.

It will be noted that these figures are in Mexican dollars, which are worth at the present time about 75 cents American gold, but which normally are worth only about 50 cents.

The accounts of the Chinese railways since 1914 have been kept approximately according to the system of accounting established by the United States Interstate Commerce Commission, but it seems to be customary to show in all statements the deduction of the fixed charges from the net income. The total net income for the year ending December 31, 1915, was approximately \$27,000,000 (Mex.), the

CHINESE GOVERNMENT RAILWAYS—FINANCIAL ACCOUNT—YEAR ENDING DECEMBER 31, 1915										
Line	Miles line operated	Gross revenue	Operating expenses	Net operating revenue	Operating ratio	Operating income	Total income	Fixed charges (inc. taxes)	Surplus or deficit	
1. Pekin-Hankow	478	25,097	8,704	16,393	42	18	1,369	4,460	7,933	
2. Pekin-Mukden	600	25,463	10,463	15,000	46	27	1,867	11,006	14,869	
3. Tientsin-Pukow	688	1,391	714	677	62	47	47	836	1,346	
4. Shanghai-Nanking	203	16,838	9,969	6,869	60	121	6,990	9,390	2,400	
5. Shanghai-Hangchow-Ningpo	168	18,462	8,740	9,722	76	941	3,595	6,240	2,645	
6. Peking-Kalgan	148	18,462	9,773	8,689	53	77	8,766	147	8,619	
7. Kalgan-Suiyuan	*119	7,404	4,286	3,118	58	not yet	operated—construction period			
8. Cheng-Tai	151	13,983	8,738	5,245	63	213	5,458	6,339	—781	
9. Taokow-Chenghua	95	6,667	3,998	2,669	60	1	2,670	5,028	2,358	
10. Kaifeng-Honan	115	10,054	4,623	5,431	46	52	5,483	7,697	—2,214	
11. Kirin-Changchun	81	11,248	9,426	1,822	84	36	1,858	2,578	—720	
12. Chuehchow-Pinghsiang	160	6,088	4,102	1,986	67	60	2,046	35	2,011	
13. Canton-Kowloon	90	8,953	8,939	14	99	130	144	11,342	—11,198	
14. Canton-Samsui	30	28,353	16,000	12,353	56	33	12,386	43	12,343	
15. Changchow-Amoy	20	893	2,215	—1,322	—248	45	—1,277	3,170	—4,447	
	3,267	17,098	9,034	8,064	53	162	8,226	5,292	2,934	

* Figures concerning Kalgan-Suiyuan Line are included in totals.

Figures concerning the Chuehchow-Pinghsiang and Changchow-Amoy Lines are included in totals for 1916.

in less time and with less expenditure of fuel than one that approached at high speed and had to stop dead in consequence of arriving a little too soon for the signal to clear.

If the stop signal does not clear for the train approaching it at the reduced rate of speed, and the train is obliged to stop on this account, it is no worse off with respect to time lost than the other which ran at high speed to the braking limit point and then had to stop.

These considerations suggest the question, If the train is under perfect stop-control approaching a stop signal that is set against it—and it always should be—what is the necessity of stopping it at all at that signal? This question is especially pertinent in the case of automatic and of permissive block systems unless, of course, the reason for stopping is immediately apparent in the form of a train ahead or of some other obstruction. Why not modify the present operating rules so as to omit the full stop? Allow the

fixed charges being \$17,000,000, leaving a surplus of about \$10,000,000.

Although it is true that of 15 railroads only 5 lines showed a surplus after paying the fixed charges, it is also true that these 5 lines represented more than half the mileage operated, so that the financial condition seems to me to be rather better than might be inferred from a casual reading of the article above referred to.

Similar figures for 1916 show the following totals:

Year ending December 31, 1916:		Per Mile
Miles operated	3,384	
Operating revenue	\$28,847	
Operating expenses	8,549	
Net	20,298	
Interest on bonded debt and miscellaneous expense	3,947	
Surplus	\$6,051	

In 1916 only four roads showed a deficit after paying fixed charges.

F. LAVIS.



Automatic block signal at leaving end of E. B. siding, L. R.

Train Operation by Signal Indication on the Erie

The Use of Power-Operated Train Order Signals Has Eliminated Some Forms of Train Orders

By Henry M. Sperry

THE 999 MILES of main line of the Erie from New York to Chicago is completely equipped with automatic block signals, with the exception of 184 miles. Progress in the installation of automatic block signals on the Erie did not make much headway until 1910, when they were put in use on the Susquehanna division. In 1906 only 6.8 miles were reported in service and in 1909, 124.8 miles; but by 1916 the total was increased to 1,018.1 miles of road. The improved results in train operation under automatic block on the Susquehanna division account in part for the progress made since 1909.

Prior to 1910 the Susquehanna division, which is a heavy traffic division, was operated under manual block and telegraph train dispatching. The following is a brief summary of the disadvantages experienced under the manual block and the improvement in train operation under the automatic block:

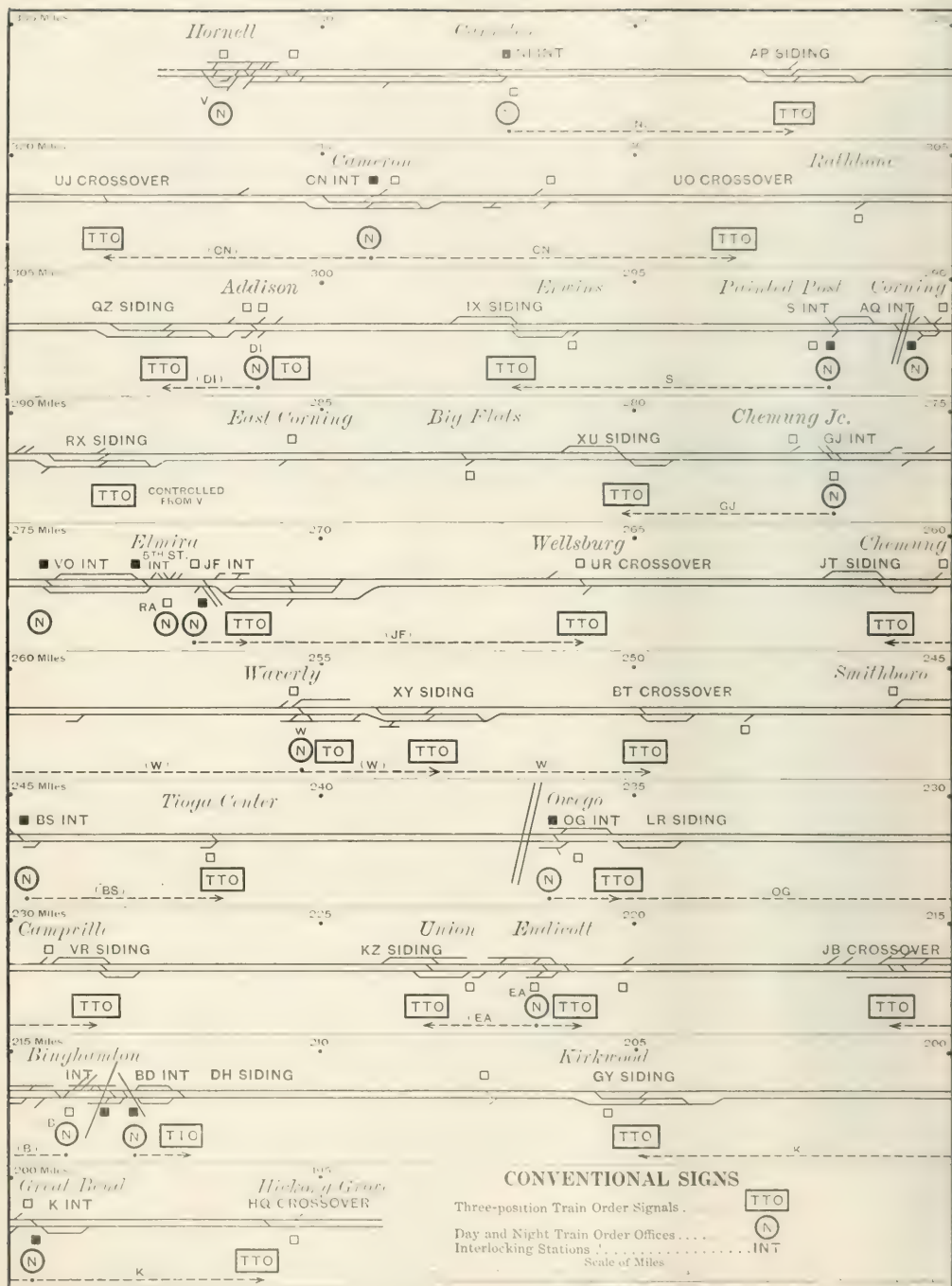
(a) There were excessive delays under the manual block due to a common fault of this system, i. e., irregular lengths of and excessively long blocks. These delays were eliminated by the automatic block signals, as the automatic block made it possible to increase the number of block sections and make them of a length to permit the movement of the maximum number of trains without delays.

(b) The number of blocks was changed from 90 manual blocks to 296 automatic blocks, an increase of 206 blocks. By the change from the manually-operated system to an automatic one, the number of block signalmen was decreased from 136 required under the manual block to 58 under the automatic, with a corresponding decrease in wage expense.

(c) The use of written train orders was almost entirely discontinued following the installation of the three-position train order signal used for the purpose of directing train movements by signal indication. This use of the three-position train order signal marked a distinct step forward in train operation. The blind passing sidings and also blind cross-overs were equipped with both telephones and three-position train order signals, the signals being operated from the nearest day and night train order office one or more miles distant. By this arrangement the train dispatcher could direct train movements at these points by signal indication, a marked improvement over operating blind sidings equipped with telephones only.

(d) The results under this method of train operation by automatic block signals and three-position train order signals were shown by a saving in train operation of \$87,969 for the first year operated under automatic block signals in comparison with the previous year under manual block.

In making a comparison of the results of train operation under two different systems of signals to determine the relative value of each, it is necessary to select a road where the track facilities and motive power are the same for the periods covered by the comparison. If, as is often the case, track facilities are increased or there is an increase in the tractive power of the locomotives, credit must be given not only to the improved signal facilities, but to all other improvements that might affect the result in making any comparison. The Susquehanna division of the Erie was selected because the improved results were due entirely to the improvement in



Passing Sidings and Train-Order Signals; Susquehanna Division, Erie Railroad

the signal facilities, there being no change whatever in track facilities or motive power.

This division runs almost due west from Susquehanna, Pa., to Hornell, N. Y., 139.7 miles. The entire distance is double tracked. The alignment is 70 per cent tangent, with a curvature for the balance of 32 deg. per mile. This division is 31 per cent level, and the ruling grade is but 0.3 per cent. Passing sidings are all long enough for 85 car trains. The total number is 31, of which 16 are used for eastbound and 15 for westbound trains. The important junction points are six in number—Binghamton, Owego,

Delays under the manual block were due to—

(a) Long block sections. Trains could not follow each other under close headway, thus causing serious delays; i. e., a freight train waiting on a passing siding could not follow a passenger train until the passenger train had cleared the block three or more miles in length. And again these blocks often included a station stop for the local passenger train.

(b) Blocks of irregular length were another source of delay. A point often overlooked is that the longest block section in *time* determines the headway between trains for the entire division.

(c) Time lost by trains operating under *written* train orders, the trains being required to either slow down or stop to receive them; i. e., an extra train running ahead of a regular train could not continue on the main track on the time of the regular train without a written train order, although the regular train might be an hour or more late. The delivery of the train order required the extra to slow down to receive it. This illustrates one of the weak points of the written train order, as in the foregoing case the moving train is brought almost to a stop for the sole purpose of receiving instructions permitting it to keep in motion.

Automatic block signals were put in service on the Susquehanna division on December 17, 1910. Up to the date of this installation progress in equipping the Erie with automatic block signals had not been rapid as only 124.8 miles of road were signalled. The marked increase from 124.8 miles on January 1, 1910, to 1,018.1 miles on January 1, 1917, can be accounted for by the improvement in train



Automatic Block and Train Order Signal at Passing Siding L R

Waverly, Elmira, Corning and Addison. The freight traffic for 1917, measured in tons carried one mile per mile of road, averaged 14,373,017.

Handicaps of the Manual Block

Prior to the installation of automatic block signals the Susquehanna division was operated under manual block signals with a total of 46 block signal stations, 18 of which were block stations only and 28 both block and interlocking stations. The average length of blocks was 3.07 miles, but there was a wide difference in their length. The shortest block was 0.30 mile in length, and 30 blocks ranged from 0.39 to 4 miles; eight blocks from 4 to 5 miles; six blocks from 5 to 6 miles; one block 6.89 miles, and the longest block 7.27 miles in length. This variation in block lengths is characteristic of the manual block, as block stations are usually placed at passenger stations, passing sidings, junctions, etc., with the result that it is often impossible to avoid delays to trains moving under close headway. It is also the usual practice to close a number of the block stations at night.

This often results in making a number of the block sections excessively long, and thus creates an added source of delay. The operation of 46 stations required a force of 136 signalmen at a total cost of \$94,752 a year for wages on a basis of the eight-hour day.

Under the manual block the train dispatching was by written train orders sent by telegraph. The division was divided into two dispatchers' districts with two men for each district, or four men for the division for each of the three eight-hour tricks, or 12 men for the 24 hours, in addition to two chief train dispatchers.

The block signals did not "supersede the superiority of trains." Trains were required to have train orders to pass or run ahead of other trains and extra trains required running orders.



Automatic Block and Train Order Signals at Tioga Center

operation on the Susquehanna division for which full credit was given the automatic block signals.

The several divisions were equipped with 298 automatic signals, controlling 296 blocks of an average length of 4,959 ft. The signals are of the one-arm, three-position upper quadrant type, electrically operated by storage batteries. The signals are controlled by polarized track circuits.

Power-Operated Train Order Signals

The old style train order signals were replaced with three-position signals. This marked a departure in the use of train order signals a full description will be of interest. The three-position train order signal is an electric motor signal on the mast with the automatic block signal; the number now in use is 42 (1918), all located at passing sidings or crossovers, indicated on the diagram by the letters TTO. The control of these signals is from the nearest day and night train order office, thus

making it possible for the train dispatcher to direct the operation of these signals by telephone instructions to the offices controlling them. For example, the train order office at Waverly (W) controls three signals, the train order signal at JT siding $5\frac{1}{2}$ miles west and the train order signals at XY siding two miles east and at BT crossover $5\frac{1}{2}$ miles east.

Another drawing illustrates a typical passing siding, showing the automatic block signals, telephone train order signals and telephones. The telephone train order signals are the lower arms of the automatic signals 280-1 and 280-2. Signal 280-1 upper arm, which is the block signal, indicates "Proceed," and the lower arm, the train order signal, indicates "Proceed regardless of following superior train until otherwise ordered." Signal 280-2 upper arm (the block signal) indicates "Stop," and the lower arm (train order signal) indicates "Take Siding."

Circuits for Train Order Signals

The circuits controlling the train order signal require the block signal (upper arm) to be in the "Stop" position whenever the train order signal is moved to either the 45-deg. or the "Stop" position. The block signal in the "Stop" position sets the first block signal 281-2 in the rear to the caution position. This arrangement of the circuits insures the display of the caution block signal approaching the train order signal, whenever the train order signal is either at the 45-deg. or "Stop" position. This is in accordance with the best practice, as it provides a distant or approach indication for each train order signal. The circuit controlling the train order signal is a polarized one over a single line wire with common return between the signal and train order office.

These three-position train order signals are in use at 13 blind passing sidings and 7 blind crossovers, and provide a satisfactory method of directing train movements at points where no signalmen are on duty. Blind sidings as usually operated are provided with telephones only, a method only partially satisfactory from a train operation standpoint, as without the signals no means is provided at the siding to indicate to the train that it should either continue on the main track or take the siding. With three-position signals at the blind siding, electrically controlled from the nearest train order office, which may be one or more miles away, it is a simple matter for the train dispatcher to display at the blind siding the required signal indication for directing the train movement to be made at the siding. Trains at the blind siding either continue on main track or take siding, as required by the signal indication of the train order signal. If they enter the siding they report by telephone to the office from which the train order signal is controlled.

The installation of the automatic block signals was completed in a little over twelve months' time from the date that the work was authorized by the railroad company. A train dispatcher's circuit with telephones in all train order offices was installed, also local circuits from each train order office to the adjacent blind passing sidings and blind crossovers.

Changes in Train Operation

Train dispatching methods were changed following the installation of automatic block and three-position train order signals in order to secure the full advantages of train operation made possible under the improved signal system. With the installation of the telephone train dispatcher's circuit the use of the telegraph train dispatcher's circuit was abandoned. With the three-position train order signals, signal indications for directing train movements largely replaced the directing of train movements by written train orders.

With the automatic block, safety and facility in operation were both increased.

The Susquehanna division is divided into two train dispatchers' districts—Susquehanna to Elmira (81.2 miles) and Elmira to Hornell (58.5 miles). There is one dispatcher for each district, requiring two men for each eight-hour trick, or six men in all, for the 24 hours, with two chief train dispatchers, one on day and one on night duty. The train dispatcher's office is at Hornell.

The train dispatcher's telephone circuit provides telephones at all train order offices. In addition, local telephone circuits are provided between the telephone train order signals at blind passing sidings and blind crossovers and the train order offices from which these signals are controlled. There is a total of 133 telephones on the main and local circuits. The telephones at the train order signals are housed in concrete booths.

For emergency use in communicating with trains that may be stopped at points distant from a fixed telephone every train is provided with a portable telephone set with fish pole attachment for cutting in on the telephone circuit. The telephone wires are easily identified by a white square painted on the crossover arms under the two telephone wires on every fifth pole.

There are 17 train order offices open day and night. At 11 interlocking towers, the interlocking signals are used as train order signals; at 20 blind passing sidings and blind crossovers telephone train order signals are located, controlled from the nearest day and night train order office; at three stations two-position train order signals are operated. This makes a total of 34 locations at which train order signals are operated.

Rules for the movement of trains by signal indications given by the train order signals are few and simple.

"Telephone train order signal rules:

"(A) Arm horizontal. Red light at night. Indication: Stop on main track and consult dispatcher on telephone.

"(B) Arm inclined 45-deg. above horizontal. Yellow light at night. Indication: Take siding and consult dispatcher on telephone when clear of main track. Passenger trains will report before pulling in siding.

"(C) Arm inclined 90 deg. above horizontal. Green light at night. Indication: Proceed regardless of following preferred trains until otherwise directed by dispatcher.

"It is forbidden for trains to accept the proceed indication, Paragraph 'C,' if there is any known cause that will prevent them from making their usual running time. In such an event they will consult immediately with the dispatcher. When a train accepts the proceed indication, paragraph 'C,' and for any cause is unable to make its usual running time, it must protect itself against the following preferred train according to Rule 99, operating department.

"It is forbidden to use a crossover at any point where a telephone train order signal is located without permission from the dispatcher.

"(D) When trains approach interlocking points with insufficient time to clear the schedule of a superior train at the next passing point, the whistle must be sounded for the siding, and if proceed signals are displayed, trains will proceed in accordance with Paragraph 'C.'"

The three indications of the train order signal—"Proceed on main track," "Take siding" and "Stop for instructions"—are unmistakable. The issue of written train orders is the exception. Under the method of operating by the signal indications of the train order signal there is no need for the use of the following Standard Code train order forms:

Form B—"Directing a train to pass or run ahead of another train." This information is given entirely by the train order signal directing the train to "proceed on main track" or "take siding" as required.

Form D-E—"Time Orders." Under the method of operating trains by signal indication the issue of time orders is not necessary.

Form G—"Extra Trains." Train orders are not required, as under time table rule B "extra trains will start from their initial point and proceed on double track without running orders."

Form J—"Holding Order." Not used, as train order signal in stop position takes its place.

The following train order forms of the Standard Code are still in use, as the information covered by them cannot be given by signal indication:

Form F—"For Sections."

Form D-H—"Work Extra."

Form K—"Annuling a Schedule or a Section."

Form L—"Annuling an Order."

Form D-M—"Annuling Part of an Order."

Form D-P—"Superseding an Order or Part of an Order."



Signal 235-1 at W. B. Passing Siding L R

For movements against the current of traffic or for the use of a section of a double track as single track Forms D-R and D-S are used.

Train Movements

The extensive use of the telephone makes it possible for the dispatcher to keep a close supervision over the movement of every train. There are four methods of reporting trains:

(d) By telephone reports from trains using emergency telephone outfits at other than fixed telephone locations.

The dispatcher directs train movements of extra trains or schedule trains running late by sending telephone instructions to the signalmen at the 17 train order offices. These instructions direct the signalmen to place the train order signal either in a 90-deg., 45-deg. or "Stop" position. If the signal is at an interlocking tower, the signalman places the interlocking signal used as a train order signal in the position directed. If the signal is at a blind passing siding or blind crossover, the signalman at the train order office places the signal in the position directed by operating the three-position switch controlling the signal.

The dispatcher makes no written record of the train movement authorized by him until after the train has acted upon the instructions of the train order signal. For example, if the dispatcher instructs a train order office by telephone to set "train order signal at 45 deg." at a blind siding for an extra train to "take siding," the entry is made on the train sheet after the extra takes the siding and the conductor has reported over the telephone that the movement has been made as directed.

There is a marked difference in the simplicity of this method of directing a train movement by signal indication as compared to the written train order method. Under the written train order method the dispatcher would have issued a Form B order, the signalman would have been required to deliver the order to the train, the train would have had to slow down to receive it and finally after the train had made the movement, as required, the conductor would have had to telephone the completion of the movement. Under the method of train orders by signal indication, the dispatcher, with a few words over the telephone, would direct the train order office to display the required train order signal and the signal would be displayed *at the point where the train is required to act upon it*. The train would not be required to slow down simply to receive instructions, as the instructions are conveyed to the train by the unmistakable indication of the train order signal. And, further, these instructions are given to the train at the point where the train is required to act upon them and not at some distant point, as is so often the case under the written train order system.

As a further example of the two methods, take the case of an extra train to be run ahead of a scheduled train running late. Under the written method a "19" order would be issued and the train would be required to slow down to receive the instructions directing it to continue on main track, the slowing down of the train defeating in a measure the very purpose for which the instructions are issued. Under the signal indication method the train order signal in the 90-deg. position will instruct the train to continue on

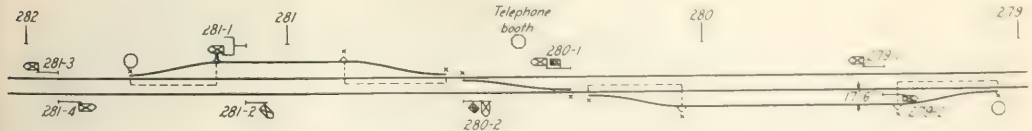


Diagram Showing Blind Siding and Typical Arrangement of Signals

(a) By telephone train reports (OS) from the 17 day and night train order offices. The distance between these offices averages 8.7 miles.

(b) By telephone reports from trains taking siding or, if a passenger train, about to take siding.

(c) By telephone reports from trains stopped in answer to train order signals in "Stop" position.

the main track and the train will not be required to lose any time by slowing down to receive these instructions.

The installation of automatic block signals on the Susquehanna division, together with the three-position train order signal and telephone train dispatching, resulted in the maximum protection for train movements by the automatic

block signals, and the three-position train order signal with the telephone train dispatching system furnish the train dispatcher with an efficient means for directing train movements by signal indication.

RESULTS

The improved results in train operation under automatic block signals were as follows:

Delays to freight trains due to the manual block were practically eliminated. The train load was increased and, although the speed was slower than formerly, less time was consumed in passing over the division. The average time for freight trains to cover the division—139.7 miles—was: Under manual block.....10 hours 29 minutes Under automatic block.....8 hours 49 minutes Difference1 hour 40 minutes Or a saving in time of 15 per cent.

The total saving in train operation is shown in Table I, compiled from data furnished by the railroad company through the superintendent's office of the Susquehanna division. This estimated saving of \$87,969 is equal to the interest on an investment of \$1,759,380.

The improved results in train operation more than justified the installation of this system of automatic block and train order signals. The success of the system was due to the fact that it provided an effective method of operating trains by signal indication.

	Manual	Automatic
Minimum miles	39	139.7
Block signalmen	14	8
Train order offices	2	6
At passenger stations	2	6
Total	14	8

Total estimated saving in train operation per day for comparison with total under automatic block.

TABLE I. RESULTS OF FREIGHT TRAIN OPERATION ON THE SUSQUEHANNA DIVISION OF THE RAILROAD

For Months of December, 1909, to November, 1910, Under Manual Block Compared with Months of December, 1910, to November, 1911, Under Automatic Block

Months (a)	Ton miles		Ton miles per train			Reduction in temperature			Freight trains			Saving in freight trains (n)	Saving in train operation (o)
	1909-10 Manual block (b)	1910-11 Automatic block (c)	1909-10 Manual block (d)	1909-10 Manual block (See Note b)		1910-11 Automatic block (f)	1909-10 (g)	1910-11 (h)	Average (i)	1909-10 Manual block (Corrected) (See Note c)	1910-11 Automatic block (m)		
				(e)									
December	173,387,082	177,605,807	227,542	217,757	228,285	8.4	12.8	+4.3	76	811	778	33	\$4,311
January	162,944,115	194,134,250	224,750	232,392	251,795	12.4	9.0	-3.4	725	704	685	19	7,401
February	154,443,876	180,987,865	225,136	231,215	252,072	12.0	9.3	-2.7	686	805	718	64	7,629
March	139,385,797	178,197,673	247,497	239,577	244,106	0.0	9.2	+3.2	805	744	730	14	4,284
April	131,246,585	168,295,833	245,320	241,640	256,548	0.0	3.7	+1.5	535	696.5	656	40.5	6,512
May	174,577,093	189,061,368	268,548	268,348	276,002	0.0	0.0	0.0	635	704	685	19	4,931
June	160,521,276	202,898,946	250,815	250,815	293,206	0.0	0.0	0.0	640	809	692	117	11,944
July	189,088,090	207,184,154	271,289	271,289	298,106	0.0	0.0	0.0	697	764	695	69	8,242
August	174,443	203,503,501	297,921	297,921	302,832	0.0	0.0	0.0	657	683	672	11	3,834
September	195,588,923	189,772,505	273,550	273,550	296,057	0.0	0.0	0.0	713	664	611	53	7,041
October	210,030,355	221,607,285	260,583	260,583	308,216	0.0	0.0	0.0	806	850	719	131	12,765
November	195,119,249	208,820,764	267,653	263,370	293,700	3.7	8.3	-4.6	700	790.5	711	81.9	8,875
	1,137,868,274	2,322,070,451	254,751	254,054	274,217	44.8	19.3	-25.5	8,300	9,163.1	8,468	695.4	\$87,969
				(Average)	(Average)								

(Average) (Average) (Average)

NOTE.—(a) The "Ton miles per train" under manual block (corrected Col. e.) are the totals for 1909-10 corrected by the difference in temperature of the winter months of the two years in order to place the totals for the two years on an equal basis in respect to weather conditions.

(b) The "Reduction on account of temperature" (Cols. g. and h.) are the percentages by which the monthly ton mile totals were reduced on account of low temperatures. These percentages were used to arrive at the totals under manual block (corrected).

(c) The "Freight trains" manual block (corrected Col. j) were computed by dividing the "Ton miles per train" manual block (corrected Col. e) into the ton miles per month moved under the automatic block (Col. c). The results (Col. j) show the number of trains that would have been required to move the traffic that was moved under automatic block if the trains had been operated on the manual block basis.



Loading Shells on a Light Railway Train

Doings of the United States Railroad Administration

Nearly Two Thousand Short Line Railroads Relinquished; Advances Made to Several Roads

WASHINGTON, D. C.

A NOTHER SEPARATION of the sheep from the goats was announced by the Railroad Administration on June 29, when it relinquished from federal control nearly 2,000 short line railroads whose control by the Administration is regarded as not "needful or desirable." This leaves within the scope of federal management only the lines or systems as to which it has been affirmatively decided that it is needful and desirable that they shall be under federal control. The previous separation referred to affected the railroad executives and officers, who by various processes have been divided into the two groups of representatives of the railroad corporations and the operating officers (using the term operating in a broad sense) responsible solely to the Railroad Administration. The relinquishment of the short lines was accomplished with the approval of President Wilson by sending them official notices only a few hours before the Senate and House had passed a resolution requested by Director General McAdoo extending from July 1 to January 1 the time within which railroads might be released, but with an amendment intended to prevent leaving the short lines out of the fold unless competing and connecting lines were relinquished at the same time. This amendment was proposed by the short lines and opposed by the Railroad Administration, which was obliged to act quickly in disposing of the short lines because unless Congress passed the resolution by July 1 it had to release such lines as it wished to release before midnight Saturday and if the resolution had been passed with the amendment it would have been impossible to release any considerable number of roads unless it released all.

The decision as to which lines should be relinquished was made so quickly after it seemed apparent that Congress would not pass the resolution extending the time that no list of the railroads retained or given up has yet been given out. It is understood that the lines retained include about 183 railroads or systems included by the Interstate Commerce Commission in Class I, which means roads having operating revenues of over \$1,000,000 a year, short lines subsidiary to those systems, and most of the 221 switching and terminal companies, making a total of about 230,000 miles, while the roads relinquished include about 1,400 plant facility roads, many of which had previously been released at their own request, and between 300 and 400 of the 765 so-called short lines, which include roads dependent on the larger systems for through connections.

The Railroad Administration's statement was as follows: "Under the act of March 21, 1918, it becomes necessary for the United States Railroad Administration, prior to July 1, 1918, to exercise the responsibility, created by Section 14 of that Act, of determining what railroads or parts of railroads it is not needful or desirable shall continue under federal control.

"So far as it has been practicable, in such a complicated matter, to develop the facts up to the present time, it has become apparent that there are large numbers of the shorter railroads whose federal control is not needful or desirable.

"The Railroad Administration has therefore provided that all such railroads be relinquished, except in cases where it has already been ascertained that it is needful and desirable that such railroads shall be under federal control.

"In taking this action the Railroad Administration is mindful of the paramount importance of preserving unimpaired the local public service performed by the railroads

which may thus be relinquished and is also solicitous that no injustice shall be done to the owners of such railroads. It may be that the creation of federal control over railroad systems in general will tend to change unfavorably the situation of many of these smaller railroads, unless special care shall be taken to avoid such unfavorable results, with consequences detrimental both to the local public service and to the just interests of the railroad owners.

"To avoid these consequences and to preserve in every reasonable respect a status for the railroads so relinquished as favorable as that which they enjoyed during the three-year test period (the three years ended June 30, 1917), great care will be taken to see that the railroads so relinquished are given fair divisions of joint rates, are insured a reasonable car supply—circumstances considered—and are protected against any undue disturbance in the routing of traffic.

"In order to make sure that a continuing study and supervision shall be provided for the carrying out of the policy thus outlined, there will be created at once in the Railroad Administration's Division of Public Service and Accounting a Short Line Railroad Section, the manager of which will be charged with the special duty of ascertaining what is necessary in order to give as to these matters reasonable protection to the railroads relinquished.

"It may be that instances will appear where federal control of railroads now relinquished is in fact needful or desirable. In such cases there will be no hesitation in taking the action necessary to put such railroads under federal control.

"In general, it is the definite policy of the Railroad Administration to see that all short line railroads receive fair and considerate treatment."

To this was appended a signed statement by President Wilson:

"I approve the above policy and announcement."

As indicated in the statement, the notices mailed to the railroads relinquished contained a statement that some of the roads might be returned to federal control if the owners and the government could agree on a contract for compensation, and it is understood that one of the motives for releasing many of the roads was the fact that the government would be in a position to dictate the terms of a contract with much less difficulty with a railroad which had been relinquished than with one which had been definitely taken over. In many cases the roads had a deficit instead of a net operating income for the three test years 1915, 1916 and 1917, but insisted on a basis of compensation which would provide for the interest on funded indebtedness or receivers' certificates. In such cases the administration is willing to take over certain roads provided it can do so without any guarantee. For this reason any list of relinquished roads at present is regarded as provisional and subject to change.

The division of law of the Railroad Administration has been conferring with representatives of the short lines for a long time and in a number of cases has relinquished roads at their own request. The short line railroads originally took the position that they had already been taken over by the President's proclamation of last December, but the administration met this point by saying it had not exercised jurisdiction over many of the lines. When the negotiations with the roads that declared they would be ruined unless taken over but which had larger ideas of what the compensation should be than the representatives of the Railroad Administration, became protracted without a settlement, the

Railroad Administration asked Congress for the extension of time and the joint resolution for that purpose was introduced on June 12. The short lines then asked for the amendment which was adopted to prevent the relinquishment of one line without its competitors and connections.

The amendment to the resolution as passed by both Houses was as follows: "Provided, however, That the right conferred upon the President to relinquish prior to July 1, 1918, control of all or any part of any railroad or system of transportation without consent of the carrier as provided in section 14 of an act approved March 21, 1918, . . . which right is herein extended to and inclusive of January 1, 1919, shall not be construed to include any railroad engaged as a common carrier in general transportation such as mentioned in section 1 of said act not owned, controlled or operated by another carrier company and which has heretofore competed for traffic with any railroad or railroads of which the President has taken and retained the possession, use, and control; it being the intent of Congress that every railroad not owned, controlled, or operated by another carrier company and which has heretofore competed for traffic with a railroad or railroads which the President has taken and retains the possession, use, or control, or which connects with such railroad and is engaged as a common carrier in general transportation, shall be held and considered as within federal control as defined in said act, and to be entitled to the benefits of all the provisions of said act so long as the railroad or railroads with which it has heretofore competed for traffic or with which it connects shall be retained under federal control."

To this was added another amendment proposed by Senator Cummins to provide that it should not include street railways or interurban or similar roads which do not receive at least 25 per cent of their operating revenue from the transportation of freight. There was little debate in the Senate, although Senator Kellogg announced that he would oppose the amendment because he was not willing to force the government to take over all short lines whether they are useful to the government or not. Senator Penrose said that as he understood it the government is diverting traffic to government-controlled railroads and "practically leaves the competing short lines in a condition with no freight, no income, no credit, and the sheriff approaching them." Senator Curtis proposed another amendment, but finally withdrew it, stating that he understood the joint resolution had already been engrossed ready to sign and that any further amendment would delay its passage.

In the House there was more debate and considerable sympathy was expressed over the condition of the short line railroads. Stress was also laid on the fact that Congress had declared its intention of requiring the retention of the short lines when it inserted in the railroad control act in Section 1 the provision that "every railroad not owned, controlled or operated by another carrier company and which has heretofore competed for traffic with a railroad or railroads, of which the President has taken the possession, use and control, or which connects with such railroads and is engaged as a common carrier in general transportation, shall be held and considered as within federal control," although it had added in Section 14 a provision allowing the President to relinquish railroads before July 1.

Chairman Sims of the House Committee on Interstate and Foreign Commerce, in explaining the purpose of the Railroad Administration, said it felt that it ought to relinquish all railroads that are not necessary for war purposes and that it had asked further time to consider each individual case and to try, if possible, to have a contract in every case so as not to have to resort to the courts. He also said that if the lines are kept by force of law within government control the lines will have the whip hand of the administration in making the contracts. He quoted General Counsel Payne

of the Railroad Administration as stating that to retain all the short line railroads would cost the government approximately \$20,000,000 per annum. On the other hand, he quoted the representatives of the short line railroads as saying that their earnings were reduced in some cases 50 per cent by the diverting of freight to government-controlled lines.

Representative Esch, in supporting the amendment, said that there are about 750 short line railroads involved, covering 30,000 miles of trackage and with a capitalization of \$2,000,000,000, whereas only about 40 of the short lines have been released upon their own request.

Railroad Administration Advances to Railroads

The Railroad Administration has advanced \$160,509,000 to railroads since the government assumed control of the lines, of which \$36,195,000 was advanced during the month of June, according to the monthly statement issued by John Skelton Williams, director of the division of finance and purchases. Of the total amount \$18,745,000 was derived from surplus balances of certain railroads and \$141,764,000 from the revolving fund. An accompanying statement said that owing to improved money conditions and better earnings the railroads are showing increased ability to provide for their own financial requirements, both in the matter of meeting maturing bond issues and in securing additions to their property.

The advances made to carriers during the months of April, May and June have been as follows:

	Revolving fund	Railroad surplus	Total
New York, New Haven & Hartford	5,000,000	\$5,000,000	\$46,964,000
Baltimore & Ohio	4,000,000	5,000,000	9,000,000
New York Central Lines	29,500,000	5,500,000	35,000,000
Pennsylvania Railroad	23,000,000	2,000,000	25,000,000
Buffalo, Rochester & Pittsburgh	600,000	600,000	600,000
Detroit, Toledo & Ironton	200,000	200,000	200,000
Chicago, Indianapolis & Pacific	500,000	500,000	1,000,000
Chicago, Rock Island & Pacific	3,000,000	3,000,000	3,000,000
Minneapolis & St. Louis	750,000	750,000	750,000
Wabash	1,300,000	1,300,000	1,300,000
Lehigh Valley	7,500,000	7,500,000	7,500,000
Ann Arbor	200,000	200,000	200,000
Chicago & Central	7,750,000	7,750,000	7,750,000
Denver & Rio Grande	2,000,000	2,000,000	2,000,000
Chicago, Milwaukee & St. Paul	2,000,000	2,000,000	2,000,000
Chesapeake & Ohio	2,000,000	2,000,000	2,000,000
Delaware & Hudson	2,000,000	2,000,000	2,000,000
Chicago, Burlington & Quincy	1,500,000	1,500,000	1,500,000
Seaboard Air Line	1,000,000	1,000,000	1,000,000
Southern Pacific Company	2,000,000	2,000,000	2,000,000
Illinois Southern	160,000	160,000	160,000
Norfolk Southern	350,000	350,000	350,000
Hocking Valley	500,000	500,000	500,000
Central Vermont	285,000	285,000	285,000
St. Louis San Francisco	750,000	750,000	750,000
Total	\$160,509,000	\$18,745,000	\$160,509,000

On the above amount \$160,509,000 was paid on account of contracts as follows:

New York Central Lines	\$16,000,000
Wabash	1,300,000
Ann Arbor	200,000
Denver & Rio Grande	2,000,000
Lehigh Valley	4,500,000
Chicago, Milwaukee & St. Paul	4,000,000
Pennsylvania Railroad	5,000,000
Delaware & Hudson	2,000,000
Chicago, Burlington & Quincy	1,500,000
Southern Pacific Company	2,000,000
Norfolk Southern	350,000
Central Vermont	285,000
St. Louis San Francisco	750,000
Total	\$40,460,000

The remaining amount \$120,049,000

was loaned on demand at 6 per cent per annum

interest, secured by collateral, except—

New York, New Haven & Hartford note for one year at 6 per cent, secured by collateral, with the right of renewal for another year	\$4,000,000
and an unsecured demand note for	3,000,000
Baltimore & Ohio, unsecured demand note for	4,000,000
Hocking Valley, unsecured demand note for	500,000
Total	\$11,500,000

Progress in Contract Negotiations Slacken

Oral arguments as to whether the operating expense accounts of the carriers as reported by the Interstate Commerce Commission shall be recast by the Interstate Commerce Commission before issuing certificates of the net operating income for 1915, 1916 and 1917 as the basis for compensation

Federal Managers and General Managers



A. Robertson
Federal Manager, Missouri Pacific



E. T. Lamb
Federal Manager, Atlanta, Birmingham
& Atlantic



W. L. Mapother
Federal Manager, Louisville & Nashville



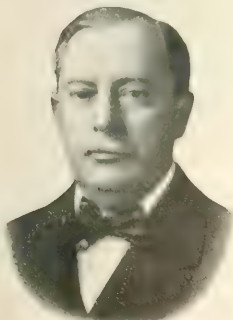
W. J. Jackson
Federal Manager, Chicago & Eastern Illinois



LeRoy Kramer
Federal Manager, St. Louis-San Francisco and Missouri, Kansas & Texas Lines North of Texas



C. G. Barnum
Federal Manager, Chicago, Burlington
& Quincy



J. E. Gorman
Federal Manager, Chicago, Rock Island
& Pacific



W. B. Scott
Federal Manager, Southern Pacific
Lines in Texas and Louisiana



W. A. McGowan
General Manager, District
Mississippi & Northern

under federal control were heard by the full membership of the commission at Washington beginning on Monday. A. P. Thom, counsel for the Railway Executives' Advisory Committee, argued that the accounts should be used except for corrections for erroneous computation, violations of the accounting rules and the deduction of war taxes which were accrued and which the law requires shall be paid by the companies from their compensation. Clifford Thorne presented an opposing argument, contending that the accounts should be recast to reduce the net operating income by amounts which should have been charged to maintenance.

Progress on the negotiations over the standard compensation contract was delayed somewhat by the necessity of dealing with the short line situation, but there are still differences of opinion regarding the extent to which the Administration shall control the expenditure of the amounts paid to the companies for compensation, the interest rate on investments in improvements and particularly regarding the effort of the administration to insert a provision by which the companies would waive all right to claim damages for destruction of business by diversion of traffic during federal control. The representatives of the security holders are especially opposed to such a provision and have threatened to refuse to ratify a contract representing some of the views expressed by the Administration representatives.

A contract between the Railroad Administration and the Kansas City, Mexico & Orient has been signed on the basis mentioned in last week's issue, which provides for the payment of \$150,000 a year and an equal division between the company and the government of net operating income above that amount, with the option that this may be commuted to \$350,000 after six months at the desire of the government.

Payment of Freight Bills

C. A. Prouty, director of the division of public service and accounting, has issued a circular giving interpretations of the general order placing transportation charges on a cash basis, as follows:

Numerous objections have been filed to Order No. 25 and in consequence I have held several conferences with shippers and railroad accounting officers with a view to determining the practical questions involved in the enforcement of that order. As a result of these conferences I am not satisfied that any change should be made in the order, but it is apparent that further explanation of the application of the same is necessary.

1. A railroad has a lien upon the property for its freight charges; that is, it may demand payment of the freight money as a condition precedent to the delivery of the property. This right should never be waived if there is a reasonable possibility that the carrier will thereby lose its freight money. This must be read into and considered as a part of whatever is said in this circular. To what extent payment before delivery will be insisted upon is usually a local question and must be left largely to the discretion of the individual carrier.

2. While the carrier must protect itself in cases where such protection is necessary, it should also treat shippers or consignees in a business way. The majority of shippers or consignees in the past have paid their freight when they received their goods and that practice should be continued for the future. In many instances with regular customers there is no necessary connection between the delivery of the freight and the presentation and payment of the freight bill; that is, the freight will be delivered to one person at one time and the bill presented to and collected from some other person at some other time. It is not the intent of this order to interrupt reasonable arrangements of that sort which do not involve the granting of a period of credit, but simply to put the transaction upon a cash basis.

Assume, for example, that freight is delivered to such regu-

lar customer on Monday and that the freight bill is mailed or delivered on the same day to the shipper or consignee, being received by him in due course upon the morning of the next day. If, now, the shipper or consignee remits his check for the amount during Tuesday so that it may be received by the carrier the morning of Wednesday, that is to be treated as a cash transaction. The bill is presented and paid in due course of business and no period of credit in the ordinary acceptance of that term is given.

This might in fact allow one day for the examination and correction of the freight bill, but that would not be the purpose of the transaction. In such case no bond will be required.

3. If in a particular case it is in the opinion of the carrier necessary or in the interest of economy that a period of two days in addition to that above prescribed should be allowed, this may be done upon the filing of the necessary bond. The check in this case should be mailed or payment made on Thursday.

4. Any plan may be adopted for the payment of these freight charges which is equivalent to a cash transaction. Take, for example, the movement of ore from the mine to the dock at the head of the lakes. The ore is weighed at the dock and the consignee has no representative there who can conveniently pay the freight. At the present time, in some instances at least, the railroad agent draws a sight draft upon the consignee, attaching the freight bills. Subsequently these freight bills are checked by the consignee, a statement of alleged errors transmitted to the carrier, which, if found correct, is taken account of in the drawing of subsequent drafts. The draft is always honored. This and similar practices are treated as cash payments. No bond is required in this case, but failure to honor a draft would automatically cancel the arrangement.

5. In many cases at the present time the shipper or consignee corrects his freight bill before paying the same, and pays, not the bill as rendered, but the bill as corrected. There is no objection to a continuance of this practice provided that the shipper or consignee does not abuse it, but proceeds in good faith with a revision of the bill both for undercharges and overcharges. The change should be made in red ink and the tariff authority for the change indicated upon the bill. The carrier should at once check the correctness of the change. If found correct, the transaction is ended; if not correct, the bill should be at once returned to the shipper or consignee with a statement of the amount the collection of which will be insisted upon, in which case this amount must be paid.

It will be understood that all this refers to questions of rates arising out of the interpretation of the tariff. Any question of loss and damage, shortage in shipment, etc., is an entirely different matter which must be settled through the regular channel.

The above will serve as illustrations of the many questions which may arise. In disposing of these questions, railroad officers must remember that we are in fact the servants of the public and that it should be our earnest and honest effort to administer our duty in the public interest. They should attempt in all cases to get at the viewpoint of the shipper or consignee and to work out some co-operative arrangement under which the best results for all parties can be attained. I am satisfied that if shippers or consignees and carriers approach the application of this order in that spirit, it will be found possible to comply with it without undue hardship. All parties must remember that these are abnormal times and allow something on that account.

In order that working arrangements may be fully consummated before the order goes into force, the effective date has been postponed until August 1, 1918. In all doubtful cases the matter should be at once taken up between the carrier and the shipper or consignee. Either party may consult this office

where a doubtful principle is involved, but it is my desire that these questions be worked out locally in all cases. Both carrier and shipper or consignee will understand that the mass of detail cannot be disposed of here.

Accounting Circular

Director Prouty of the division of public service and accounting has issued a circular stating that in order to obtain uniform results it has been decided that the provisions of general order No. 17 requiring the carriers to open new accounts called federal books, apply with equal force to all carriers under federal control, whether in receivership or otherwise. It is, therefore, necessary on the part of accounting officers or carriers in receivership to see that the provisions of the order are complied with and that new books are opened as of January 1, 1918. All assets collected and all liabilities paid subsequent to December 31, 1917, which were collectible or payable on or prior to that date are to be accounted for to or from the receivership or the corporation depending upon whether the assets collected or the liabilities paid are for account of the receiver or the corporation. The separate books of account are to be continued during the period of federal control, notwithstanding the receivership may be terminated before that time.

Consolidated Classification Completed

The work of combining the Official, Western and Southern Classifications into one volume, uniform as to rules, descriptions, carload minima, etc., and with three columns of ratings—one for each of the three classification territories, has been completed and the proposed Consolidated Classification No. 1 has been compiled and submitted to the Interstate Commerce Commission for consideration and for public hearing.

Under the three separate classifications it was often the case that a shipment moving through two territories was subjected to different rules on the different parts of its journey and the shipper, say, from an eastern point to a point west of the Mississippi River was required not only to be familiar with the rules and descriptions applying east of the river but the possible different ones west of the river and was compelled, moreover, to refer to two distinct classifications in order to ascertain his through rating.

These difficulties will disappear when the new Consolidated Classification becomes effective and it will only be necessary for a shipper to consult one volume while the only territorial variation will be in the rate, which can easily be located.

The work of unifying the three classifications has been going on for several years under the direction of the Uniform Classification Committee, which has been endeavoring to establish uniformity as to rules, descriptions, minima, etc., without attempting to effect uniformity of rating. Shortly after the Railroad Administration was formed, Director General McAdoo appointed a committee composed of the chairmen of the three territorial classification committees and of the Uniform Classification Committee and a representative of the Interstate Commerce Commission to hurry up the work, and the book is now ready for publication, subject to any changes that may be deemed necessary or advisable after public hearing. In the consolidated classification, in addition to the work which the uniform committee has been carrying on, a greater degree of uniformity in ratings has also been provided than previously existed, and this has led to a considerable number of increased ratings. There was a greater degree of uniformity between the official and western classifications than between them and the southern and, as a result, in the consolidated classification there is a much greater number of increases than of decreases in the Southern territory, while in the eastern and western territories it is stated that the number of increases and decreases is about equal. The Interstate Commerce Commission on June 27 ordered a proceeding of inquiry and investigation by the commission on its own

motion concerning the reasonableness and propriety of the descriptions, rules, regulations, rating and minimum weights provided in the classification, except the rules and regulations governing the transportation of explosives and other dangerous articles. The proceeding was assigned for hearing before Examiner Disque at the places and on the dates following: Boston, Mass., August 1; New York, N. Y., August 5; Chicago, Ill., August 12; Omaha, Neb., August 19; Portland, Ore., August 26; San Francisco, Cal., August 30; Denver, Colo., September 5; Fort Worth, Tex., September 9; New Orleans, La., September 13, and Atlanta, Ga., September 19. All carriers subject to the act to regulate commerce and which are not under federal control were also made respondents with a view to prescribing reasonable and appropriate classification in consolidated form for their use.

Information as to Labor Conditions

The Board of Railroad Wages and the Interstate Commerce Commission issued a questionnaire to the railroads through the regional directors, requesting information regarding labor conditions on the different railroads, as follows:

1. What is your normal summer force of common labor?
 - (a) Section labor.
 - (b) Extra track maintenance gangs.
 - (c) Track construction gangs.
 - (d) Bridge department.
 - (e) Building department.
 - (f) Water supply and fuel department.
 - (g) Signal department.
 - (h) Other branches of service (specifying).
2. What total force in each of the above should you have quickly to enable you to get the property in normal shape for present or winter service?
3. Do you employ common labor by the day or by the hour; specify hours per basic day?
4. Give range of pay per hour, approximate number employed at each rate, and reason for any differential that may have existed in December, 1915, or exists today.
5. Give approximate corresponding rates paid in other industries in that proximity.
6. At what rate is overtime paid for night work, Sundays and holidays as of this date?
7. What proportion of this force are paid on the piece work basis?
8. What was the rate per basic day or hour for piece workers prior to January 1, 1918?
9. What was the average, maximum, minimum and prevailing piece work hourly earning in 1917?
10. Do you recommend the continuance or introduction of piece work on track maintenance?
11. Describe conditions of supply of common labor sufficient to give comprehensive grasp of the situation.
12. What rates do you recommend be paid to obtain adequate supplies of common labor?
13. If such rates are paid will they withdraw labor from essential war industries or from non-essential industries, or will they induce itinerant labor to work?
14. What minimum differential (expressed in per cent, over usual monthly earnings of common labor) should be paid for foremen?

Belnap to Devote Full Time to Safety Section

Hiram W. Belnap, who was recently appointed manager of the safety section in the Division of Operation of the Railroad Administration, has resigned, effective on July 1, his position as chief of the Bureau of Safety of the Interstate Commerce Commission, to devote his entire time to the work of the safety section. As has been described in recent issues, Mr. Belnap will supervise the building up of an effective safety organization on all of the railroads under

federal control. He had been with the Interstate Commerce Commission for 15 years, for 7 years as chief of the Bureau of Safety and for the 8 preceding years as inspector of safety appliances.

Rate Divisions Should Be Furnished

The Division of Public Service and Accounting has issued a circular stating that attention has been directed to the failure on the part of certain carriers to furnish other interested carriers with a copy of the divisions necessary to apportion interline freight revenues. These requests for divisions were to enable the destination carrier to apportion the revenues on traffic moving via usual routes in substantial volume, and the failure to supply divisions in such cases puts an unnecessary burden upon the settling carrier and necessitates the apportionment of such revenues on a mileage basis. To the end that interline freight revenues covering traffic moving in substantial volume via usual routes may be apportioned as provided in General Order No. 21, all carriers are notified that proper requests for copies of divisions should be promptly complied with, provided, however, if requests for divisions are made covering traffic moving in small volume over unusual or diverted routes, such requests should be referred back to the carrier making the application and its attention directed to the provisions of paragraph 4 of General Order No. 21.

Stockyards Railways

In reply to a Senate resolution Walker D. Hines, acting director general of railroads, has addressed a letter to the Senate stating that no action has been taken in regard to taking over as part of the Railroad Administration any of the stockyards of the country. The letter said in part:

"As to the stockyards railways, the present view of the Railroad Administration is that in general it will be in the public interest for the government not to exercise control of such railways, since they are either wholly or largely plant facilities for the stockyards service. The allowance made to such stockyards railways will however, be carefully scrutinized to see that they are not excessive. It is believed that an adequate and non-discriminatory service can be secured without federal control of these railways.

"In a few cases the stockyards railways may be so extensive and may serve so many industries, other than the stockyards and packing houses, as to make such railways an integral part of the general terminal facilities of the United States Railroad Administration and necessitate their retention in federal control. The Chicago Junction Railway, which has 220 miles of track and serves many other industries, is of this class.

"These questions at present are receiving careful study, and a specific answer as to the permanent status of these stockyards railways in respect of federal control cannot be made until the study shall be completed.

"It is believed that the Director General of Railroads has not authority under existing laws to take over stockyards. The authority under which the roads were taken over by the President is derived from the act approved August 29, 1916, and the power is limited to systems of transportation or parts thereof. The federal control act approved March 21, 1918, does not, it is believed, enlarge this power.

"No study as such has been made regarding the ownership and control of the stockyards to determine what, if any, connection such ownership and control has with the packing industries of the country. The only information which we have sought is to determine whether the terminal roads in different localities should be taken under control of the government."

SPAIN PRODUCED 5,973,300 TONS OF COAL IN 1917, 5,589,800 tons in 1916, and 4,293,100 tons in 1913.

Starting Work Quickly on the Illinois Central

IN ORDER TO BEGIN work on the construction of several important mechanical terminals at the earliest practical date after receiving notification of the approval of its budget recently, the engineering department of the Illinois Central adopted a novel and interesting expedient. The approval of all construction work was delayed so long this year as the result of the concentration of final authority in the hands of the Railroad Administration at Washington that less than the usual time remained to complete the facilities before winter. Furthermore, a large amount of work on different roads was approved at approximately the same time, leading to active competition for contractors and men.

Among the items approved on the Illinois Central were the construction of mechanical facilities at Champaign, Carbondale, Mounds and Amboy, Ill., and Fulton, Ky. In order to secure contractors for these projects before they were loaded up with other work and to hasten the completion of the work the road did not wait to complete the detailed plans for these improvements before calling for bids. An invitation was prepared in printed form and sent to a selected list of contractors, asking them to submit proposals for each of the jobs on the basis of the actual cost of labor, material and insurance, plus fixed sums or fixed unit prices (depending upon the character of the work), to cover contractors' profits, use of plant, tools and overhead expenses. The work to be done was specified in the invitation. Location and such other plans as were completed were sent with the invitations, as were also standard drawings and specifications covering the various types of buildings and facilities to be constructed. Specifications for mechanical terminals built last year at Baton Rouge, La., and at Paducah, Ky., were also included as typical of the work to be done this year. Equipped with this information, the contractors were in a position to go over the work on the ground in an intelligent manner and to submit bids on each project to cover their overhead costs and profit in either lump sums (for clearing the site, etc.), or unit prices (as for placing concrete) for as many of the 154 items listed in the invitation and as were encountered in the project under consideration. With the bids in hand the engineering department was able to award contracts with the minimum delay. In letting the work it was also endeavored to distribute it between different contractors in a manner which would lead to the earliest completion of all of the projects. Largely for this reason a different contractor was placed at each of the five points.

As a result of this method invitations for bids were sent out to contractors on receipt of authority to proceed with these projects. Contracts were awarded six days later and the contractors were at work at all of the points within a week of the time that they had received notification of the awarding of the work to them, or within 17 days of the approval of the budgets by the government. By means of this plan the double object was accomplished of awarding the contract in the minimum time while retaining the personal incentive to the contractor to do the work as expeditiously and cheaply as possible and at the same time insuring him that he was protected against increases in prices for materials and labor, while also protecting the railroad company in case there should be a lowering of prices.

JAPANESE GET CHINESE RAILWAY.—According to press despatches, Japanese interests have obtained the long-sought-for extension of the Kirin-Huilin Railway, which is to be 277 miles in length. The Japanese will advance to China 10,000,000 yen (\$5,000,000), and make a similar amount available for surveys, accepting therefor 20,000,000 yen (\$10,000,000) of six months' treasury bills.

Yearly Meeting of the American Concrete Institute

Abstracts of Some of the Papers Presented at the Annual Convention Held at Atlantic City

THE ANNUAL CONVENTION of the American Concrete Institute was held at the Hotel Traymore, Atlantic City, N. J., on Thursday, Friday and Saturday of last week. The session on Thursday was held jointly with the American Society for Testing Materials, when reports and papers covering the portions of the concrete field occupied by the Society and the Concrete Institute in common were presented. The following are abstracts of some of the papers presented which are of direct interest to railroad men.

Reinforced-Concrete

Flat-Slab Railway Bridges

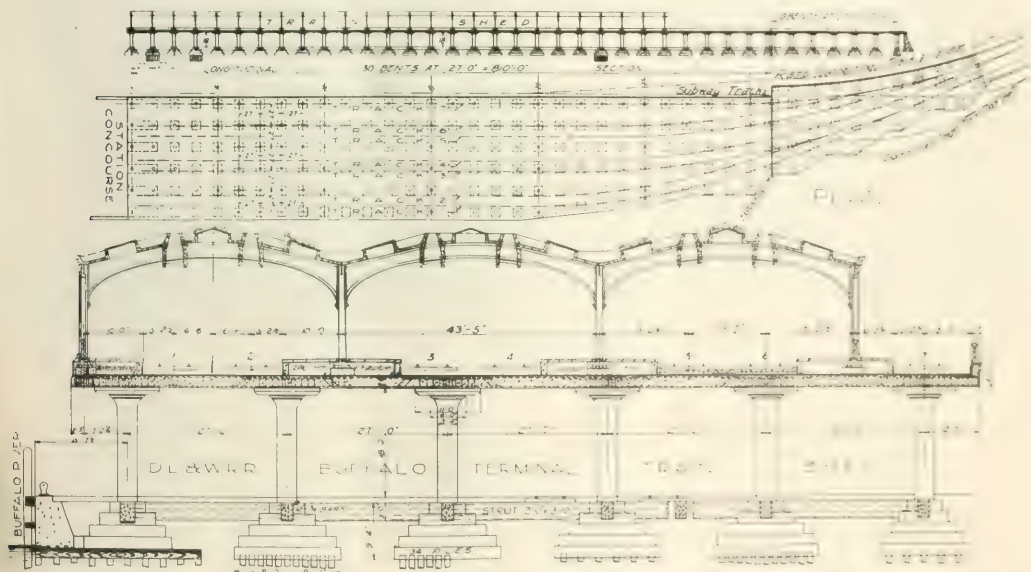
By A. B. Cohen

Assistant Engineer in Charge of Concrete Design, the Delaware, Lackawanna & Western, Hoboken, N. J.

The principal advantages of the flat slab compared with all other forms of reinforced concrete and other fire-proof construction are embodied in the simplicity of both the formwork and the arrangement of the reinforcing steel.

construction there is one outstanding feature of the system which is of most vital importance in reinforced concrete construction. By reason of its uniform cross section and continuity of the reinforcement, there is no other type of reinforced concrete that is better proportioned to resist shrinkage and thermal changes. Structures of the flat slab type have been built in surprisingly great lengths without the incorporation of a single expansion joint and have successfully resisted the very severe strains of these stresses. By the insertion of an additional amount of reinforcing steel across construction joints, a constant tensile resistance can be maintained which has the effect of preventing cumulative action of the stresses at any particular section; the strain is distributed uniformly throughout, resulting in an infinite number of minute cracks that do not impair the strength of the structure.

Our experience does not extend over a sufficient length of time to ascertain definitely what effect the repeated action due to temperature changes will have eventually on the strength of the structures. However, very close observation of existing flat slab structures, in service from three to six



Details of the Reinforced Concrete Flat Slab Train Shed, Lackawanna Terminal, Buffalo, N. Y.

The first cost of construction has been so reduced thereby as to put structural steel, in competition with the flat slab within its limitations, substantially out of consideration; furthermore with concrete construction lower maintenance charges prevail and greater permanency is obtained. The simple arrangement of the reinforcing steel, laid over a practically unbroken flat surface, insures a more positive placement of the reinforcing bars than the general beam and slab design in concrete.

In addition to these general advantages of the flat slab

years, have disclosed no deleterious effect due to these causes. The minute cracks found were of no greater concern than those developing on the tension side of a beam long before the steel has reached full working stress.

By way of comparison in this regard, to show the difficulties encountered in other types of concrete construction, consider the special arrangements in the manner of expansion and sliding joints that are necessary and not always efficacious in large concrete arch viaducts or in viaducts of the column, beam and slab design. In the viaducts consisting

of a series of large main arches surmounted by transverse spandrel walls supporting a floor system, the vertical movement of the heavy arch ring, for a rise and fall of temperature, is transferred to the floor system. This very appreciable vertical movement must be resisted by the comparatively light floor in addition to its own changes in a horizontal plane. In the case of the beam and slab design the constituent members have different sections and therefore offer varying degrees of tensile resistance. There arises the difficulty of transferring the movement from the larger through the smaller members, as from the deep beams through the thin slab, which is not always satisfactorily controlled.

Some Examples

The first and most extensive application of the flat slab system for carrying railway loadings was made in Chicago with the erection of the Soo Line freight terminal. The yard area required for this improvement amounted to 18.5 acres, comprising eleven city blocks located near the business and manufacturing centers. This entire layout for handling freight is carried on an elevated structure to meet the municipal requirements that no grade crossings should exist. Deck construction gave the greatest possibilities of storage development, making available 520,000 sq. ft. on the ground sur-

slab where storage and other shipping facilities, including express, are available. Two tracks are located on the dock level which connect by means of the subway and ramp tracks, with the main line tracks on the upper level. Passenger traffic is discharged on the upper level, precluding interference with other station appurtenances located on the ground level.

The perfectly flat unobstructed floor simplified the waterproofing treatment which consists of a membrane composed of two layers of cotton cloth saturated and applied with hot asphalt and protected by a cover of asbestos paper and two $\frac{3}{4}$ -in. layers of asphalt mastic. Only one expansion joint was provided and this placed at bent 31 where the slab begins to narrow down from the seven-track to the two-track width at the easterly end. The joint was deemed necessary here for the reason that the narrow section would not offer the same tensile resistance to temperature changes as would the wider section. An accumulation of stress might reasonably be expected somewhere in the narrow section if no expansion joint were provided which might result in cracks of sufficient magnitude to impair the strength of the viaduct.

The only cracks so far developed have occurred in the end panel under tracks 1 and 2 between bents 24 and 25. These cracks developed before any live-load was applied in a sec-



Underside of the Slab in the Warehouse, Lackawanna Terminal at Buffalo, N. Y.

face underneath the deck. The flat slab showed advantages of lower cost, lower maintenance and greater permanence as compared with structural steel. From a railroad point of view the outstanding feature is the possible flexibility in the track layout since the structure is designed to carry any arrangement of tracks on 12-ft. centers. This was obtained with very little additional cost over a fixed position of tracks and driveways. It was in this structure that those responsible for the design decided that no expansion joints were necessary and their judgment seems to have been justified.

The satisfactory results obtained with the flat slab system at the Soo Line terminal prompted its consideration and adoption by the Delaware, Lackawanna and Western Railroad in the recent construction of a viaduct approach to the station of the new terminal improvement at Buffalo, N. Y. The viaduct, 154 ft. in width and 1,070 ft. in length, supports a structural steel trashed, platforms, and seven tracks on ballasted floor. Deck construction was admirably adapted to the maximum development of full terminal facilities in a very limited area. This new layout is located alongside the Buffalo river. The docking facilities are for Great Lakes steamers which can be unloaded directly under cover of the

tion poured July 14, 1916. The waterproofing was laid during the following winter and it was on this panel that the kettles for melting the asphalts were placed, resulting in high temperatures in the slab. There is the possibility that the subsequent sudden cooling of the slab in zero weather caused the cracking. This hypothesis is not advanced so much in an endeavor to substantiate the writer's previous remarks—that the constant tensile resistance of the slab under ordinary conditions has the effect of preventing cumulative action of the stresses at any particular section—but is given rather for its value as a warning in anticipation of what may occur to any concrete bridge slab if too much heat is applied locally in extreme cold weather to a comparatively thin slab for any purpose.

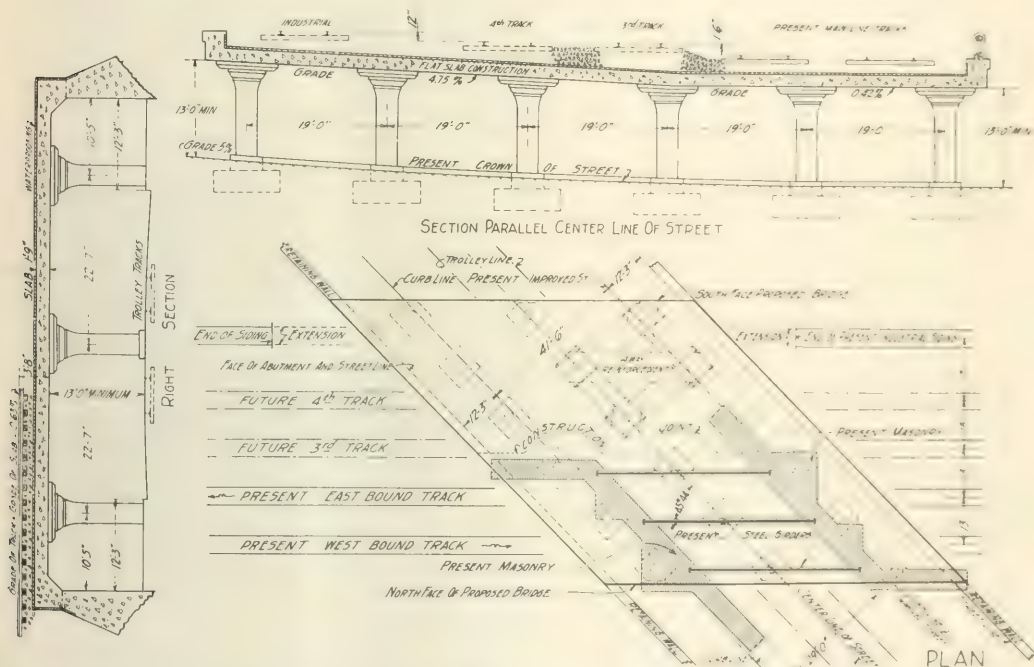
The second application of the flat slab construction made by the Lackawanna solved in a very acceptable manner one of the perplexing problems encountered in grade crossing elimination through populous sections. The difficulty develops when it becomes necessary to acquire abutting property for the expansion of tracks and station facilities, in which case the property is usually rated at an exorbitant value.

This condition prevailed in connection with track elevation work through South Orange, N. J., where the acquisition of more right of way would have been necessary for an additional third track and island platform together with a new station if the latter were to be built in the usual manner alongside. The necessity of purchase was obviated by the adoption of a flat slab viaduct, 79 ft. in width and 426 ft. in length, under which the station and all its appurtenances were built within the confines of the original right of way.

The proximity of South Orange avenue, a county highway, was an important consideration in favor of the slab construction since the easterly end of the viaduct is carried over this main thoroughfare. Included in the facilities provided under cover of the slab are a concourse connecting the station with the avenue and its trolley line, parking space

slab for the small type railway bridge, it has been found in a number of estimates that a very appreciable difference existed in favor of the flat slab. In one case the cost of structural steel exceeded that of the flat slab by 200 per cent. This result was obtained where deck construction would have been required on account of a yard layout involving cross-overs on the bridge, and a shallow floor depth was necessary because of close vertical clearances. The estimate included the price of structural steel at its high water mark.

The flat slab system has flexible possibilities not obtainable by established bridge construction at Lackawanna bridge No. 9.99. It is proposed to remove the present two track steel bridge for the reason that the abutments, 29 ft. apart, encroach upon the new 41-ft. 6-in. driveway, which has been substantially paved with granite block on a concrete base. The bridge is to be extended to insure track



Proposed Application of the Flat Slab Design to a Difficult Bridge Problem, Lackawanna R. R.

for vehicles, a baggage platform and a heating plant apart from the station.

There are many advantages in addition to that of economy to be gained by this type of construction. It permits of more effective architectural treatment; because of its shallow floor depth the track can be laid in ballast, which is a very important consideration in track construction; there are no girders projecting above the deck to encroach upon the lateral clearance of the motive power or to interfere, as in this case, with the construction of the platforms; the rigidity of the structure is noteworthy since no noticeable vibration is developed with the simultaneous passing of heavy locomotives at high speeds on all three tracks; by reason of this rigidity and of the ballasted floor, the rumbling noises common to structural steel bridges are very much subdued.

The same advantages that accrue from the use of flat slab construction covering large areas prevail for smaller structures and comparing the cost of structural steel with the flat

development on the southerly end, including the installation of an industrial track by extension of the present separate sidings which terminate close to the proposed bridge on either side.

lateral street intersections fixed the five per cent grade of the street on the southerly side to begin at the face of the present steel bridge, thereby materially encroaching upon the vertical clearance for future expansion of tracks at their present elevation. To overcome this difficulty the flat slab is here tilted in the transverse direction to be approximately parallel with the grade of the present crown of street, and in the longitudinal direction parallel with the grade of the tracks. This flexibility and relative shallowness of the slab have resulted in a very shallow floor depth, preserving the continuity of the ballasted main line track construction, and the extension across the bridge of the industrial siding to the right at its present elevation without resorting to the usual alternative of lowering the street which in this case

would be a very expensive operation. When the future third and fourth tracks are laid, they can easily be established at the elevation 1 ft. 6 in. above the present tracks necessary to provide the proper amount of ballast.

The most important consideration in the construction of the small type railway bridge on an established alignment is to maintain traffic without interruption during the operation. This is handled in a number of ways. Where the topography will permit, the alignment is shifted temporarily in order that the bridge might be built clear of traffic, in part or in its entirety. Where the right of way is of limited width and the tracks cannot be shifted, a timber pile bent trestle of 12-ft. spans is driven under traffic and between these bents, after the excavation has been made the abutment and piers only of the new bridge can be built. Long temporary through girders are often used to span out to out of the new abutment lines in order that the entire bridge may be built underneath. If no old girders are available and the only solution is the timber trestle there arises the exclusion of the flat slab construction, for the reason that the floor system of the new bridge must be erected beyond the bridge site, either in units or in the whole, followed by a quick removal of the trestle stringers and the installation of the completed floor system on the new masonry during hours of least traffic.

This very important consideration of construction is satisfied in the last example by dividing the work into two parts along the construction joint as indicated. This joint is placed without weakening the strength of the slab and so

struction can be carried on. These features are emphasized in the last example which, with its 45° 44' angle of crossing coupled with the grades of the street and tracks, would considerably complicate the details of design and construction of established bridge practice. The flat slab design will not require any special consideration on account of these complications. Its flexibility offers much opportunity in overcoming and simplifying other inherent complications of the small railway bridge.

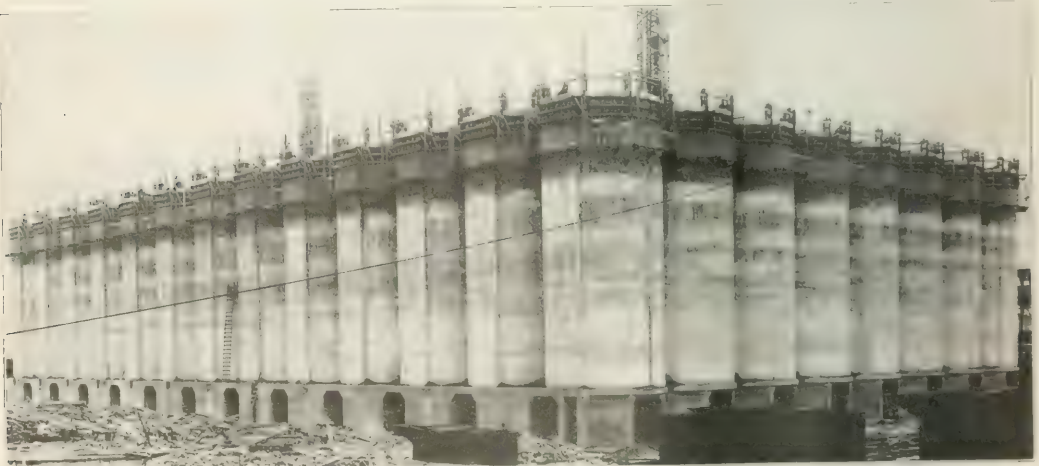
The Chicago & North Western Elevator

By F. C. Huffman

Assistant Chief Engineer, Chicago & North Western,
Chicago

The Chicago & North Western's 10,000,000 bu. terminal elevator, completed at the close of 1917 and leased to the Armour Grain Company for operation, is the largest and most completely equipped grain elevator in the world. It is located on the west bank of the Calumet river, near One Hundred and Twenty-second street, Chicago.

The plant is so situated that grain is received and shipped both by rail and water. By rail the daily receiving capacity is 1,296,000 bu., and the daily shipping capacity 1,296,000 bu. By boat the daily receiving capacity is 480,000 bu. and the shipping capacity 1,440,000 bu. All of the above operations may be carried on simultaneously. The handling capacity of the elevator depends on the receiving capacity,



Partly Completed Bins Showing the Forms in Position

that the southerly half can be built first without interference with traffic and alongside of present structure by removing only a small portion of the old masonry. The main line tracks will be shifted temporarily to the completed half, which gives clear field for the removal of the old bridge and completion of the new structure. The bulkheads of the construction joint are arranged to be practically normal to the bands of reinforcement.

The measure of the advantage in cost of the flat slab railway bridge, compared with other types, varies considerably and is dependent upon the conditions at hand. There seems to be no question concerning the architectural and structural advantages, the latter results in less maintenance and greater permanence. Of immeasurable value is the simplicity of design and the expediency with which the con-

struction is carried on. These features are emphasized in the last example which, with its 45° 44' angle of crossing coupled with the grades of the street and tracks, would considerably complicate the details of design and construction of established bridge practice.

The main structure consists of track shed, work house, storage house and river house, all of which are combined in one unit and built of reinforced concrete, with the exception of the cupola, which is built of structural steel and supports curtain walls of concrete two inches thick reinforced with No. 9 wire mesh. These curtain walls are built of "gunite" placed by the cement gun.

It is necessary when undertaking the construction of such a great structure to have a large and well designed concrete plant which will carry out the work economically. This consisted in part of an elevated railroad track for receiving sand and gravel in hopper bottom cars which were dumped from a trestle into a hopper from which a belt conveyor

carried the material up an incline of 20 deg. to a height of 40 ft. Here it was dumped and distributed uniformly by a traveling tripper into a large storage bin 200 ft. long. This bin had a sloping bottom and was divided into two compartments, one for sand holding 1,000 cu. yds., and one for gravel holding 2,000 cu. yds. A belt conveyor running underneath for the entire length received the material from the bin and carried it to a cross belt which again elevated the material to a height of 40 ft. Here it delivered it to a long belt running parallel to the building.

This belt delivered to three separate mixing plants equally spaced near the side of the structure. Each mixing plant has a sand hopper of 40 cu. yds. capacity and a gravel hopper of 80 cu. yds. capacity located directly over the mixer. The material is delivered to the mixer through measuring chutes.

The cement in most cases was taken directly from cars which were brought opposite each mixer on a material track. A 600-bbl. cement shed was built at each mixer plant to store the cement in case cars were not delivered regularly.



A Top View of the Bin Forms During Construction

Water was supplied from the river by the use of a motor-driven triplex pump automatically controlled by a cut-off switch, at a maximum pressure of 80 lb. A one-yard electrically driven mixer was installed at each plant. After the concrete was mixed it was dumped into hoisting buckets at each of the three plants and hoisted to the proper height, where it was delivered to distributing chutes. The distributing chutes had swivel legs and balanced cantilever discharge spouts operating in a radius of 100 ft. This method of handling the concrete was used for all the foundation slabs, basement walls and bin floor slabs. Above these sliding form work was used and the "bugging" method was followed. Each of the concrete plants was able to deliver 1,200 cu. yds. during a period of two 10-hr. shifts. When operating at capacity a batch of concrete was turned out every 47 sec. All conveyors, hoists, mixers and machinery were electrically driven by current brought in at 12,000 volts and stepped down to 220 volts at a temporary transformer building on the site.

The foundation for the structure consists of 18,200 timber piling of an average length of 36 ft. below cut-off, spaced $2\frac{1}{2}$ ft. center to center. After the piling was cut off the concrete mattress was poured over the entire area. This

mattress consisted of gravel concrete, heavily reinforced with steel bars and varying in thickness from 1 ft. 6 in. to 2 ft. 4 in., as requirements demanded. As soon as a section of the mattress was completed, workmen began placing the stationary forms for the basement story. This story is used for the machinery and belt conveyors employed in conveying the grain from the track shed to the work house or river house and for receiving the grain from the river house, and storage bins, and delivering it to the work house. The walls and piers in this story are of massive design owing to the enormous load they must support. In the storage house and the river house the forming was so arranged that the bin bottom slab and walls were poured together, making a monolithic structure.

The concreting of the circular bins was next in order of procedure. The bins of the storage house, 104 in number, are 105 ft. high and $22\frac{1}{2}$ ft. in diameter, on the center lines of the walls which are 7 in. thick, reinforced horizontally with flat bars. The forms consisted of an outer and inner wall section built of 4-in. beveled vertical staves, 4 ft. high and held together by yokes. There were eight yokes to a bin, each yoke having a lifting jack of the "monkey motion" type attached to it. This type of jack was especially designed for this job, and operated upon a one-inch pipe which served as the vertical reinforcing for the walls. This jack operates with a lever working through a vertical arc and eight were used on each bin form. The vertical pipes were spliced with a butt joint and a filler which permitted the jacks to operate without any interference with the joints or the placing of additional lengths of pipe. The pipes were marked at six-inch intervals, to assist the workmen on the jacks in carrying the forms up in a level position and also inform them the amount they were required to raise at any one time. These forms were so connected by vertical rods and cast slides that the raising of one form did not disturb the adjoining forms. Each bin form was lifted six inches in turn, the workmen making the round in regular order, and the steel placers following closely behind, after which the concrete was poured, making the work a continuous performance. These 104 bins were run up 105 ft. in 17 days, working two 10-hr. shifts per day. The 24 bins of the river house were run up a distance of 95 ft. in 11 days' time, working two 10-hr. shifts per day.

All roofs and floors were constructed of reinforced concrete. There were 62,000 cu. yds. of concrete, 1,750 tons of reinforcing steel, 2,000,000 ft. b.m. of form lumber, 94,000 bbl. of cement consumed in this structure.

THE DRIVE IS ON for War Savings Stamps! Remember that the soldier's chance of life depends upon the support given him by the folks back home. Help! Save and buy War Savings Stamps.

TRAINS BY WATERPOWER IN SPAIN.—Telegraphing recently from Madrid, the special correspondent of the London Daily Mail said that in a debate on railways in the Spanish Senate, Senor Cambo said the government was occupied with a large scheme for the development of hydro-electrical energy, and more than hinted at the existence of a plan for operating thus the main railways of the country. The correspondent added: "As the industrial development of Spain is hung up for lack of communications and transport, and as transport at present depends on coal, the importance of this project can hardly be exaggerated. It is interesting to note also that practically all hydro-electrical plants in the country are run with German machinery, and that their usual commercial forethought has been displayed in a systematic cultivation of the subject, as well as in a good deal of surveying and buying of properties where this power could be developed on a large scale. There is enough waterpower in Spain to do the whole work of the country."

Directors' Orders Governing the Western Regions

DURING THE PAST YEAR the regional directors of the western regions issued a number of orders, among which the following are noted. Supplement No. 1 to Circular 126, directed to southwestern and northwestern railroads, and Circular No. 7 sent to central western railroads, all under date of June 26, interpret Circular No. 126 on advertising regulations as not prohibiting the distribution of stocks of maps on hand as long as the supply lasts.

Circular No. 135 directed to northwestern railroads and Circular No. 13 directed to central western railroads, as well as an unnumbered circular directed to the southwestern lines—all three dated June 26—ask for an expression of opinion on the advisability of appointing one watch inspector for all roads at watch inspection points, whose sole duty would be inspection of time pieces and who would receive compensation therefor from the carriers. The circular asks whether the present system under which watch inspectors receive no compensation except the profit on watches which they sell, does not in some cases result in the practical compulsion of the employees to buy new watches from the men who pass upon their time pieces.

Supplement No. 3 to Circular No. 32 to northwestern and southwestern roads and Circular No. 9 to central western roads, dated June 26, outline a new procedure which will be followed in making applications for the opening up of new coal mines. Applications hereafter will be made by the coal mining company, in the first instance, to the Fuel Administration which, if it considers them worthy of attention, will pass them on to the Railroad Administration for more detailed consideration. At the conclusion of an investigation by the latter organization, a joint decision will be made by both administrations.

Circular No. 11, dated June 26, addressed to central western railroads quotes a letter addressed to the director general by the manager of the troop movement section which suggests that obsolete and weak passenger cars now put into bunk car service, might be used for the transportation of working men to and from the large ship-building and explosive plants now engaged in war work. The circular asks central western roads to prepare statistics on the amount and present distribution of this class of equipment.

Circular No. 22, dated June 27, and addressed to central western railroads quotes a letter from W. S. Carter, director of the division of labor of the Railroad Administration, which suggests that in view of the scarcity of train service employees the possibilities of employing firemen, brakemen and men in other similar service below the age of 21 might well be studied. Central western lines are requested to express their opinions on this matter and to advise if the state laws in their territories would interfere with the course suggested.

Supplement No. 1 to Circular No. 122 to southwestern and northwestern railroads and Circular No. 19 to central western railroads, all dated June 27, ask carriers to encourage full box car loading. While there is at present a surplus of this class of equipment throughout western territory, this should not be permitted to serve as an excuse for light loading as an usually heavy crop movement is in prospect.

Supplement No. 1 to Circular No. 96 sent to northwestern and southwestern railroads and dated June 27, states that employees' magazines now published by the various railroads and circulated free among their employees may be continued but that new ones should not be started.

Supplement No. 2 to Circular R. P. C. 13, dated June 26, and sent to all western railroads, asks them to confine

the sale of soap wheels to contractors in rail turning cast iron car wheels for railroads.

Circular No. R. P. C. 16, dated June 28 and directed to all western railroads, asks that every effort be made to reduce the size, quantity and weight of table clothes, napkins, towels, etc., purchased for use in dining cars, lunch rooms and other places where furnished by railroads. This request is made because of the scarcity of linen and cotton fabrics for table ware and their present high prices.

Supplement No. 3 to R. P. C. Circular No. 3, dated June 18 and sent to all western railroads, asks for certain detailed information concerning all fuel coal contracts, heretofore or subsequently made including the names of the vending company, the producing company and the mine, its location, the date of contract, the date of expiration, the net tons ordered, the approximate weekly shipment required, the grade of coal, the routing, the price, etc.

Circular No. R. P. C. 15, dated June 28, and sent to all western railroads states that during the next few months carriers will find it necessary to order smooth forged axles for their own use and to turn them down in their shops, where facilities for doing so are available. This will enable the axle manufacturers to utilize their maximum capacity for rough-turning axles for the United States standard cars now under construction.

Disposing of Old Ties

Circular No. 138 to northwestern railroads, Circular No. 23 to central western railroads and an unnumbered circular directed to southwestern railroads, all dated June 28, suggest certain rules to govern the disposition of old ties. Old ties will be used for lighting fires in engines to such an extent as may be advantageous and economical. Section employees will be allowed such old ties as the roadmaster may allot them for their personal use only. Ties may be given to farmers in exchange for plowing fire guards, mowing the right-of-way or for the privilege of erecting snow fences on adjoining land, under the direction of the roadmaster and division superintendent. Old ties may be disposed of to the public at such places as there may be a demand for them and at reasonable prices, provided they can be picked up by the purchaser without expense to the railway. In wooded localities where there is no demand for old ties and in other places where ties cannot be disposed of in accordance with the previous instructions they will be burned, under favorable weather conditions, so that the right-of-way may be kept cleaned up.

Maintenance of Way Labor

Circular No. 16 sent to central western railroads and unnumbered circulars directed to northwestern and southwestern lines, all under date of June 26, include questionnaires on maintenance of way labor conditions which are to be filled out for the information of the Board of Railway Wages and Conditions. The questionnaire asks for the previous rates of pay, hours of labor, manner of paying, whether by day or by hour—the rate of overtime paid, recommended changes in wages and working conditions, etc.

Application of Superheaters

Circular No. 132 to northwestern railroads and Circular No. 10 to central western railroads and an unnumbered circular directed to southwestern railroads, all dated June 26, contain the following instructions:

1. Locomotives on the receiving class 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.
2. Locomotives in freight or transfer service, having 30,000 lb. or more tractive power, will have preference, and locomotives with the longest service life will be first.
3. If superheated material is on hand the locomotives equipped by the above ruling, it should be used on smaller engines if not interchangeable with larger ones, the idea being to obtain the benefit of its use rather than to have it remain in stock because of not conforming to the above requirements.

The Bearing of Malaria on Railroad Operation

Description of Benefits Which Accrued to a Road from a Campaign to Eliminate This Sickness

By H. W. Van Hovenberg

Sanitary Engineer, U. S. Public Health Service, and Formerly Sanitary Engineer, St. Louis Southwestern Railway, Texarkana, Ark.

THE MATTER OF HEALTH PROTECTION for employees of large business enterprises has long since passed the experimental stage. Protection of health leading to increased efficiency, better social conditions, and greater contentment among laborers is now accepted as a paying investment of the highest order. Some health protective agencies have been thrust upon the railroads for the protection of employees and the public, such as safe drinking water, drinking

grip on their energy and vitality. The relation of malaria to the management of labor on the railroad becomes obvious when we consider some of the ways in which it increases tremendously the burden of both employer and employee.

(1) There is a turnover of labor many times during the season caused by malaria infected men joining the gangs only to leave at the end of one or two days' work. A foreman never knows how many laborers he will have ready for work, and a superintendent is never certain that a foreman can complete his work on time due to this uncertainty.

(2) There is a large class of railway employees, including ticket agents, clerks, telegraph operators, and others more or less skilled who have necessarily spent many years in mastering their line of work. Many of these employees are exposed to malaria infections, and the railway often pays for time lost and supplies less skilled labor in their absence. It is obvious that the positions of employees who have passed through years of training cannot be filled temporarily, without the possibility of error, without chance of accident, and without certain delays that may be of serious import.

(3) We have a large number of skilled employees working about machinery. Sickness from malaria among such men, who are trying to work while infected, means the



Spraying Oil on Stagnant Pools Prevents Mosquito Wiggletail from Getting Air and Kills It By Suffocation

cup, and pure ice supply. Other protective activities have been inaugurated by the railroads; such as the "Safety First" movement, the teaching of first aid among employees, and the employment of sanitarians to look after the proper construction of toilets, ventilation of offices, proper feeding of work crews, etc. Within the past few months the St. Louis Southwestern has created a new department devoting its entire time to the elimination of malaria from among some 15,000 employees working over approximately 2,000 miles of trackage in five states.

Anti-malaria work, as undertaken by this road, was inaugurated through a study of the records of the employees' hospital by Edwin Gould, chairman of the board of directors. Mr. Gould found that over a period of four years 25 per cent of all patients entering the hospital were being treated for malaria and that approximately one-fourth of all the medical and surgical relief furnished at this institution was devoted to the treatment of malaria patients. He found that there had been an annual average of 640 cases of malaria treated at the hospital during the past four years and that each patient received treatment over an average period of five days. These startling figures do not include the hundreds, and more likely thousands of men treated for malaria by local surgeons. Here was a problem. It was obvious that a point of high efficiency among the thousands of employees could not be reached while malaria had such a



A Mosquito Breeding Ditch and Its Appearance After Cleaning—A Step in the Anti-Malaria Campaign

likelihood of accident for which the company will pay in full measure, means the mistreating of tools and machinery, and of far greater importance, a certain decrease in output. Perhaps the greatest financial loss to the railway is due to the very large number of light cases of malaria which do not even receive the attention of the local physician, or of any physician for that matter. I mean such a case as a man trying to work and give full value in return for his wages, but who cannot do so, because of the fever. Such cases are

*Abstract of a paper read at the National Malaria Committee Conference on Malaria, held at the Hotel Chippa, Memphis, Tenn., on November 1, 1917, in which additional information has been incorporated.

numerous in communities where high malaria rates prevail.

(5) The contentment of a laborer has much to do with his efficiency. Naturally a man working in a malarial locality with his wife and children sick with fever, with his savings going to pay the doctor and the undertaker, cannot be a happy and contented employee. Again an efficient and conscientious employee looks forward to advancement. His general efficiency, and record for always being on duty is much in his favor. The man who is suffering from malaria and who is off duty from time to time is not favored when the opportunity comes for advancement.

Early in the spring of 1917 the income from a trust fund created by Mr. Gould was made available for anti-malaria work. The fund is being expended with two distinct purposes in mind: (1) to increase the efficiency of the railway labor and to decrease the number of hospital cases resulting from malaria infection, and (2) to serve the public by co-operation with cities and towns and business enterprises in ridding their respective communities of malaria, and thus doing health protective work of the highest order.

Anti-malaria demonstration work of the St. Louis Southwestern was organized by officers of the United States Public Health Service, including J. A. LePrince, well known for his work in Panama, and Drs. H. C. Derivaux, T. H. D. Griffiths, and L. L. Williams, Jr., of the Malaria Investigation Branch of the Service. The demonstration work in Lufkin, Tyler and Keltys was well started when these gentlemen were recalled about July 1, to control the malaria problems about the army cantonments and aviation fields, and at which time a sanitary engineer was employed by the railway to continue their work.

The seasons' work embraced demonstrations of malaria control in the cities of Tyler, Texas and Texarkana, Ark., each with a population of approximately 17,000, in the city of Lufkin, Texas, with a population of about 3,000, and adjoining which city the large lumber mill of the Lufkin Land and Lumber Co. is located, and in the two typical lumber mill towns of Keltys and Wildhurst, Texas.

The work in the cities and towns before mentioned consisted in the destruction of all possible breeding areas of the Anopheles or malaria bearing mosquito, and in the removal of as many as possible of the breeding areas and containers of the common house mosquito, which, however, does not carry malaria. A demonstration of the value of screening the living quarters of extra gangs and bridge and building outfits was also carried on. Early in the spring, most of the outfit cars and bridge and building department cars were screened, but no serious attempt was made to instruct the men living in these cars in the purpose of the screening, which would undoubtedly have been of great value.

Analysis of Work in the Cities

Early in May work was started in Tyler, a city in which there are approximately 700 St. Louis Southwestern employees. For this work the city appropriated not to exceed the amount of \$1,000, in labor and team hire, while the railway on its part agreed to furnish all other labor and expense for the seasons' work. Briefly the results have been a decrease of 45 per cent in the number of employees admitted for malarial treatment at the Texarkana hospital, as shown by the comparison of the hospital records for the months of June and September, inclusive, of this and last year. A study of the prescription records of a Tyler drug store chosen at random, shows a decrease in the actual "quinine subscriptions" written for patients suffering with malaria of 49 per cent for the months of May to October, inclusive of 1916 and 1917. From several reliable sources I am told that the malaria sickness rate in Tyler was almost negligible this year. The Anopheles breeding areas in Tyler were kept under control throughout the summer with comparative ease. On the other hand the propagation

of Culex, or the ordinary house mosquito, gave us much concern. The complete elimination of this mosquito from Tyler must await education of the public and a livelier interest on its part in removing the breeding places from about private homes.

The work in Texarkana was started on August 1, and Anopheles breeding was under control within a few days. In this instance, the cities of Texarkana, Ark., and Tex., shared alike in the expense of the demonstration work up to \$600 for each city. Neither city had available cash for this work, but readily accepted an offer of the St. Louis Southwestern to accept script in payment of labor furnished by the railway, said script to be applied in the payment of taxes.

The city of Lufkin was chosen for demonstration work by officers of the United States Public Health Service because of its reputation for malaria sickness, and because of the occasional cases of malaria of the pernicious type reported in that vicinity. The St. Louis Southwestern supplied five-ninths of the cost for the Lufkin demonstration, the other four-ninths being supplied by the Lufkin Land and Lumber Company, Mrs. G. A. Kelly, a club woman of Lufkin, who is deeply interested in civic and public health matters, and the Women's Civic League. There are no public health records with which to interpret the result of the demonstration work in Lufkin. What was accomplished may possibly be shown through an analysis of the prescription records of the four drug stores. During the months of June, July, August, September and October, the relative number of quinine prescriptions to the total prescriptions filled by these stores decreased from approximately 17 per cent in 1916 to about 7 per cent in 1917. The prescription records of the third largest drug store, but one, in which records are well kept, show that there was an actual decrease of 310 in the number of quinine prescriptions filled this year from July 1 to November 1, compared with corresponding months of last year, amounting to a relative decrease of 82 per cent. The decrease in prescriptions at this one store alone, if counted in dollars, amounts to as much as the entire cost to the people of Lufkin for the anti-malaria work during the entire season. This does not take into account the savings to the people through not having to pay doctors' bills, and not having to lose their wages. During the month of August, 1916, the four drug stores in Lufkin filled 447 prescriptions. This number decreased to 141 in August, 1917, or a reduction of 68.5 per cent.

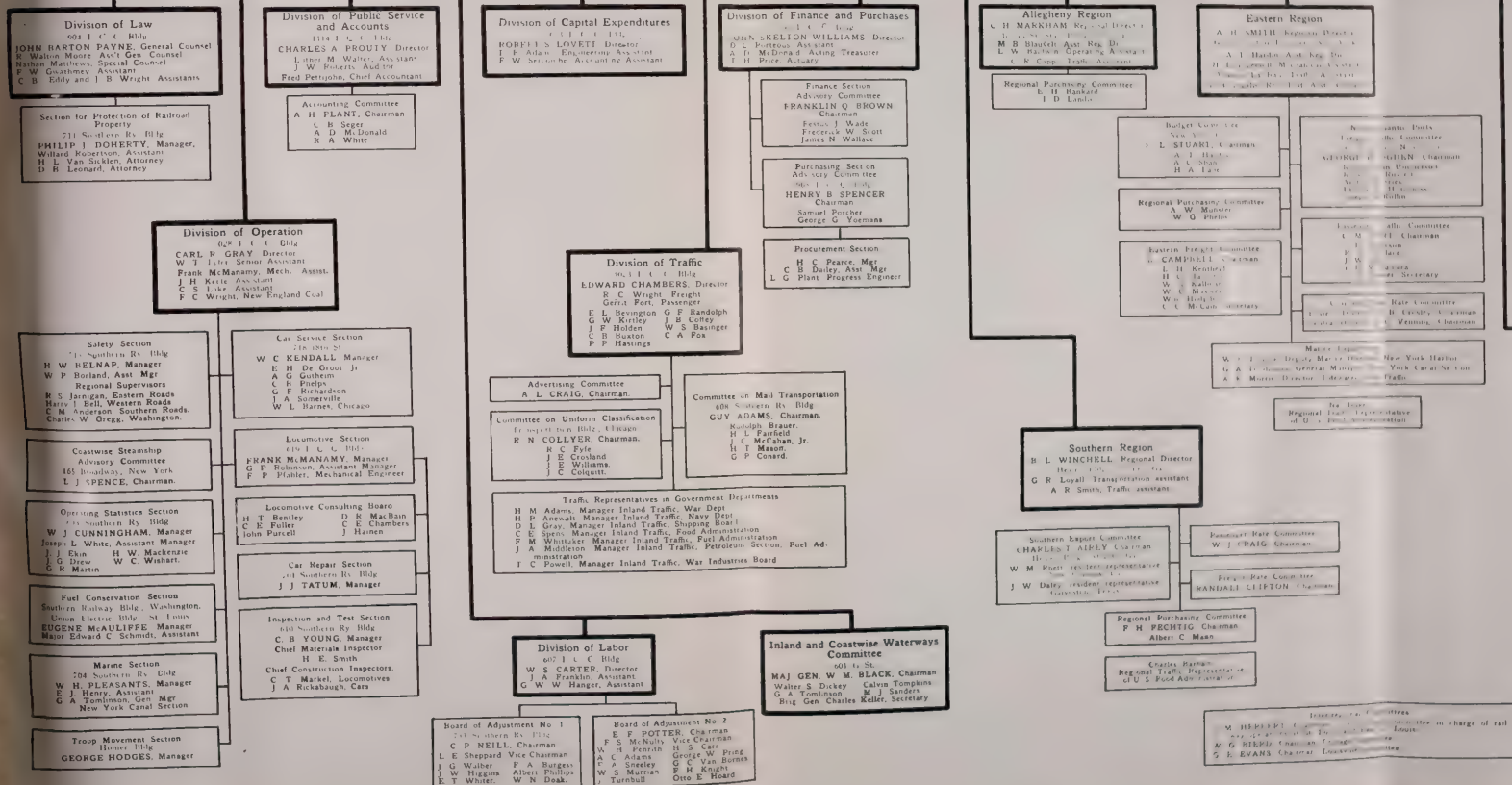
I am informed by Dr. O. M. Dillen, company physician for the Lufkin Land and Lumber Company, that he has observed a decrease from 85 to 90 per cent in the number of cases of malaria treated by him this year as compared to last. As in Tyler, the control of Anopheles breeding was a simple problem compared with the elimination of the common house mosquito, and here again the final elimination of the mosquitoes rests on the degree of co-operation received from the public of Lufkin.

The San Augustine County Lumber Company at Keltys, a typical mill town, paid the entire cost of its anti-malaria work, while the railway on its part furnished the services of its sanitary engineer in the direction of the work. This company produces from two to three million feet of lumber per month and, like most other lumber mills, has been working day and night to keep up with the demand for its product. Every request made on the mill in the way of furthering the malaria control work was granted immediately, for the management realized the importance of keeping its employees well. The labor situation was very acute. Wages were raised and every means taken to secure and to keep a full quota of men. The army draft, volunteers, and the demand for labor in the picking of cotton and for work at cantonments, produced a labor shortage never known before in East Texas. E. L. Kurth, secretary and treasurer, told

Organization of the United States Railroad Administration

Central Administration

Regional



the writer of this paper, that if there had been the same amount of sickness this year in Keltys that obtained during 1916, the lumber mill would have been closed down probably one-half of the time.

Let us see what bearing malaria work in Keltys has to railway management. The San Augustine County Lumber Company pays approximately \$25,000 per month to the Cotton Belt for the hauling of its freight, of which \$15,000 is retained by the Cotton Belt, the balance of \$10,000 going to connecting lines. On this basis during the months of greatest malaria infection, namely, July, August, September and October, the St. Louis Southwestern received this year approximately \$60,000 for the hauling of freight. According to Mr. Kurth this would have been reduced to \$30,000 had not excellent health conditions been maintained at Keltys. We can claim approximately \$30,000 then in the railway company's receipts from handling of freight which represents very clearly the definite connection between anti-malaria work and railway operation. In dollars and cents the income of the Cotton Belt has been increased by the profit on handling \$30,000 freight. This profit will pay many times over the cost of anti-malaria work at Keltys. This example is typical to some extent of what has prevailed at the lumber mills in Lufkin and in Wildhurst.

Work Among Employees

The St. Louis Southwestern anti-malaria demonstration work for 1917 included the protection of the employees themselves from mosquitoes through screening, and the eradication of malaria bearing mosquitoes from cities and towns by removing and destroying their breeding places.

A large number of employees live and sleep on cars fitted up for the purpose. These work trains of various kinds are often located in highly malarious districts. The men are thus exposed to infection. For the months of May to October, 1916, 13 per cent of all the malaria patients in the employees' hospital came from the bridge and building department, which department employed one per cent approximately of the total employees of the road.

J. M. Herbert, president of the St. Louis Southwestern System, ordered all cabooses, extra gang cars, work trains and bridge and building cars screened before the mosquito season of 1917. He gave his personal attention to this work to the extent of inspecting the screening of outfit cars while on tours of inspection along the line. As a result of these measures it was found that the relative number of hospital cases from the bridge and building department alone decreased nearly one-half in 1917. The records show that for the month of May to October inclusive in 1916, one employee from the bridge and building department went to the hospital for malarial treatment for every 3,960 man-hours of labor put in by the department, while for the same period of 1917, one man went to the hospital for every 7,580 man-hours, a relative decrease of 47.7 per cent. Screening the sleeping quarters of these employees was undoubtedly responsible in a large measure for this great reduction.

Orders are now out, directing that all screening be repaired and that new screening be done wherever needed, in preparation for the 1918 mosquito season.

Protection of the men living on work trains is secured easily and without undue expense. Screening of windows and doors must be well done, and only screen wire having 16 meshes or over to the inch should be used. Screen that will keep out flies will not be effective against mosquitoes. Defective screening will permit mosquitoes to enter the sleeping cars at night. At daybreak they try to get out, but in the short interval before full daylight they are unable to find the particular hole in the screen that they searched half the night for. Consequently the car becomes a mosquito trap and the infected mosquito must hide and await her time

to bite another victim and thus spread malaria from one person to another in the same car.

Holes in the floors, walls and ceilings of the cars should be completely closed, and the screen door braced against sagging. Painting the ceilings of the cars white and putting up all the cracks will permit swatting the mosquitoes each morning at daybreak. Any infected mosquito will be destroyed, even if the men in the cars were bitten and disturbed by the pests. This method of control was admirably demonstrated by Mr. Le Prince in Panama with construction gangs.

The fumes of certain chemicals when burned will destroy the adult mosquito. This should be done at night before retiring, since the malaria bearing mosquito does her biting as a rule only at night, and she may not give notice of her presence about the car to the sleepers because she does not make the loud humming sound usually associated with the more numerous and better known varieties of mosquitoes. In handling construction trains the officials in charge of work crews should choose points for the location of cars that are as far removed from mosquito breeding areas as possible. Perhaps a very little work with shovels will drain standing water near outfit cars or a few applications of oil will destroy the breeding areas of myriads of mosquitoes. Thus the foreman of the gang may be saved from issuing hospital slips to men down with chills and fever, and also saved from the criticism of his superiors who demand results.

Certain railway employees are not easily protected from malarial infection. For instance, conductors, engineers, firemen and brakemen may work several ways out of a division point. They may sleep in several different places during the week and they may be obliged to sleep without proper protection by screens. These men can protect themselves by use of mosquito bars carried with them for this purpose, or they may resort to the use of quinine. It is well known that quinine, when used in suitable amounts and at required times, will render most people immune from malarial infection. Such a method of protection against malaria has been practiced for years in many tropical countries. The St. Louis Southwestern proposes, during the oncoming malaria season, to supply quinine free of cost to employees on certain work who express a desire to help themselves to have good health.

The company hospital records show that for the months of May and October inclusive, 1916, the following classes of labor contributed 79 per cent of the malaria cases:

Supporting employees.....	1 per cent
Engineers, firemen and brakemen.....	7 per cent
Conductors.....	78 per cent

Proper screening of sleeping cars and the use of quinine will certainly reduce the rate of malarial infection among the extra gang and bridge and building employees. On the other hand the section hands, aside from those who live in well screened company houses, must either expend their meager earnings for screens or avail themselves of the offer of free quinine. A large portion of the section hands are ignorant Mexicans and negroes. This class of labor is responsible for nearly one-half of the malaria cases at the hospital, although representing less than 15 per cent of the total number of railway employees. The demonstration of the use of quinine on them will be very carefully watched, for this means of health protection permits of almost unlimited expansion among the thousands of thousands of similar laborers on railways in the south.

Dr. R. C. Derivaux, medical officer in charge of malarial investigation of the U. S. Public Health Service, in his recent publication dealing with a quinine immunization experiment on a number of families living on large plantations, writes that at Lake Village, Ark., "quinine was given

237 persons for immunization, and a reduction in malaria of 64.45 per cent obtained as ascertained by repeated parasite index examinations." This demonstration was carried on jointly by the International Health Board and the U. S. Public Health Service.

American Railway Engineering Association Committee Work

SIX NEW CHAIRMEN have been selected for standing committees of the American Railway Engineering Association for the coming year, while 16 chairmen have been held over. G. J. Ray, chief engineer D., L. & W., succeeds John D. Isaacs, consulting engineer S. P., as chairman of the Rail committee. Mr. Ray is succeeded as chairman of the Track committee by John R. Leighty, engineer of maintenance of the M. P. W. H. Hoyt, assistant chief engineer of the D., M. & N., has been made chairman of the committee on Wooden Bridges and Trestles, following E. A. Frink, principal assistant engineer S. A. L. W. H. Finley, president C. & N. W., has been appointed chairman of the committee on Rules and Organization, succeeding Joseph Mullen. The Yards and Terminal committee is headed by B. H. Mann, signal engineer M. P., who succeeds E. B. Temple, assistant chief engineer P. R. R. C. M. Taylor, superintendent of treating plants of the C. R. R. of N. J., is placed in charge of the work of the committee on Wood Preservation, succeeding Earl Stimson, engineer maintenance of way B. & O.

Owing to the nature of the subjects assigned to the committees for investigation and to the fact that not more than two topics can be reported to the convention for action in any one year, many of the subjects considered last year have been carried over. Among the new subjects assigned to the committee for investigation during the present year are the following:

BALAST—Study and report on the design of gravel washing plants; study and report on the design of stone-crushing plants.

BUILDINGS—Report on detail designs of buildings used for housing track labor. Report on the efficient and economical methods of electric lighting of (a) Passenger station interiors; (b) Passenger station surroundings; (c) Platforms, covered and uncovered. Report on modern types of toilet facilities at small stations where water supply and sewers are lacking.

WOODEN BRIDGES AND TRESTLES—Report on classifications and grading rules for all lumber and timber used in the construction and maintenance of way departments of railways. Report on specifications for construction timbers and building lumber. From these studies draw up in unified form a set of specifications for construction timbers and building lumber for use on railways, showing each kind and quality of lumber or timber which is suitable for each of the different classes of work on a railway. Report on specifications for timber which is to be treated with a preservative substance.

MASONRY—Report on different methods of depositing concrete under water. Report on the disintegration of concrete and the corrosion of reinforcing material in connection with the use of concrete in sea water. Prepare specifications for slag aggregate. Report on (1) the effect upon the strength and durability of concrete not having a sufficiency of moisture present throughout the period of hardening as compared with concrete fully supplied with moisture; (2) methods of providing moisture during this period; (3) remedy for concrete hardened with insufficient moisture.

SIGNALS AND INTERLOCKING—Report on Automatic Train Control. Report on methods in use for short-circuiting track circuits for the display of signals for the protection of track

workers. Report on the application of aspects indicating that No. 19 or No. 31 orders are to be delivered. Submit a code of signal rules. Investigate and report on the subject of the proper time interval for the release of electrical and mechanical devices applied to signal or switch apparatus.

RECORDS AND ACCOUNTS—Report upon forms for analyzing expenditures for assistance in controlling expenditures.

RULES AND ORGANIZATION—Prepare rules for the construction, maintenance and operation of buildings and protective apparatus for the reduction of fire risk. Prepare rules for the inspection of bridges and culverts.

WATER SERVICE—Report upon plans and general specifications for typical water station layouts. Study locomotive flue failures which may be due to improper water conditions and report upon methods of treatment to correct such conditions.

YARDS AND TERMINALS—Report on unit operation of railway terminals in large cities. Report on the handling of freight in double-deck freight houses and the cost of operation. Also report on the handling of freight by mechanical means. Report on the advantages of a small sorting yard with grades sufficient for gravity switching to be located between the classification yard and advance pocket for the purpose of switching trains into station order.

IRON AND STEEL STRUCTURES—Report upon the use of plastic compounds for the protection of steel work exposed to the blast action from locomotive stacks. Secondary stresses and impact. (a) Report definite principles for design to reduce secondary stresses and rules for computing or allowing for them. (b) Study and draw conclusions from records of impact tests. (c) Continue impact tests and stress measurements as funds may be available. Report on the design, length and operation of turntables. (a) Report specifications for the design of turntables and turntable pits. (b) Report specifications for metal for turntable roller and disc bearings. Report on principles for detailed design of flashing, drainage and reinforcement for waterproofing purposes. Report on track scales superstructures.

WOOD PRESERVATION—Report on preservative treatment for Douglas fir. Report on indicators for determining the Burnettizing of ties and timbers.

ECONOMICS OF RAILWAY OPERATION—Report on methods for increasing the capacity of a railroad. Collect data on operating costs from available sources, including rate case investigations necessary to a complete analysis of operating costs. Report on the effect of speed of trains upon the cost of track maintenance. Report on the economic length of operating districts. Report upon the allocation of maintenance of way expenses to passenger and freight service. Report on the reclamation and utilization of scrap material.

ECONOMICS OF RAILWAY LABOR—Report on plans and methods for organizing to obtain labor for railways. Report on methods of equating track sections. Report on typical plans for boarding cars and boarding houses for railway laborers. Study the matter of establishing proper relations between a unit of track expenditure and a unit per mile of line for different classes of road for the purpose of determining a normal maintenance expense and to obtain, as far as possible, uniform conditions involving: (a) Separation of expenses as between road, signal and bridge and building departments. (b) The determination of the ratio of labor cost to total cost. Report on labor-saving devices.

EQUIPMENT EXPORTS FROM ENGLAND—The British Board of Trade returns show that the exports of railway material for the first four months of the present year were: Locomotives, valued at \$2,584,840, as compared with \$2,362,560 in the same period of 1916; rails, \$1,188,775, against \$1,218,640, and cars, \$2,321,210, as compared with \$1,263,770 in 1916.

American Society for Testing Materials

Reports on Bearing Metals, Steel Tie Plates and Structural Steel for Cars—Dr. Marburg's Death

THE TWENTY-FIRST annual meeting of the American Society for Testing Materials was held at the Hotel Traymore, Atlantic City, N. J., June 25 to 28, 1918. The work of the society during the past year was somewhat curtailed due to the extraordinary conditions prevailing. Many of the changes made in the specifications were of a minor nature. The following is an account of the more important ones of interest to railway men:

Proposed Specifications* for Bronze Bearing Metals for Turntables and Movable Railroad Bridges

These specifications cover four classes of bronze-bearing metals for turntables and movable railroad bridges.

The purposes for which these classes are frequently used are as follows:

Class A for contact with hardened steel disks under pressures over 1,500 lb. per sq. in., for example, bearing metals used in turntables and center-bearing swing bridges.

Class B for contact with soft steel at low speeds under pressures not over 1,500 lb. per sq. in., for example, turntables and journals of base and lift bridges.

Class C for ordinary machinery bearings.

Class D for gears, worm wheels, nuts and similar parts which are subjected to other than compressive stresses.

The bronze shall be a homogeneous alloy of copper and tin. The copper shall conform to the requirements of the standard specifications of the American Society for Testing Materials. The bronze shall be made from new metal, except that scrap of known composition produced by the foundry at which the bronze is cast may be used.

Care shall be exercised that the metal is not overheated, and that the temperature at pouring and the conditions of cooling are such as will be most likely to secure dense castings.

The bronze shall conform to the following requirements as to chemical composition:

Elements considered	A	B	C	D
Copper, per cent....	Remainder	Remainder	85 (max.)	11
Tin, per cent....	about 20	about 17	about 16	2.5 (max.)
Lead, per cent....	.....	.....	.....	2.5 (max.)
Zinc, per cent....	.....	.....	.....	.....
Iron, per cent....	.....	.....	.....	.....
Phosphorus, per cent	not over 1.0	not over 1.0	0.7 (max.)	.....
Other elements, per cent	not over 0.5	not over 0.5	not over 0.5	not over 0.5

The bronze shall conform to the following requirements as to compressive and tensile properties:

Properties considered	A	B	C	D
Compression				
Deflection limit, lb. per sq. in.	1,000 (0.001)	1,000 (0.001)	1,000 (0.001)	1,000 (0.001)
Permanent set in 1 in. under 100,000 lb. per sq. in.	0.001 (max.)	0.001 (max.)	0.001 (max.)	0.001 (max.)
Tension				
Yield point, min., lb. per sq. in.	.....	.....	.....	15,000
Tensile strength, min., lb. per sq. in.	.....	.....	.....	30,000
Elongation in 2 in., min., per cent	.....	.....	.....	11

The deflection limit in compression shall be determined as that load which produces a permanent set of 0.001 inch in the compression test specimen described in Section 6 (b).

The yield point in tension shall be determined as the stress producing an elongation under load of 0.5 per cent—that is, 0.01 in. in a gage length of 2 in.

A test bar of the form and dimensions shown (0.57 in.

diameter for a length of $2\frac{3}{8}$ in.) to be used for the tension test specimen, and a suitable test bar for the compression test specimen, shall be an integral part of the casting, and shall be fed and cooled under the same conditions as were the castings.

Compression test specimens shall be cylinders 1 sq. in. in cross-sectional area and 1 in. high.

Tension test specimens, turned from the test bar shall be $\frac{1}{2}$ in. diameter for a length of $2\frac{3}{4}$ in. The ends shall be of a form to fit the holders of the testing machine in such a way that the load shall be axial.

The castings shall be sound, clean and free from blowholes, porous places, cracks and other defects.

On Non-Ferrous Alloys for Railway Equipment

G. H. Clamer, chairman of the subcommittee of the committee on Non-Ferrous Metals and Alloys, recommended that certain changes be made in the tentative specifications for non-ferrous alloys for railway equipment in ingots, castings and finished car and tender bearings (B 17-17 T),† by which the four bearing metals (Nos. 1 to 4, inclusive) shall be changed to three.

The following facts were presented before the meeting of the main committee:

1. The desirability of having a hard alloy for those bearings which are subjected to alternating or impact loads is now well recognized. That such an alloy is desirable was supported by evidence presented by the chairman, and by the correspondence of Messrs. W. M. Corse, W. K. Frank, H. V. Wille and J. C. Ramage—all members of Sub-Committee VI—and also by the correspondence of J. T. Wallis, general superintendent of motive power, Pennsylvania Railroad.

2. The desirability of using a softer alloy than Bearing Metal No. 2 for driving brasses, truck brasses and hub liners, was agreed to.

3. The committee was practically unanimous in its opinion that the zinc content in Bearing Metal No. 4 is too high for best practice, and favored a compromise between alloys Nos. 3 and 4.

The committee recommends that the specifications be amended as indicated below, and continued as tentative because there is still some doubt as to the proper limits of composition for the alloys:

1. Change the first three paragraphs of Section 1 (b) to read:

"(b) These alloys and the purposes for which they are used are as follows:

"Bearing Metal No. 1, for connecting rod bearings, bushings, eccentric straps, crosshead gibs, and miscellaneous bushings;

"Bearing Metal No. 2, for driving box bearings, engine truck and trailer bearings, and hub liners;

"Bearing Metal No. 3, for lead-lined bearings, for locomotive tenders, freight and passenger car equipment."

2. Change the table of chemical composition from its present form to read as shown in the table on the following page.

The requirements covering Babbitt Metal and Lining Metal have been revised to conform with alloys Nos. 7 and 9, respectively, of the proposed Tentative Specifications for White Metal Bearing Alloys (known commercially as Babbitt Metal), referred to under the heading "Sub-Committee

* Tentative specifications for administrative purposes only. † Section 6 (b) of the specifications for the compression test specimen is omitted.

IV—On White Metals," and appended to this report. The requirements covering Bell Metal are unchanged.

It will be noted that in Bearing Metal No. 1, phosphorus

plates, or from the rolled bars; and longitudinally with the rolling. They shall be rectangular in section, not less than ½ in. in width between the planed sides, and shall have two

ANALYTICAL TABLE OF CHEMICAL COMPOSITION

Alloy	Carbon, per cent	Phosphorus, per cent	Sulfur, per cent	Manganese, per cent	Iron, max., per cent	Antimony, per cent	Copper, per cent	Silicon, per cent	Arabic, per cent	Total Impurities, in dilutions, max., per cent
Bearing metal No. 1	remainder	9.11	9.11	0.75	0.25	0.25*	1.0†	.....	.....	1.0
Bearing metal No. 2	remainder	4.6	23.5-26.5	0.75	0.40	0.50*	.....	.....	.....	1.5
Bearing metal No. 3	remainder	4.6	17-22	2.50	0.40	0.50*	.....	.....	.....	3.0
Field metal	remainder	16.18	0.25*	0.25	0.25	0.50*	0.6	9.0†	.....	0.50
Hubbitt metal	9.50*	9.25-10.75	remainder	none	.....	14-16	.....	.....	0.20	0.75†
Finishing metal	0.50*	4.50-5.50	remainder	none	.....	9.25-10.75	.....	.....	0.20	0.75†

*Maximum.

†Must not contain zinc.

†Not considered an impurity, and can be specified at option of purchaser.

is not considered an impurity and can be specified at the option of the purchaser.

[Note: After this report was read a strong plea was made to increase the total impurities in Bearing Metals Nos. 1 and 2 to 2 per cent was made, but after considerable discussion it was decided to leave it as it was presented by the committee.—Editor.]

Specifications for Steel Tie Plates

Revised specifications for steel tie plates were submitted which differ from those appearing in the report of last year's convention (*Railway Age Gazette*, July 6, 1917, page 13), in regard to the chemical properties and physical tests. The paragraphs as to chemical properties are given in full below:

The steel shall conform to the following requirements as to chemical composition:

Bessemer	Soft grade	Medium grade
Carbon, per cent.....	not under 0.06	not under 0.12
Phosphorus, per cent.....	not over 0.10	not over 0.10
Open-hearth		
Carbon, per cent.....	not under 0.12	not under 0.20
Phosphorus, per cent.....	not over 0.06	not over 0.06

A carbon determination shall be made of each melt of Bessemer steel, and two analyses every 24 hours representing the average of the elements carbon, manganese, phosphorus and sulfur, contained in the steel, one for each day and night turn respectively. These analyses shall be made from drillings taken at least ⅓ in. beneath the surface of a test ingot obtained during the pouring of the melts. The chemical composition thus determined shall be reported to the purchaser or his representative, and shall conform to the requirements specified in the table.

An analysis of each melt of open-hearth steel shall be made by the manufacturer to determine the percentages of carbon, manganese, phosphorus and sulfur. This analysis shall be made from drillings taken at least ⅓ in. beneath the surface of a test ingot obtained during the pouring of the melt. The chemical composition thus determined shall be reported to the purchaser or his representative, and shall conform to the requirements specified in the table.

An analysis may be made by the purchaser from a finished tie plate representing each melt of open-hearth steel and each melt or lot of 10 tons of Bessemer steel. The carbon content thus determined shall not be less than that specified in the table and the phosphorus content shall not exceed that specified in the table by more than 20 per cent.

The innovation concerning the physical properties lies in the elimination of all reference to tensile tests and the method of making them. Instead bending tests are required as given in detail below.

The bend test specimens shall bend cold through 180 degrees around a pin the diameter of which is equal to the thickness of the specimen for the soft grade, and to twice the thickness of the specimen for the medium grade, without cracking on the outside of the bent portion.

Bend test specimens shall be taken from the finished tie

parallel faces as rolled. They shall be free from ribs or projections. Where the design of the tie plates is such that the specimen cannot be taken between the ribs or projections, these ribs or projections shall, in preparing the specimen, be planed off even with the main surface of the tie plate.

If preferred by the manufacturer and approved by the purchaser, the following bend test may be substituted.

A piece of the rolled bar shall bend cold through 90 deg. around a pin the diameter of which is equal to the thickness of the section where bent for the soft grade, and to twice the thickness of the section where bent for the medium grade, without cracking on the outside of the bent portion.

One bend test shall be made from each melt of open-hearth steel, or from each melt or lot of 10 tons of Bessemer steel.

If any test specimen shows defective machining or develops flaws, it may be discarded and another specimen substituted.

The Rail Situation

Weight of Sections—Some of the railroads that have increased the weight of section, particularly where this is decidedly over 100 lb. per yd., report the greatly reduced cost of track maintenance and a reduction in the number of failures as well as better riding track. One of these roads now has in contemplation a section weighing 200 lb. per yd. While this weight of section may be extreme and only to be considered by roads having extremely dense traffic and the heaviest wheel loads, the tendency toward heavier sections seems to be general.

Heat-treated Rails—From time to time experiments have been made in the quenching and annealing of rails, sometimes of standard sections and sometimes of sections slightly modified to better meet the stresses incident to quenching. The rails when put in service generally showed markedly greater resistance to abrasion, but some failed due to brittleness in track. There are now in track, at points where the service is particularly severe, quenched and annealed rails which have not proven brittle, although they carry very heavy traffic under severe service conditions on heavy curves. The results of these tests indicate that the heat-treated rails may have a future.

Structural Steel for Cars

At the request of the Tank Car Committee of the Master Car Builders' Association and other interested consumers, the committee has given careful consideration to specifications for plates for welding. The question was referred to Subcommittee II (Committee on Steel) which held two meetings at which specifications now in use by welding companies were presented for consideration and discussion. In pursuance of the report of this sub-committee, the committee recommends that requirements for "plates for forge welding" be

incorporated in the Standard Specifications for Structural Steel for Cars (A 11-16), as indicated below and referred to letter ballot for adoption as standard.

1. *Section 3.*—Add the following chemical requirements to apply to "Plates for forge welding":

Manganese	.....	0.40 to .60	per cent
Phosphorus	.....	not over 0.04	per cent
Sulphur	.....	not over 0.04	per cent
	.....	not over 0.045	per cent

2. *Section 6 (a).*—Change the heading of the last column of the table to read (italics are new) "Plates for cold pressing and forge welding," which makes the following tensile properties applied to plates for forge welding:

Tensile strength, lb. per sq. in.	.....	45,000-58,000
Yield point, min., lb. per sq. in.	.....	0.5 tens. str.
Elongation in 8 in., min., per cent	.....	1,500,000
	.....	Tens. str.

the same modifications which apply to plates for cold pressing.

3. *Section 8 (b).*—Change to read as follows by the addition of the italicized words and the omission of the words in brackets:

"(b) The test specimen for rivet steel, [and] for plates for cold pressing, and for plates for forge welding, shall bend cold through 180 deg. flat on itself without cracking on the outside of the bent portion.

Modified Steel Specifications Being Used Under Present Industrial Conditions

The attention of Committee on Steel was called to the fact that in many cases purchasers had allowed temporary modifications of standard specifications, thereby permitting the shipment of material that ordinarily would not fall within the limits of the specifications as to chemical or physical properties. The committee was of the opinion that this temporary adjustment of the standard specifications to meet unusual industrial conditions offered an excellent opportunity to study the effects of such departures from standards upon the performance of the material in service, and to collect all of the data available from such study so that the results may be before the committee for use when considering revisions in existing standards. With this in mind, the committee directed its sub-committees to compile, in so far as possible, an adequate record of the service of material purchased under any of the committee's specifications which may be thus modified by special agreement.

The following resolution was also adopted and it is the hope of the committee that purchasers and producers generally will co-operate by making available to the committee all data which are being accumulated:

"Committee A-1 on Steel recognizes the difficulty now existing under the stress of war conditions in securing an adequate supply of material under the standard specifications for steel adopted by the society. It has been considered more desirable, however, for variations from these specifications to be arranged between the manufacturer and the purchaser as applying to individual cases, than for the society to make general changes in the specifications under the present unsettled conditions. An adequate record should be kept of the service rendered by material purchased under such arrangements, in order that the data may be available when revisions of the specifications are under consideration later."

Lubricants

The committee feels that the need of an evaporation test for lubricating oils has not been demonstrated. In view of the results obtained, which indicate that concordant results cannot be obtained unless the conditions as to air bath, method of heating, size and shape and materials of dishes used, method of placing dishes in the air bath and location of the thermometer bulbs, are identical, no further work on evaporation will be done by the committee until the need of such a test is shown.

The committee respectfully recommends to the Society the adoption as standard of the following tests included in the Tentative Tests for Lubricants (D 47-17 T) presented last year and published in the proceedings:*

Specific gravity, revised to read as follows by the addition of the italicized words:

Specific gravity may be determined by hydrometer, Westphal balance, or pycnometer, providing these instruments are verified. The observation shall be taken with the sample at 15.56 deg. C. compared with water of the same temperature. *Correction for the buoyant effect of the atmosphere shall be made when necessary.*

Cloud and Pour Test for Petroleum Oils except Steam Cylinder and Black Oils;

Cold Test for Steam Cylinder and Black Oils;

Free Acid; Carbon Residue.

The committee further recommends that "standard temperatures for viscosities" contained in the Tentative Tests submitted last year be withdrawn. In explanation of this recommendation, the committee believes that while eventually the adoption of these standard temperatures will be desirable, such adoption is not feasible at the present time. The use of the Fahrenheit temperatures 70 deg., 100 deg., 130 deg. and 210 deg. represent the common American practice. The committee's temperatures were approximate Centigrade temperatures approaching these as near as would be possible in round figures. At the present time, however, due to war conditions, not only has the use of the Fahrenheit temperatures greatly increased in this country, but these temperatures have also been adopted abroad—for instance, by the British government—and it is the feeling of the committee that an attempt to change the standard temperatures at the present time would result in confusion in the specifications for oils for the various governments and might tend seriously to delay matters looking toward the successful prosecution of the war. The committee anticipates that at a later date it will again present these temperatures for adoption as standard by the society.

Death of Doctor Marburg

The death of Dr. Edgar Marburg, the secretary of the society, occurred on June 27 at his home, during the time the meeting was held. The news of Doctor Marburg's death was received at the meeting with a great deal of sadness, as the members realized that the society had lost a very ardent worker. Doctor Marburg was the head of the Civil Engineering School of the University of Pennsylvania and spent considerable time and hard work on the affairs of the society. He was born in 1864 and was graduated from the Rensselaer Polytechnic Institute in 1885. He had in the past few years worked very diligently for the society, and his services have been highly appreciated. Doctor Marburg had been ill for about two years with heart and kidney trouble and was at the time of his death on leave of absence from the University of Pennsylvania on account of ill health.

Other Business

Among other things considered at the meeting were the topical discussion on Co-operation and Industrial Research in which Dr. Henry M. Howe, Dr. John Johnston, Dr. Arthur D. Little, Dr. Charles L. Reese and Mr. Frank E. Gorrill participated; a paper on The Effects of Grating of Sands and Consistencies of Mix Upon the Strength of Plain and Reinforced Concrete, by L. N. Edwards, which supplements his paper on the same subject presented at the last annual meeting, and a paper on Variable-Pressure Method for the Measurement of Viscosity, by E. C. Bingham.

The following officers were elected for the ensuing year: President, G. H. Clamer; vice-president, George S. Webster;

members of executive committee, G. Aertsen, G. K. Burgess, G. B. Heckel and K. W. Zimmerschied. No action was taken at the meeting toward the appointment of a secretary-treasurer on account of the death of Doctor Marburg.

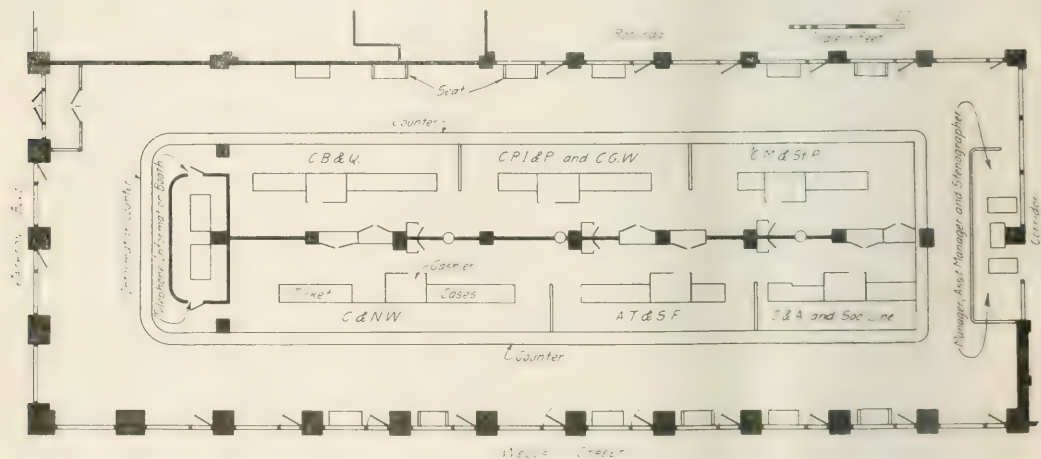
Investigation of the Ivanhoe Collision

A JOINT investigation of the Ivanhoe, Ind., wreck, which occurred on the Michigan Central on the morning of June 22, was held, behind closed doors, by the Public Service Commission of Indiana, and the Interstate Commerce Commission, at Hammond, on Thursday, June 27. The Interstate Commerce Commission was represented by G. E. Ellis, signal engineer; G. E. Starbird, safety appliance inspector, and W. D. Anderson, hours-of-service inspector. The Indiana Public Service Commission was represented by John W. McCardle, who was chief of the joint commission; Edward M. Corr, and D. Matthews, chief inspector for the Public Service Commission. The engineer, fireman and head brakeman of the circus train and the signal man at Ivanhoe Tower, were examined by the commission in the morning. The signal engineer, signal supervisor and signal foreman on this particular territory of the Michigan Central, the conductor and the flagman of the circus train and the conductor and two brakemen of the troop train were examined in the afternoon. The attorney representing Alonzo

started back through the caboose and that when the engine struck the caboose, he was driven into the other cars. No trace remains of him. Fifty-nine bodies have been recovered in the wreck and taken to Lake County, Ind., morgues. Of these only 15 were identified.

Consolidated Ticket Office At Chicago

WORK ON THE CENTRAL ticket offices of the railroads entering Chicago is progressing and will probably be completed some time in August. The consolidated office will be located in the Insurance Exchange building, Jackson boulevard, Sherman and Wells streets, where the entire first floor has been reserved for that purpose. The new office will be in two separate sections, which will be connected by the central lobby of the building. The western section, a plat of which is shown in the illustration, has been assigned to Western railroads and the eastern section to Eastern lines. Each section contains 10,000 sq. ft. of floor space and will be identical in plan. As indicated in the diagram, each office will contain six booths, located in the middle of the room, and will be surrounded on all sides by a lobby which is 11 ft. wide at the narrowest point. At one end of the counter there will be located an information telephone booth and an information counter which will be manned by separate forces to insure efficient service to the



Floor Plan of Western Section

Sargent, engineman of the troop train and his fireman, Gustav Klauss, declined to permit them to testify before the commissions as they are under indictments. The commissions did not insist on the men testifying. After the investigation Mr. McCardle advised that nothing was brought out at the hearing beyond what was published in the June 28 issue of the *Railway Age*. He stated that the equipment was all right, that the flagman of the circus train and the rest of this train crew were blameless; and the accident was due to the engineman of the troop train being asleep or dozing.

One of the mysteries which will perhaps remain unsolved in connection with this wreck is the death of Trainmaster Whipple of the Michigan Central. The flagman testified that when the circus train came to a stop and as he was dropping off to go back and flag, the trainmaster was in the door of the caboose. Nothing more is known of what happened to him, but the supposition is that the trainmaster assumed that the empty equipment train would stop and had

public. At the south end of each room will be located the office of the manager, who will have general supervision over the entire ticket office.

Each booth will have its own cashier, its own Pullman diagram, its own reservation desk and its own force of clerks. A telephone exchange, which will be installed on the fourth floor of the building, will connect the public with the information booths or directly with the ticket booths of the individual roads, as the occasion may demand. The booths in each section will be entirely surrounded by a counter 132 ft. in length. Nineteen different entrances opening to the street and to the lobby of the building will provide ready access to the offices. Pay telephone stations and writing tables will be installed on the sides of the room for the convenience of the public. The offices will be lighted by the indirect system. The furnishings of the western section will be finished in mahogany, as this will permit the maximum use of furniture now in the separate offices of the railroads. According to

present plans the woodwork in the eastern section will be finished in fumed oak.

The individual railroads will use entire ticket booths or share them with other lines, according to their amount of passenger business. The allotment of space among the Western lines is indicated in the diagram.

In the eastern section the northeast booth will be occupied jointly by the New York Central and the New York, Chicago & St. Louis, the central booth on the eastern side of the office will be occupied by the Michigan Central and the Cleveland, Cincinnati, Chicago & St. Louis, and the southeast booth has been allotted to the Illinois Central, the Chicago, Indianap-

olis & Louisville, and the Chesapeake & Ohio. The north west booth will be occupied by the Pennsylvania Lines, the central booth on the western side by the Baltimore & Ohio and the Pere Marquette, and the southwest booth by the Grand Trunk, the Chicago & Eastern Illinois, the Erie, and the Wabash.

The installation of the ticket office for Western lines is being carried on under the direction of J. Francis, general passenger agent of the Chicago, Burlington & Quincy, and the work in the Eastern section is being done under the supervision of L. W. Landman, general passenger agent of the Michigan Central at Chicago.

The Duty of Railroad Accounting Officers

Preservation of Company Individuality Now Lying Dormant Should Be Every Officer's Aim

By R. A. White

General Auditor, New York Central

AS I LOOK AT IT, federal control came about through the inexorable laws of mechanics—when an irresistible force meets an immovable body something is bound to happen. The railroad industry is the only private enterprise which is not permitted to control either its expenses or the selling price of its product. When expenses are moving far more rapidly than the body which has been petitioned for a selling price to meet the expenses, there is bound to arise an extremely strained situation.

This, in itself, was bad enough, but under war conditions the railroad situation became a national matter, and something had to be done. Of course the railroad situation would have been relieved within a reasonable length of time after the railroads had been granted a living income, but by that time the war might have been over, and waiting was out of the question so long as the immovable body still retained its marvelous immobility and the Gordian knot was still tied as tightly as ever. When a Gordian knot is principally tied of red tape, it has to be cut, and an irresistible force was about due, and it came in the shape of a proclamation by the President of the United States. You will recall that he stated that the railroads had not fallen down through any fault of their own but that conditions were such as to call for a unified control of operations, and in order to accomplish that, and as a war emergency measure, he had assumed such control over their operations.

While it always hurts to be the subject of criticism, no one can deny that the railroads were in a bad way, and even the elements seemed to co-operate in tying matters up, so no one could complain either of what was done or the way it was done. In fact, it looked like help, because instead of a very large number of government representatives exercising their presumptive right to demand priority for their individual shipments, the railroads got one government director who was to decide what was really to get priority rights, and we heaved a sigh of relief, particularly when it stopped snowing.

Then the press, especially those papers which for some cause believe it a duty to try in every way to incite class hatred, began to rave about the people coming into their rights, about the end of abuses by railroad magnates, about the beauties of government ownerships, and all those other catch-phrases that tend to circulate a catch-penny sheet among the unthinking, and we, who know the railroad business as

it really is, were hurt and depressed, and even disgusted and angry.

But, fortunately, most men have a sense of humor and there is a funny side to all this. When you try to reconcile the views expressed in some of the press with the facts, and search in fairness for the equity of the views, I am irresistibly reminded of a story an English friend of mine told me some years ago. A friend of his, a barrister, was pleading before a judge and was constantly over-ruled on each point of law as he raised it. Finally he said with tears in his voice, "Your Honor, I seem to be unfortunate on my points of law, but at least you will admit the equity is in my favor." The judge smiled a sort of superior smile, and leaning forward and looking over his glasses, said: "Mr. Cholmondeley, when you speak of your equity in this case, you bring to my mind a picture of a blind man—in a dark room, looking for a black cat—that is not there."

Then Congress passed the act directing the President to execute a co-operative agreement with the owners of each property as to the use thereof, and we unbent our wrinkled brows, and smiled again. It looked as if after all we might only have, at the most, a careful and responsible tenant, who agreed to turn the property back in as good condition as when he began to run it. Up to date the leases have not been signed, however, and when we consider some of the suggestions that have been made, one begins to wonder again, in the words of a former U. S. senator, where we are "at."

But what I think we all want to do is just this—consider that all this is a war emergency measure and that war changes pretty nearly everything. We must win the war—everybody is united on that—and if anything is necessary to win the war, it must be done, even if it upsets all our preconceived ideas, based on life training, of order, method or logic. And so it is up to us to back up every move that is meant to help win the war, and go the limit unless it proves unworkable, then help to change it and make it work.

Occasionally we encounter a spirit of pessimism. Some men say "What's the use of initiative any more? There's no competition," and "what's the use of saving? It's the government's money." Discourage this wherever you meet it. Of course competition is gone, and of course competition is the greatest spur to progress and development. But a higher and holier incentive than competition calls now to do each his level best—patriotism. You don't need to remind railroad men of their loyalty to their country—look at the railroad

FROM AN ADDRESS WHICH WAS DELIVERED AT THE ANNUAL MEETING OF THE RAILROAD ACCOUNTING OFFICERS' ASSOCIATION, MAY 7, 1918, BY R. A. WHITE, GENERAL AUDITOR, NEW YORK CENTRAL.

men who have offered their lives, if needed, in enlisting for active service—look at the work that is being done by those either not eligible for active service or else needed more for railroad operation—look at the railroad subscriptions to the Liberty Loans, and to the Red Cross funds, and you can see where railroad men, and railroad women, stand on patriotism! And this spirit must be maintained and encouraged.

Besides the enthusiasm of this great incentive, there is a thought that each of us ought to take home and keep with him constantly—those properties have been built up through years of thought and effort, of risk and daring, of struggle and achievement, of sacrifice and expansion, of competition and co-operation, until they are absolutely indispensable to the development, prosperity, even the safety of the nation. And it is not the rails, the cars, the engines that have brought this growth—these are but the muscles of the body organic—without initiative, intelligence or responsibility. The muscles must be guided by the brain, and it is the organization that is the brain of the corporation. This relationship between the muscles and the brain, between the plant and the human element, is like the spinal cord in the human body, which acts as the main power transmission line; the spirit of corporate loyalty and co-operation in a thoroughly welded organization is the spinal cord of efficiency.

Our duty, therefore, is to sit tight, stiffen the loyalty and maintain the efficiency so that the government may at the termination of its control restore the property in as good condition as when it received it—that is with the tracks true and well ballasted, the cars and engines staunch and capable, but, above all, an unchanged organization, for tracks and roadbed, cars and engines, can be gotten any time, but a firmly welded organization once weakened can never be replaced. An organization is not a mere assemblage of unrelated individuals; an organization is made up of experts in their selected lines, each of whom has qualified himself by study, thought and experience, to fit his part of the machine to work harmoniously with all the rest. And it is not the mere fact that each head can tell his subordinates what to do that makes him valuable to the corporation, but the fact that his life work has told him the difficulties that had to be avoided and the problems that had to be solved, and gave him the ingenuity and the power to steer through all these obstacles.

Any man can be replaced *in time* by another man who can do just as well, but no other man can ever know all the experiences the original man had, or even remember the things he had forgotten. So each of us should strive in every way possible to hold together the organization that experience has proved is best fitted to the success of the individual property. If the war means doing some other kind of work, or doing our usual work some other way, tackle it cheerfully and loyally. If technical work is reduced, don't let the experts go—use them somewhere else where they can help the government temporarily by doing some other needed work, and, later on, by preserving the integrity of the organization, which can only be done by keeping the employees together, and not letting go of those whose knowledge and experience is an invaluable asset to the corporation.

I spoke before of loyalty to the government—to back up the government and win the war, and every railroad man can be counted upon to do that. But there is a kind of loyalty and support that is the most dangerous kind of camouflage of disloyalty—dangerous because it is unthinking. I mean the spirit that pats a man on the back and agrees with everything he proposes or suggests, when the very briefest thought would show that a certain contemplated course might mean disaster. True loyalty would stop to think and would really help by pointing out the error in the thought and the disaster in the result, and suggest a better course.

Federal control is an accomplished fact by Act of Congress, and all railroad men have to do when orders are issued thereunder is to obey them. But every railroad man, as a patriot,

has a further duty, and that is to protect the interests of the country by seeing that mistakes are not made and that the biggest industry in the country is not ruined through following the plausible but misleading suggestion of ignorant or prejudiced influences. Federal control under the provisions of the act and the language of the President's proclamation is only the intervention of an additional power over the operations of the individual properties to produce the results most beneficial to the conduct of the war, with due regard, however, to the protection of the rights and the investments of the owners under a possible radical diversion of traffic. To this no one should object—the eggs may be cracked and a little mixed, but not yet scrambled beyond recognition. If, however, under another administration or under other management, federal control became a stepping stone to government ownership, or if steps were pending at any time that would weaken or destroy an organization so that it could never be restored, then it is the duty of every patriot to point out the seriousness of the matter, and that the harm done is not only to the individual property, but to the country, because the property of the country is the aggregate of the properties of individuals, the prosperity of the country is the sum of prosperity of its parts, and a loss in one is a loss to the total.

To my own mind, government ownership of railroads in the United States is as unthinkable and as un-American as German militarism. There is no country in the world which presents such a wide diversity of everything—nature, resources, climate, and all the other elements that tax man's ingenuity—as the United States. Naturally, there is no other country which has so thoroughly developed individualism because of the necessity of meeting the problems which arise from that diversity. The railroad industry may not have had its inception here, but the railroad industry has reached its highest development here, and the one incentive that has led to its highest development has been competition; and the power that has brought about that development is individuality. The German nation has brought militarism to the highest point of development in ruthlessness, efficiency and wooden obedience, but it has only succeeded in doing this by crushing all rivalry and competition and completely suppressing the individual.

American militarism differs from German militarism just as the American soldier differs from the German soldier. The strength of the American soldier, apart from the fact that he never fights except in a just cause, lies in the power of his individuality and in the fact that American militarism has always encouraged, not attempted to extinguish, individual thought and initiative.

To my mind, federal control differs from government ownership in much the same way. It may consolidate and unify the activities of different roads and remove the incentive of competition, but it still leaves a field for individual effort and initiative, although each may be dormant, waiting for the return of the properties.

Government ownership, however, would leave no field for competition, no chance for individual effort, no incentive for development. I do not believe government ownership is in the air now. I believe the framers of the federal control act and those in Congress who passed it, were sincere in making provision for the return of the control of the properties, but there is always a number of either ignorant socialistic or anarchistic writers to whom there is no more attractive class of financial investment for attack than the railroad industry. So there is always risk of the question being agitated unless the public can understand the true animus of the envious malice behind the propaganda, and the real danger of the suggestion, and railroad men ought to take every opportunity to point out what a death blow government ownership would be to the railroads, and what a stagnation to the development of the country would inevitably follow.

Circulars of Southern Regional Director

CIRCULAR LETTER NO. 274 asks the railroads to supply the local agents of the United States Employment Service regularly and systematically with information which the Department of Labor has requested as to the character of workers and the number wanted at each point of need, as the employment service has promised to see that every means possible is taken to fill the needs.

Circular Letter No. 276 suggests as information a plan recently adopted by the Norfolk & Western to prevent the overheating of corn in carloads on account of excessive moisture. In order to preserve it a hose and pipe were connected to air pressure tanks and compressed air at a pressure of from 70 to 90 lb. was blown through the corn at various points in the car. During the hour that the operation was being conducted, the temperature was reduced from 107 deg. to 80 deg., with the result that the corn was saved.

Circular Letter No. 277 requests the latest obtainable information as to stocks of materials and supplies on hand and as to what officer is charged with the policing of this important matter, to see that unnecessarily large orders for any particular items are not being placed.

Circular Letter No. 278 suggests various methods of conserving machine tool steel, stating that a great economy in such supplies may be effected by having a careful inventory taken and by the introduction of tool-holders in shops, if properly used. A list is given of various firms who manufacture tool-holders and the suggestion is made that a special man be employed to visit the various shops and look over the expenditure for tool steel and the possibility of economy in various ways.

In Circular Letter No. 279 railroads are asked to submit promptly their recommendations as to the new locomotives each line will require for the year 1919.

Circular Letter No. 280 states that for the purpose of helping to conserve fuel and increase the efficiency of locomotive operation, it has been decided to put into effect a locomotive superheater schedule as follows:

1. Locomotives in shop receiving Class 1, 2 or 3 repairs will be superheated as material is available and labor conditions will permit.

2. Locomotives in freight or transfer service, having 30,000 lb. or more tractive power, and in passenger service having 25,000 lb. or more tractive power, will have preference, and locomotives with the longest prospective life will be first equipped.

3. If superheater material is on hand for locomotives not covered by the above ruling it should be used on smaller engines if not interchangeable with larger ones; the idea being to obtain the benefit of its use rather than to have it remain in stock because of not conforming to the above requirements.

Circular Letter No. 285 states that for the sake of uniformity and to avoid interference with program for repairs to locomotives of the United States Railroad Administration, locomotives of industrial concerns, contractors, logging roads and short line railroads not under government control are not to be repaired in shops of railroads under government control without the approval of Frank McManamy, manager, locomotive section, Division of Operation. Requests may be communicated by federal managers direct to Mr. McManamy and replies will be made through his office.

Circular letter No. 286 regarding the classification of employees under the selective draft law is as follows:

"You will recall that we were previously assured of the intention of the Provost Marshal General to have skilled and necessary railroad employees placed in Class II, and reserved to be drawn upon only as the exhaustion of Class I required it, or to supply the necessary skilled men for the operation of military railways. Those concerned were noti-

fied of this understanding in order that it might be generally known, and with the hope that it would largely protect the skilled and necessary employees against being drafted for general military service, and instead, reserve them for their work on the railroads, which is of such great importance to the conduct of the war.

"Unfortunately some of the district boards, which have jurisdiction over the matter of industrial classification, without any provision for appeal in any ordinary case so far as the existing regulations go, did not carry out this understanding, or were not broad in their construction of what sort of work should be included in skilled and necessary railroad employment. The result was that a large number of men who were considered skilled and necessary railroad employees have been placed in Class I.

"The names of such men sent in by you have been tabulated and arrangements made for presentation of the recapitulation to the War Department, with the hope that there may be a reclassification in the office of the Provost General, which will place many of these men in Class II, or some other deferred class.

"We cannot, however, undertake to take up individual cases as the men are called for service. In event a man who is a skilled railroad employee is called for service, and you will notify me as soon as possible after his call, giving the name of the man, the nature of his railroad work and experience, his order and serial numbers, the location of his draft board, the place at which and the date on which his orders call for him to report, will endeavor to make arrangements to have him assigned to military railway service. If this is done, it will, to that extent, lessen the call upon other skilled railroad employees who might be drafted for military railway service.

"It is perhaps well to repeat what I have heretofore written to some of you, namely, that if you hear of any cases where skilled railroad men have actually been placed into ordinary military service, I should be advised so as to try to get them into military railway service. I understand arrangements have been made to have the skilled railroad men who are called under the selective draft law sent to Camp Benjamin Harrison, and kept together to avoid their being placed in ordinary military service through error.

"It is not anticipated that the men who have been classified in Class II will be called, except as it may become necessary to do so to fill places in the military railway service for which men cannot be found among those who are already in military service, or who may be drafted from Class I."

Circular Letter No. 287 requests information in connection with passenger train car equipment as to the number of cars in service for various periods since last receiving classified repairs, including at least repainting or revarnishing of exterior, number of cars which can be given classified repairs per month with facilities available.

Circular Letter No. 290 asks for information to enable the administration to make a forecast of operating expenses for the current year. Each railroad is directed to send to the division of operation an estimate of the probable operating expense for the year, sub-divided by the major expense groups. The division of traffic is also asked for a similar forecast as to operating revenues. The forecast of expenses, therefore, is to be based upon the same assumption as to the volume of traffic and take into account the maintenance program, effect of wage increase, the possible further dilution of labor, cost of fuel and other materials, and the operating proportion of additions and betterments, also of any anticipated economies through federal control.

Circular Letter No. 291 directs the roads to take every precaution to insure strict observance of the safety appliance laws, saying that the Bureau of Safety reports many instances where cars are being moved in defective condition.

General News Department

Senator Thomas, of Colorado, has introduced in Congress, by request, a bill to require the use of an automatic electric cab signal and train-stopping device by common carriers engaged in interstate commerce.

V. R. Hawthorne, acting secretary of the Master Car Builders' Association and the American Railway Master Mechanics' Association, has transferred his office from 906 Karpen building to 746 Transportation building, Chicago.

No employee was killed on the Atchison, Topeka & Santa Fe during the 93 days from March 22 to June 22. The Santa Fe has approximately 50,000 employees, and during the corresponding period of 1917, nineteen of its employees were killed.

Free transportation for soldiers and sailors to and from their home towns, when on furlough, and also for employees of any department of the United States during the war and for six months afterward, would be authorized by a bill which has been introduced in Congress by Representative King.

The daylight zone investigation which is being made by the Interstate Commerce Commission is not yet finished, but the commission has issued an order that until further order, Mountain time shall be observed at all points on the line of the Chicago, Burlington & Quincy west of Curtis, Neb., to and including Sterling, Colo. This territory heretofore has been included in the Central zone.

The Boston Elevated Railway is now running trains through from Harvard Square, Cambridge, to Andrew Square, South Boston, through the recently completed "Dorchester tunnel." From Andrew Square to the corner of Washington and Summer streets the running time will be five minutes. The extension of the elevated road northward from Charlestown to Everett will probably be opened within a few months.

The Engineering Council, New York, an organization of national technical societies, has created a small special committee to study the question of the licensing of engineers. A few of the states have already passed laws on this subject and others are considering similar action. The work of this special committee is to advise engineering organizations regarding the course of procedure to follow in the states in which this subject is brought up.

Twelve Thousand Five Hundred Fifty-one head of live stock were killed on the right of way of the Atchison, Topeka & Santa Fe in the past two years, and the record is made the text of an exhortation to the employees, in the shape of a red, white and blue placard, to remember their personal duty to aid in the prosecution of the war by increasing production, speeding transportation, and stimulating manufactures. "Conservation of every article of food stuff must be kept uppermost in the mind of all transportation employees and through them kept before those who produce. The loss of food by these killings was great; let us all strive to reduce it."

The airplane mail carriers arrived in New York and Washington almost on schedule time throughout the last fifteen days in June, according to a statement issued by Postmaster General Burleson at Washington. The same statement contains a list showing the hour of arrival, at both termini, for each day in June, and a large majority of the items show a fair speed record. On the eighth, the arrival in Washington was 9:15 p. m., and on the twelfth it was 6:05 p. m. These are the only days showing so serious a delay. This list shows an hour of arrival on every weekday in June; though, according to news notes printed in New York papers, there was no start from New York on June 1, June 7 or June 11.

Maximum prices for fir, logs and lumber, produced in the Pacific Northwest, to prevail during the three months be-

ginning with June 15, have been determined upon by the Price Fixing Committee appointed by President Wilson. These prices are not to be exceeded on any sales or contracts either to the public or to the government; the allied nations or the railroads. Any additional cost for log freights occasioned by order No. 28 of the director general of railroads is to be added to the price fixed on logs so affected. Orders have also been issued regarding the disposition of the logs and lumber, and the government will apportion the car supply available for, and arrange for the transportation of logs and lumber subject to the allocation by the War Industries Board.

Government control of telegraphs is provided for in a resolution introduced in Congress on Monday, July 1. The resolution would authorize the President to take possession and control of any telegraph, telephone, marine cable or radio systems and to operate them subject to those conditions of law, so far as applicable, which are in force as to steam railroads under federal control, if in his discretion it is deemed desirable in order to insure their continuous operation, or to guard the secrecy of military and governmental communications, or to prevent communication by spies and other public enemies thereon, or for other military or public reasons. The resolution was introduced by Representative Aswell, of Louisiana, following the announcement that a strike of operators of the Western Union would be called on July 8. The proposed resolution is endorsed in a note by the President, as well as in letters by Secretaries Baker and Daniels and Postmaster General Burleson.

The Seventh avenue subway, New York city, which was opened from 42nd street, southward, to 33rd street about one year ago, is now in operation from 42nd street to the Battery, at the south end of Manhattan, and also to Wall street, by way of the Park place branch. This line is four-tracked from 42nd street to Chambers street, where the Park place branch diverges. Within a few weeks the Seventh avenue line is to be connected at its northerly end to the existing subways so as to make a through line on the west side of the city; while that part of the existing subway which lies on the east side of the city will be connected with the line on Lexington avenue. The existing line from the Grand Central Terminal, 42nd street and Fourth avenue, westward to Broadway, will become the cross-piece of the letter H, in the "H" system into which the old and the new subways will be combined. The Pennsylvania station, Seventh avenue and 33rd street, is now connected by subway directly with the downtown business district, with stations at Cortland and Rector streets on the west side; Fulton and Wall streets on the east side, and Broadway and Park place (Woolworth building and Postoffice). All these lines are operated, or to be operated by the Interborough Rapid Transit Company.

Assistant in Transportation is the title of an office for which the United States Civil Service Commission announces examinations on July 30. These are for men only. There are five vacancies in the Bureau of Markets, Department of Agriculture, Washington, at salaries ranging from \$1,800 to \$2,400 a year. The duties of appointees will be "to assist in the rendering of practical service to producers and distributors of farm commodities, especially live stock and perishable commodities, in every phase of the transportation problem, and to co-operate with both shippers and carriers in raising the standard of transportation service and in reducing the economic waste of foodstuffs in transit." Competitors must have had at least two years' experience in the freight-traffic department of a common carrier involving responsibility not less extensive than that of division freight agent, at least one year of which experience was had within the past five years. Each applicant must submit a thesis on each of three subjects. (1) A discussion of the marketing of

either perishable products or live stock, or both, as affected by the system of rail transportation in vogue in the United States; (2) a discussion of the changes thus far inaugurated by the director general of railroads with respect to the transportation of live stock and perishables, and an analysis of their economic value in comparison with the practices displaced; (3) a description of an organization for a railroad for assembling and disseminating information in regard to the movement of live stock and perishables. Applicants must be 25 to 50 years old.

General Travel Conditions

Hotels, steamship lines, and summer resort interests generally, have probably never before been so uncertain as to the probable volume of summer tourist traffic. Railway fares have been sharply advanced. The submarine warfare in our own waters and the German offensive toward Paris without doubt have had a depressing effect. The campaigns for strictest economy in personal expenditures, for the sale of War Savings Stamps, and for contributions to war funds, lead the most ardent summer vacationist to reconsider his summer plans. It seems probable that vacations will be limited to brief and relatively inexpensive sojourns not far from home. It does not follow that hotels, and the lake and river lines, may not have a good season, but it is likely that patronage, compared with former seasons, will be very largely local, and spending may be on a less liberal basis than heretofore.—*American Express Co.'s Travel Bulletin.*

No Employees Killed in 91 Days

Not a single employee was killed on the Atchison, Topeka & Santa Fe proper in 91 consecutive days, according to a circular issued by Isaiah Hale, commissioner of safety, on June 21. During the same period last year, namely from March 22 to June 20 inclusive, 19 employees were killed in accidents. Mr. Hale points to the record for this year as proof that a railroad can be operated without loss of life. His circular, which is addressed to "My Fellow Workmen," reads in part as follows:

"Death is no respecter of persons. Caution and watchfulness are your insurance that you will not be the next one to go. Remember, too, that if you bring about an avoidable injury to yourself or someone else at this time you have done an unpatriotic thing. Men sitting around home or in hospitals nursing an avoidable injury are doing nothing to help win the war. They are playing into the hands of the enemy, and their injury they ought to regard as a mark of shame."

The Castleton Bridge

The proposed bridge across the Hudson at Castleton, N. Y., is the subject of a decision by the Supreme Court of New York, Justice Chester, handed down on June 28, in which the proposal of the railroad company, the New York Central, is sustained. Justice Chester says that laws enacted by Congress are paramount to state laws, and he overrules the demurrer of the state which, in the suit at bar, is defending the act of the legislature forbidding the construction of a bridge except it be of one long span. The state will appeal the case to the higher court.

An injunction had been granted restraining the railroad from starting work on the structure. The road contended that federal jurisdiction was absolute, and it was upon this answer that the demurrer was argued. The secretary of war approved the railroad company's plans for the proposed bridge on May 2, 1917. These provide for two spans, 600 ft. and 405 ft. respectively.

In his decision Justice Chester says that "Congress has constitutional power to regulate commerce with foreign nations, and among the states has the paramount right to regulate such commerce over highways, railroads and bridges, as well as upon navigable waters. * * * It will be seen that both Congress and New York state have passed laws on the subject of proposed bridges. This being the situation, which is the controlling authority? It seems to me that there is but one answer and this answer should not be given by yielding to public sentiment or to the desires of influential public bodies who have spoken on the subject,

but must be responsive to the controlling power of the supreme law of the land.

"I think that the acts of Congress and the determination of the secretary of war are controlling as to the kind of bridge that the Central may construct, and that state legislation prescribing differently cannot be effective to overrule the federal authorities."

Coal Production

A sharp decline in production of bituminous coal occurred during week ending June 22. The output of soft coal, including lignite and coal made into coke, is estimated at 12,016,000 net tons, a decrease compared with the week of June 15 of 610,000 net tons or 5 per cent, but an increase over the same week of 1917 of 701,000 net tons or slightly over 6 per cent.

The average production per working day during the current week is estimated at 2,003,000 net tons, as against 2,104,000 net tons during the preceding week and 1,888,000 net tons during the week of June 22, 1917.

Anthracite shipments during the week of June 22 decreased 790 cars or 1.9 per cent.

Material decreases occurred in Illinois, Ohio, Western Pennsylvania, Somerset County, high volatile district of West Virginia, Cumberland-Piedmont district, Northeastern Kentucky and in the Western and Pacific Coast states and with exception of Illinois and the western states the decline in production is entirely attributed to insufficient supply of coal cars, while in Illinois it is attributed to both car and labor shortage and in the western states, where the car situation improved slightly, to labor shortage and mine disability.

Chicago Railroad Police Mean Business

Arch crooks as well as petty pilferers are beginning to learn that the Chicago Railroad Police Commission means to accomplish the purposes for which it was organized a little over a month ago. (*Railway Age*, June 14, page 1447.) During the month of June the commission made 183 arrests in the Chicago terminals district, 105 of which were minor cases and disposed of in the municipal courts. There were 78 cases of felony which were taken to the state or federal courts, according to the nature of the offenses. Of the persons arrested 21 had served time in penitentiaries and have criminal records. Fifteen of those arrested on the charge of felony were railroad employees when apprehended. Four organized bands of thieves have been broken up. One of these bands is known to have operated on railroads for several years past, while another had goods stored away which had been shipped over a year ago. Approximately \$12,000 worth of goods has been recovered by the commission, most of which was stolen from railroads during the last 90 days. All of the recovered goods were stolen prior to the first week in June. Reports from railroad men in the Chicago terminal district indicate that there has been a marked decrease in stealing during the past three weeks, i. e. since the publication of information that the Chicago Railroad Police Commission was established.

Slackers Called to Account

Numerous employees in the Pennsylvania system have been guilty, apparently, of indifference, laziness or carelessness to such an extent as to call for a sharp rebuke, and, in response to a letter from the assistant general manager of the road, the chairmen of the four train-service brotherhoods on that road, have addressed vigorous letters to their membership calling upon all individuals to serve their country faithfully in a spirit of co-operation and in keeping with the vows that have been made to back up the boys in the trenches. The assistant general manager cited a large number of specific instances of delinquencies, indifference and carelessness. The circulars issued by the brotherhood chairmen manifest a most commendable spirit of co-operation and loyalty. Extracts from some of these follow.

"The man who is failing to report on time, or is refusing to respond when called, is helping to discredit our organization, when at this critical period there is such an extreme shortage of men to move the great volume of freight neces-

President has placed us all in the same category with the soldiers. We are just as much a part of this great war machine; our responsibility is even greater, for if we fail, or if we all should do as a few are doing (failing to respond when called) the result would be appalling."

"We should get away from the idea that our responsibility ceases when we have completed our daily assignment. The conductor is a part of the national railroad service and as an integral unit of this great republic he has a duty to perform in this time of Democracy's great struggle for the world's freedom from autocracy. By the terms of agreement between the management and our organization, we are bound to respect the working conditions and rates of pay in effect. We can assist the government to uncover not only the men engaged in engine and train service who are willfully slacking their work, but employees in every branch of service. . . ."

"We teach a man at the time of his admittance into the Brotherhood his obligation to God, himself, his employer and his fellow member; this is the time when our obligation is being put to the test; when members of this brotherhood fail to perform service for which our Committee has stipulated rates and conditions, we have to a degree prejudiced our good faith. . . . Local Chairman should carefully check the list of names and ascertain if any of these men are under the jurisdiction of his Lodge. . . . Investigate each particular case."

"As members of an honorable organization, we are all in duty bound to do everything in our power to assist officials of the company in the prompt, efficient and safe movement of engines and trains. The long list of delinquencies shows a seriously demoralizing tendency. Do all in your power to see that every member is particularly careful to promptly and efficiently perform all his duties, and if for any reason they desire to leave the service of the company, they do so only after giving due and timely notice. Failure to promptly respond for duty when called and quitting the service of the company without due and timely notice are among the worst forms of industrial slacking. Industrial slacking in any of its forms is as great a menace to the safety of our country as any pro-German propaganda can possibly be."

Trial of Schweyer Automatic Train-Stop

D. H. Schweyer's automatic train-stop, briefly described in the *Railway Age* of June 21, page 1536, was exhibited in operation before a large company of railroad officers and others on the Colebrookdale branch of the Philadelphia & Reading on Sunday June 23. In this system an electric current (a. c.) controlling air brake valves on the locomotive is run through a choke coil which is so fixed on the engine frame as to move in line with a "track armature," 30 in. long, fastened on the ties 13 in. outside of the gage line. The choke coil and the track armature are 2 1/4 in. apart and there is nothing movable in either of them. On the passage of a train the armature weakens the current on the engine and thus causes the setting of the brakes. A roadside battery, in connection with a short section of insulated track and an insulated truck of the locomotive is arranged so as to neutralize this stop-operation, as may be desired, whenever the track ahead is clear.

The tests were made between Bechtelsville and Barto, 12 miles east of Pottstown, Pa. Tests were made under all three of the normal conditions; clear, caution and stop. The caution indication was arranged to reduce speed but not to stop the train; and the stop indication was arranged to apply the brakes in emergency.

In the caution test a service application of 15 lb. reduction was made, which resulted in a reduction of speed from approximately 35 miles an hour to about 20 miles an hour before the next ramp (track armature) was reached. This test was not considered satisfactory and it was repeated, with a service application of 25 lb. reduction. This application reduced the speed gradually from about 35 miles an hour until the train reached the next ramp, when it was brought to a stop in less than 100 ft.

The test for a full stop was made at the entrance of the signal section, and there was no preliminary caution signal, with its ramp to give the customary reduction of speed. The speed of the train over this ramp was approximately 35 miles an hour. The device applied in emergency and the train was brought to

a stop in 700 ft., with the throttle open. All of the tests were repeated several times.

The behavior of the choke coil was demonstrated with the train at rest. The a. c. ammeter in the locomotive cab showed a normal current of 1.75 amperes while running or clear of the ramp. The locomotive was then stopped with the choke coil directly over the ramp. With a clearance of 2 1/4 in. from the ramp, the current value fell to 1/2 ampere, a drop of 71 per cent.

Some difficulty was experienced because of variations in the speed of the turbine generator on the engine, which caused a drop in the current on the line sufficient to permit the brakes to apply. This was due to the fact that the generator was not designed for this work, and was 50 per cent overloaded. The trouble was quickly remedied.

After the regular tests were completed, a number of runs were made to test the electro-magnetic fixture which is placed between the rails and which is designed for use on an electrified railroad in place of the insulated track section. These tests, like the others, fully met the expectations and requirements.

Accident Bulletin No. 65

The Interstate Commerce Commission has issued Accident Bulletin No. 65, containing statistics of railroad accidents in the United States during the three months ending with September 30, 1917. The total number of persons killed on the railroads of the country in that quarter was 2,841, and of injured, 50,837. The totals of the three principal classes of persons in the three principal classes of accidents are as below:

	Persons Killed and Injured, Three Months Ending with September 1917			September 1917		
	Passengers			Employees		
	Killed	Injured	Total	Killed	Injured	Total
In train accidents	61	1,406	1,467	108	4,905	5,013
In train-service accidents	61	1,177	1,238	608	12,406	13,014
In non-train accidents	—	—	—	94	31,377	31,471
Totals	61	1,406	1,467	810	44,778	45,588

The most notable change as between this and the last preceding quarter is under the head of passengers killed in train accidents. The quarter now reported included the disastrous collision at Kellyville, Okla., September 28, in which 20 passengers were killed. The number of passengers killed in train accidents in the first quarter of 1917 (Bulletin 63) was 38. The other differences between the figures of Bulletin 65 and those of Bulletin 64 are to be explained largely by the fact, noted regularly for many years, that the quarter including April and May is one of lighter traffic than the other three quarters of the year as well as one in which, usually, the weather conditions are favorable.

	Casualties with Derailment, Three Months Ending with June 1917			June 1917		
	Bulletin 65			Bulletin 64		
	Total	Killed	Injured	Total	Killed	Injured
Total casualties	53,678	2,841	49,837	50,837	2,389	47,448
Total persons killed	2,841	—	—	2,389	—	—
Total persons injured	50,837	—	—	47,448	—	—
Passengers killed in train accidents	61	—	—	39	—	—
Employees killed	810	—	—	657	—	—
Total collisions	2,061	—	—	1,712	—	—
Collisions per million locomotive miles	4.34	—	—	3.59	—	—
Total derailments	2,586	—	—	2,484	—	—
Derailments per million locomotive miles	5.44	—	—	5.35	—	—
Damage to railroad property by train accidents	\$4,144,930	—	—	\$3,653,570	—	—
Shipment worked thousands of hours class 1	350,184.0	—	—	320,954.4	—	—
Casualties to shopen per million man hours	50.13	—	—	48.60	—	—
Casualties per million man hours	—	—	—	—	—	—
State-owned	23.19	—	—	25.07	—	—
Locals	19.99	—	—	22.30	—	—
Brooklyn, etc.	26.48	—	—	27.58	—	—
Other companies	17.42	—	—	17.92	—	—

The bulletin contains reports, made by the Bureau of Safety, on 34 collisions and derailments which were investigated. These accidents occurred on the following roads: Chicago, Burlington & Quincy, Chicago, Milwaukee & St. Paul; Chicago, Rock Island & Pacific; Cleveland, Cincinnati, Chicago & St. Louis (2); Denver & Rio Grande; Great Northern (3); Illinois Central; Jacksonville Terminal Company; Louisville & Nashville (3); Manistee & North Eastern; Minneapolis & St. Louis; Missouri, Kansas & Texas; New Orleans, Texas & Mexico; Nashville, Chattanooga & St. Louis; New York Central (2); Norfolk & Western; Ogden, Logan & Idaho; Pennsylvania; Pere Marquette; St. Louis-San Francisco; Shore Line Electric; Southern; Southern Pacific; Texas & Pacific; Wabash; Washington, Baltimore & Annapolis (electric).

REVENUES AND EXPENSES OF RAILWAYS

FOUR MONTHS OF CALENDAR YEAR 1918

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net railway operating ratio.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) last year.
		Freight.	Passenger.	(Inc. misc.)	Way and equip. structures.	Maintenance of equip. ment.	Traffic.				
Buffalo, Rochester & Pittsburgh.....	584	\$4,314,905	\$905,442	\$4,967,088	\$630,315	\$1,651,062	\$61,349	\$1,778,532	\$1,778,532	\$61,349	190,989
Carrollton, Cincinnati & Ohio.....	383	1,210,884	119,238	1,600,935	189,566	264,457	51,798	407,150	54,585	461,735	164,989
Central of Georgia.....	1,918	8,344,152	1,632,466	6,616,804	837,482	1,040,210	94,880	37,372	275,778	403,158	364,347
Central of New Jersey.....	684	8,406,922	2,038,541	11,610,765	1,018,462	1,018,462	94,880	5,891,224	82,576	1,018,462	1,687,966
Central of New England.....	301	1,532,370	99,136	1,614,248	272,327	259,798	5,242	890,350	31,229	921,579	148,066
Chesapeake & Ohio.....	341	1,670,650	175,418	1,846,068	182,715	172,621	16,263	376,988	19,084	396,072	48,578
Chesapeake & Ohio, Inc.....	1,756	14,922,455	2,926,919	18,294,934	2,295,323	4,121,077	120,808	7,133,800	382,494	14,220,449	1,109,490
Chicago & Alton.....	1,070	4,426,223	1,465,415	5,891,638	860,485	1,593,535	121,053	2,892,769	143,967	5,658,151	1,602,924
Chicago & Eastern Illinois.....	1,131	5,303,599	1,017,723	6,927,061	875,649	2,329,684	90,695	3,097,820	194,317	3,292,137	1,039,809
Chicago & Erie.....	269	2,460,640	170,359	2,630,999	217,573	533,009	60,417	1,676,183	7,237	3,068,684	317,318
Chicago & Erie, Inc.....	8,090	31,460,520	7,455,729	38,916,249	4,901,417	5,558,063	160,416	1,676,183	3,521,517	5,197,696	1,399,236
Chicago, Burlington & Quincy.....	5,573	29,425,608	7,010,196	40,879,823	5,018,392	7,827,155	470,423	10,600,630	994,246	11,594,876	1,897,585
Chicago, Detroit & Canadian Pacific.....	60	237,816	38,315	276,131	37,269	80,462	6,132	165,841	8,906	301,609	11,812
Chicago Great Western.....	1,496	3,905,708	43,953	3,969,767	741,155	1,298,957	161,817	2,467,074	15,205	4,791,052	582,751
Chicago, Indianapolis & Louisville.....	657	1,921,925	615,826	2,537,751	708,203	708,203	71,301	1,226,271	83,343	1,309,614	240,337
Chicago, Milwaukee & St. Paul.....	10,305	25,911,456	6,114,009	32,025,465	3,961,593	9,266,568	494,281	17,491,131	831,621	42,881,806	5,912,141
Chicago, Peoria & St. Louis.....	217	550,550	80,401	630,951	96,058	106,699	19,769	373,698	270,907	644,605	172,130
Chicago, Rock Island & Gulf.....	474	963,455	333,367	1,485,595	156,716	300,765	34,444	560,951	384,336	945,287	101,396
Chicago, Rock Island & Pacific.....	2,233	19,534,248	7,221,668	26,755,916	2,406,104	3,567,625	476,306	12,641,658	2,414,581	15,056,239	3,825,361
Chicago, St. Paul, Minn. & Omaha.....	1,729	4,248,974	1,711,904	7,077,716	602,501	1,312,328	96,213	3,789,051	187,603	3,976,654	1,148,658
Chicago, Terre Haute & Northwestern.....	374	1,269,707	175,509	1,709,702	135,631	435,237	16,650	530,551	20,940	551,491	41,757
Cincinnati, Indianapolis & Western.....	311	2,584,197	185,680	6,867,284	106,609	202,472	25,688	447,261	32,015	827,355	160,133
Cincinnati, New Orleans & Texas Pacific.....	345	1,590,555	433,295	2,023,850	124,088	198,933	11,524	304,933	15,331	368,263	64,734
Coal & Coke.....	23,86	12,135,713	3,547,425	18,344,966	1,765,493	3,004,163	296,260	7,922,885	370,373	14,118,259	3,405,473
Coal & Coke, Inc.....	197	311,109	81,240	410,105	76,606	113,445	5,696	907,605	14,500	407,583	29,000
Colorado & Southern.....	337	459,228	53,607	512,835	113,636	111,407	26,043	368,199	19,338	644,600	70,621
Colorado & Southern, Inc.....	1,190	2,949,349	602,693	3,552,042	335,587	758,692	37,813	1,364,520	176,952	2,661,263	960,175
Colorado & Southern, Inc., Inc.....	42	114,845	4,309	119,154	30,945	64,128	475	134,008	176,952	2,661,263	179,375
Empire Creek & Valley.....	116	1,290,837	41,281	1,332,118	24,211	38,725	3,089	194,407	13,218	194,347	190,887
Empire Creek & Valley, Inc.....	879	7,667,515	779,759	8,447,274	1,175,416	1,728,973	87,807	4,826,173	144,618	8,966,791	1,301,570
Empire Creek & Valley, Inc., Inc.....	405	1,146,115	278,519	1,424,634	1,211,719	344,350	53,179	820,434	375,428	1,195,862	1,301,570
Empire Creek & Valley, Inc., Inc., Inc.....	1,190	2,949,349	602,693	3,552,042	336,587	758,692	37,813	1,364,520	176,952	2,661,263	960,175
Empire Creek & Valley, Inc., Inc., Inc., Inc.....	42	114,845	4,309	119,154	30,945	64,128	475	134,008	176,952	2,661,263	179,375
Empire Creek & Valley, Inc., Inc., Inc., Inc., Inc.....	116	1,290,837	41,281	1,332,118	24,211	38,725	3,089	194,407	13,218	194,347	190,887
Empire Creek & Valley, Inc., Inc., Inc., Inc., Inc., Inc.....	879	7,667,515	779,759	8,447,274	1,175,416	1,728,973	87,807	4,826,173	144,618	8,966,791	1,301,570
Empire Creek & Valley, Inc., Inc., Inc., Inc., Inc., Inc., Inc.....	405	1,146,115	278,519	1,424,634	1,211,719	344,350	53,179	820,434	375,428	1,195,862	1,301,570
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Empire Creek & Valley, Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc.....	1,190	2,949,349	602,693	3,552,042	336,587	758,692	37,813	1,364,520	176,952	2,661,263	960,175
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Empire Creek & Valley, Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc., Inc.....	405	1,146,115	278,519	1,424,634	1,211,719	344,350	53,179	820,434	375,428	1,195,862	1,301,570
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Empire Creek & Valley, Inc.....	879	7,667,515	779,759	8,447,274	1,175,416	1,728,973	87,807	4,826,173	144,618	8,966,791	1,301,570
Empire Creek & Valley, Inc.....	405	1,146,115	278,519	1,424,634	1,211,719	344,350	53,179	820,434	375,428	1,195,862	1,301,570
Empire Creek & Valley, Inc.....	1,190	2,949,349	602,693	3,552,042	336,587	758,692	37,813	1,364,520	176,952	2,661,263	960,175
Empire Creek & Valley, Inc.....	42	114,845	4,309	119,154	30,945	64,128	475	134,008	176,952	2,661,263	179,375
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Empire Creek & Valley, Inc.....	879	7,667,515	779,759	8,447,274	1,175,416	1,728,973	87,807	4,826,173	144,618	8,966,791	1,301,570
Empire Creek & Valley, Inc.....	405	1,146,115	278,519	1,424,634	1,211,719	344,350	53,179	820,434	375,428	1,195,862	1,301,570
Empire Creek & Valley, Inc.....	1,190	2,949,349	602,693	3,552,042	336,587	758,692	37,813	1,364,520	176,952	2,661,263	960,175
Empire Creek & Valley, Inc.....	42	114,845	4,309	119,154	30,945	64,128	475	134,008	176,952	2,661,263	179,375
Empire Creek & Valley, Inc.....	116	1,290,837	41,281	1,td							

Traffic News

The postage on letters by airplane (between New York and Washington) has been reduced from 24 cents an ounce to 16 cents for the first ounce and six cents for each additional ounce. The price includes six cents an ounce for transportation and ten cents for special delivery.

The Railroad Administration has announced that 5 cents will be the minimum passenger fare instead of 10 cents, as provided in general order No. 28. This puts back to 5 cents the fares between several stations, all within the limits of Jersey City, on the Central Railroad of New Jersey, which had been the subject of loud protests.

The New York State barge canal is to have a package freight service, under the charge of F. B. McPherson, general freight agent, Utica. This is announced by G. A. Tomlinson, general manager of the New York canal section of the Federal Railroad Administration, who says that six steamboats have been assigned to this service.

The Car Service Section has asked all roads to send box cars of the Illinois Traction Company to that road. If loaded to junction points, they will not be subject to reconsignment away from the home road. This action is said to be necessary to provide equipment needed by the Illinois Traction, its own cars being specially constructed to meet its requirements, while the ordinary railroad box car cannot be used with safety.

At the request of the Food Administration, the Railroad Administration has withdrawn the minimum charge of 50 cents for shipments of milk and cream, as provided in the general rate advance order effective on June 25. This will leave in effect the existing minimums on such shipments. The Food Administration had received many protests from dairymen that the fifty-cent minimum, which would have had to be paid on shipments, even so small as a single can, would work a hardship.

The Food Administration announces that the establishment of new freight rates by the Railroad Administration has necessitated a change in the government price basis for wheat, and the new increased prices were made effective on July 1. The change takes into consideration not only the increase in transportation rates, but other factors. An executive order was issued by President Wilson on June 21 to enable the Food Administration to make the necessary readjustments in wheat prices to cover the increase in rates, the intention being, so far as the complex problem of railway rates will permit, to readjust prices at the terminals on such a footing as to place the farmer in the same position, as near as may be, that he enjoyed previously.

Coal Supply Arranged for the Northwest

The Fuel Administration and the Railroad Administration have arranged for shipments of necessary coal by the Great Lakes for the northwestern states and that portion of Canada dependent upon the lake route. A total of 28,000,000 tons of bituminous coal will be moved through Lake Erie ports to the Northwest; 24,000,000 tons to the northwestern states and the remainder to Canada. The aim will be to complete the movement of the coal by the end of October.

Pipe Association Protests Rate Increase

The American Concrete Pipe Association has filed a protest with the United States Railroad Administration contending that the general freight increase will work great hardship on numbers of that body—in some cases to the extent of bankrupting them. The protest reads in part as follows:

"Members of the association have taken contracts for concrete tile to be delivered on the work or contracts for the entire construction of drainage districts. According to our understanding of the ruling in such cases, the freight

will have to be paid by the shipper. The situation is made more acute on account of the great increase on short haul freight, although the government has for some time been encouraging the establishment of local plants such as the concrete tile manufacturers have built; so this ruling puts a greater hardship on them than if they had been shipping longer distances. What this ruling will mean is that one concern will be able to compete in the other man's territory in many cases more easily than in his own."

Commercial Travelers Want Reduced Rate

Representatives of various organizations of commercial travellers, who asked that the Railroad Administration give them a passenger mileage rate of 2½ cents, were given a hearing at Washington on June 28 by Luther M. Walter, assistant to the Director of Public Service and Accounting, and Gerrit Fort, assistant in charge of passenger matters to the Director of Traffic. Among the organizations represented were the Association of Commercial Travellers, the National Council of the Travelling Salesmen's Association, the National Shoe Travellers' Association, the United Commercial Travellers' Association, the Far Western Travellers' Association, the Southern Travellers' Association, the Garment Salesmen's Association, the Lace and Embroidery Salesmen's Association, and the Merchants' Association of New York.

Under General Order No. 28, the old mileage book rates were abolished, and commercial travellers now have to pay three cents a mile.

Consolidated Ticket Office Facilities Increased

The Railroad Administration, to remedy congestion, has extended the facilities of the consolidated ticket offices in Washington, New York and other large cities. According to a statement issued by the administration, the congestion results in part from an abnormally heavy passenger travel and, in part from the recent advance in fares, which came at a time when the ticket offices were carrying their peak load for the season. Another factor which has increased the burden of these offices is the recent authorization of a rate of a cent a mile for soldiers and sailors on furlough. Many men in the service are taking advantage of the low fare, and the work of issuing these tickets involves delay.

On July 1 an annex to the Washington consolidated ticket office was opened in the room formerly occupied by the Wells-Fargo Express Company, in the same building as the ticket office. In this office, government orders and military, Navy and other business, the transaction of which requires extended time, will be cared for. Other short cuts were adopted in the sale of tickets, both in the consolidated office in the Washington Terminal, and the forces in both offices were augmented.

Proposed Consolidated Classification Completed

The committee appointed by the director general early in the year to formulate uniform rules, descriptions and weights for the three freight classifications, has completed its work and its report, a volume of 485 pages is now in the hands of the Interstate Commerce Commission. Hearings on the changes proposed in this report will be held on August 1 at Boston, on August 5 at New York, August 12 at Chicago, August 19 at Omaha, August 26 at Portland, Ore., August 30 at San Francisco, September 5 at Denver, September 9 at Ft. Worth, September 13 at New Orleans, and September 19 at Atlanta. The hearings will be held under the direction of Examiner Disque and J. C. Colquitt, classification agent of the Interstate Commerce Commission. The proposed Consolidated Freight Classification No. 1 will cancel Official Classification No. 44, Southern Classification No. 43 and Western Classification No. 55, and supplements to those classifications. The committee which prepared the new classification consisted of R. N. Collyer, chairman of the Official Classification Committee; R. C. Fyfe, chairman of the Western Classification Committee; J. E. Crosland, chairman of the Southern classification; J. E. Williams, chairman of the Uniform Classification Committee, and J. E. Colquitt, classification agent of the Interstate Commerce Commission.

Commission and Court News

Interstate Commerce Commission

A large number of electric interurban lines have filed applications with the Commission for permission to increase their fares to three cents a mile. Attorneys for the Washington, Baltimore & Annapolis, at a hearing before the commission, stated that the company did not need more money, but proposed the increase at the request of the Railroad Administration.

State Commissions

The Railroad Commission of Tennessee has issued a statement relative to the new freight rates as they affect railroads in that state. The commission agrees to the intrastate rates prescribed by the Railroad Administration only as a war measure, and only agrees that they shall be effective during the period of federal control. The rates shall be subject to such right of review as now or hereafter may exist. Tennessee shippers who may have cause of complaint may file their complaints with the commission, which will inquire into the justice of such complaints; and the commission will, when necessary, go before the Interstate Commerce Commission or the Federal Administration and endeavor to secure just and satisfactory settlements in all cases. "It is the policy of the commission to co-operate with Federal Administration of Railroads, reserving all questions as to the respective powers and jurisdiction of the State and Federal Commissions for future determination."

Personnel of Commissions

A. G. Pack, assistant chief engineer, Bureau of Locomotive Boiler Inspection, Interstate Commerce Commission, has been nominated by President Wilson chief inspector, succeeding Frank McManamy, who was recently appointed mechanical assistant to the director of the Division of Operation of the Railroad Administration. Mr. Pack was born July 22, 1865, at Princeton, W. Va. In 1882 he entered the service of the Chesapeake & Ohio as an apprentice in the boiler shop. In 1887 he went to Denver and worked for the Union Pacific and the Denver & Rio Grande as a locomotive fireman. He was a locomotive engineman on the Colorado & Midland and the Colorado Springs & Cripple Creek, serving in the latter position until his appointment in 1911 as district inspector of locomotive boilers of the Interstate Commerce Commission at Denver. He was appointed assistant chief inspector in February, 1914.

Court News

Attempted Regulation of Shipments of Liquor

A city ordinance required all bills of lading to be open to inspection of the city commissioners and police officers and required every common carrier to keep at its office in the city an alphabetical record of all consignments of alcoholic liquors received by it in the city, the names of shipper and consignee, and the quantity of the shipment. This record was also to be open to inspection by commissioners and police. The New Jersey Court of Errors and Appeals holds that these provisions of the ordinance, so far as they attempt to affect as a common carrier a railroad engaged in interstate and intrastate business, are in conflict with the act of Congress regulating interstate commerce, and must be set aside. A clause in the city charter making it unlawful to sell within the corporate limits spirituous liquors in quantities less than five gallons without a license did not authorize an ordinance making it unlawful for any common carrier to deliver in the city any alcoholic liquor consigned to a club, lodge, or other association. If the ordinance was invalid, as to interstate shipments, it was

also invalid as to intrastate shipments, as the two could not be separated in view of the object of the ordinance. As the shipments sought to be forbidden were not in violation of any state law they were not prohibited by the Webb-Kenyon Act. *West Jersey & Seashore v. Millville* (N. J.), 103 Atl., 245. Decided March 4, 1918.

New Initial Carrier Constituted by Tariff Regulation

In every case of an action for damages for breach of contract or breach of duty by a common carrier of freight to carry it safely, whether in assumption on the contract or in tort for breach of duty, the right of action is dependent on the existence of a contract of carriage between the plaintiff and the carrier when the alleged cause of action arose. This contract need not have been express, but may have arisen from the duty imposed at common law or by statute, state or federal, in which case the contract will be implied in law from the duty. The Virginia Supreme Court of Appeals holds that, under the Interstate Commerce Act, as amended, if an interstate shipment of freight is begun under an express contract of carriage between the initial carrier and the shipper, and subsequently a connecting carrier issues another contract to the shipper and takes up the original bill of lading, the second contract does not supersede the first, which remains in force by virtue of the federal statute law, and the shipper and all assignees claiming through him, all of whom could have enforced the original contract, have no right of action for damages against the subsequent carrier, but only against the initial carrier. This is now the settled construction of the federal statute law. The same result would follow if the initial contract were not an express contract, but one implied in law. But if the initial contract was invalid as a contract of carriage east of Chicago, then a second contract might be made by a connecting carrier carrying east of Chicago subjecting it to the liability, under the act, as amended, of an initial carrier. Where a tariff regulation prohibits the movement of live stock on a shipper's order contract east of Chicago, the regulation applying to all carriage of live stock on the lines of all roads east of Chicago, the first carrier east of Chicago who makes such second contract is the initial carrier within the act.—*Chesapeake & Ohio v. Nat. Bank of Commerce* (Va.), 95 S. E., 454. Decided March 21, 1918.

United States Supreme Court

Choice of Routes by Railroads

The Supreme Court of the United States has reversed three judgments of the Minnesota courts allowing the plaintiffs to recover from the Northern Pacific an amount equal to that by which the freight collected for coal carried on an interstate route from Duluth to some other city in the State exceeded the rate prescribed by the Minnesota law for carriage between those points on another route, wholly within the State.

The decision says that in the absence of shipping instructions it is ordinarily the duty of the carrier to ship by the cheaper route. But the duty is not an absolute one, existing only if other conditions are reasonably equal. Resort to the more expensive route may be justified by the particular circumstances of the case or by general practice. In these cases the justification was rested on a general practice. Because of the grades of the two lines, all outbound shipments were and are in general moved over the southerly route on account of the very great expense which another arrangement would entail. Whether the practice was reasonable was an administrative question and, therefore, the court had no jurisdiction to adjudicate the controversy until it had been determined by the Interstate Commerce Commission. Before the judgments were entered by the Supreme Court of Minnesota in these cases, that Commission had determined that under the circumstances, "the carrier was not required by law to change its methods of operation and abandon the use of its more favorable interstate line"; and had refused to grant refunds in respect of the shipment of other commodities, under precisely similar circumstances. The fact that the question involved an intrastate as well as an interstate route did not prevent the application of the rule that it must first be determined by the Commission. It is sufficient that one of the routes is interstate.—*Northern Pacific v. Solum*. Decided June 10, 1918.

Equipment and Supplies

U. S. Standard Locomotives

The Railroad Administration on Tuesday gave out a statement that Director General McAdoo had been notified by the Baldwin Locomotive Works that the first of the locomotives recently ordered had been completed and is ready for inspection.

It is understood that the recent order for 390 additional locomotives will be treated as an extension of the original order of 1,425 and that the same specialties will be used for the same classes of locomotives.

Orders for headlight cases for the United States standard locomotives have been placed as follows:

765 Shroeder Headlight & Generator Co.
500 Handlon & Buch.
500 Adams & Westlake.

Water gage cocks for the 1,025 United States standard locomotives have been ordered from the Nathan Manufacturing Company. Superheaters for the locomotives will be built by the locomotive builders on a royalty basis.

In last week's issue a typographical error gave orders for journal boxes for 32,500 of the standard cars to the Union Spring & Manufacturing Company. This should have been given as 2,500 cars only.

Locomotives

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, is in the market for a 70 to 80-ton six-wheel switching locomotive, and for 2 second-hand 80 to 90-ton standard gage Shay locomotives.

Freight Cars

THE IMPERIAL REFINING COMPANY, Ardmore, Okla., is inquiring for tank cars.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, is in the market for 6 to 12 second-hand Goodwin dump cars, all steel construction, similar to class "G" and equipped for air dump.

Signaling

THE WABASH has ordered from the Union Switch & Signal Company an interlocking plant for the crossing of its line with the Pere Marquette at Magee, Ind., and another for its crossing with the Chicago & Alton at Clark, Mo. These plants will have 20-lever and 32-lever machines, respectively, and will be installed by railroad forces.

THE LOUISVILLE & NASHVILLE has contracted with the Federal Signal Company for the installation of an electric interlocking plant at Winchester, Ky., 56 working levers. The track circuits will be alternating current and there will be complete approach and sectional route locking. The machine will have lever lights and a spot-light track model.

THE CHICAGO, MILWAUKEE & ST. PAUL recently contracted with the Union Switch & Signal Company for the necessary material to complete the automatic block signaling on the western section of the line now being electrified, a distance of 220 miles. The new signaling involves approximately 325 Style "L" light signals, 325 impedance bond layouts, 500 Model "15" track and line relays, 500 S V L vane line relays with switch indicators, transformers, lighting arresters, track impedances, relay housings, etc. The d. c. automatic (semaphore) signals now in service on a large part of the 220 miles of this new electrification will be replaced by the three position color light signals operated by alternating current. The railroad company's field forces will do the construction work.

Supply Trade News

Marvin Hughitt, Jr., until recently vice-president of the Chicago & North Western, has been made president of the Superior & Consolidated Coal Companies, with office at Chicago.

E. C. Carroll, superintendent of construction of the Chicago & North Western, in the signal department, has resigned to become sole representative of the National Carbon Company, with headquarters at Chicago, effective July 8.

At a directors' meeting of the Chicago Pneumatic Tool Company, held June 28, W. P. Pressinger, general manager of sales, with headquarters at Chicago, and W. H. Callan, manager of plants, with the same headquarters, were elected vice-presidents. Mr. Pressinger's photograph and biography were published in the *Railway Age*, on May 31.

Edward F. Carry, president of the Haskell & Barker Car Company, has resigned as director of operations of the Shipping Board, to become chairman of the Port and Harbor Commission. He will be succeeded on the Shipping Board by J. H. Rossetter, of San Francisco, vice-president and general manager of the Pacific Mail Steamship Company.

John F. Kane, assistant secretary of the Pullman Company, was elected secretary at a meeting of the board of directors of that company held on June 10, to succeed A. S. Weinsheimer, deceased. Mr. Kane is a native of Ingersoll, Ont. He received his early education in the schools of that city, following which he came to Chicago. On September 1, 1891, he entered the service of the Pullman Palace Car Company, now the Pullman Company, as a telegraph operator. In 1904, he was appointed paymaster with headquarters at Chicago, in which position he remained until 1913, at which time he was elected assistant secretary. He continued in that position until his recent election as secretary with headquarters at Chicago, as mentioned above.



J. F. Kane

Ellsworth L. Mills has resigned as president and secretary of Anti-Creeper Corporation, and Howard A. Butler has been elected as president and secretary in his place. Herbert W. Lockwood has also resigned as treasurer and James G. Shaw has been elected treasurer in his place. Ellsworth L. Mills has also resigned as treasurer of the Creepcheck Company.

The Barco Mfg. Company, Chicago, has placed on the market a type of crosshead and shoe invented by Charles D. Markel, chief construction inspector of locomotives in the inspection and test section of the United States Railroad Administration. This device, which is known as the Barco crosshead and crosshead shoe, was described in the *Railway Age Gazette*, issue of February 2, 1917, page 196. The company is prepared to furnish crossheads complete or to sell the shop rights to manufacture the device at the option of the railroads.

A. B. Cole has been appointed assistant to manager, department of publicity, Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., to succeed M. C. Turpin, who has accepted a position in the ordnance department at Washing-

ton, D. C. Mr. Cole will have charge of the editorial work, including the preparation of literature, and supplying information to the press. Mr. Cole started his career as general car-shop laborer for the Grand Rapids, Grand Haven & Muskegon Railway, Fruitport, Mich., with the idea of obtaining a first-hand working knowledge of electric railway operation. In June, 1909, he graduated from the School of Electrical Engineering, Purdue University, Lafayette, Ind., where he made a specialty of steam and electric railway studies. On July 15, 1909, he entered the engineering apprenticeship course of the Westinghouse Electric & Mfg. Company and completed this work in February 6, 1911. While on the course he was engaged, in addition to the regular shop testing, on railway project work in the general engineering division and as a railway sales correspondent at East Pittsburgh, and afterward in the Cincinnati district office. In November, 1912, Mr. Cole was transferred to the department of publicity to prepare railway publications and a year later was placed in charge of railway and large power apparatus publicity. Later he was given charge of railway, power, marine and R. D. Nuttall Company publicity, which position he held up until the time of his appointment as assistant to manager. Recently, Mr. Cole has been co-operating on publicity matters, with the American Electric Railway Association War Board at Washington, D. C., spending one-half of his time in Washington and the remainder in East Pittsburgh.

Trade Publications

BRAKE BEAMS.—The American Steel Foundries, 30 Church street, New York, has recently issued a 34-page catalogue describing the Ajax and Hercules brake beams, the Simplex clasp brake, and the Atlas safety guards.

WOOD MILLER.—In a well illustrated, four-page folder, the Oliver Machinery Company, Grand Rapids, Mich., describes its No. 75 wood milling machine. Its application to all kinds of pattern work including gear patterns is plainly shown in the folder.

SUPERHEATER DAMPERS.—The Locomotive Superheater Company, 30 Church street, New York, has recently issued Bulletin No. 3 on superheater dampers. The proper methods of installing, operating and maintaining the dampers are plainly illustrated and described.

FIBROUS PACKING.—Under the title of Jones Packings, the Jones Packing Company, 50 Church street, New York City, has issued a catalogue describing the several kinds of fibrous packing manufactured by that company. They include packing for superheater and high pressure steam engines, also water pump and valve stem packing.

PORTABLE ELEVATOR.—The New York Revolving Portable Elevator Company, Jersey City, N. J., has recently issued Bulletin No. 50, entitled *The Revolver*, describing the company's portable elevator or tiering machine which is used in storerooms and warehouses for the piling or stacking of goods. The bulletin is well illustrated and shows in considerable detail how the Revolver can be used for many different kinds of work.

VALVES AND FITTINGS.—A new catalogue of hydraulic valves and fittings has just been issued by the Hydraulic Press Manufacturing Company, Mt. Gilead, Ohio. The book is well written and illustrated, and presents in an attractive way the complete H-P-M line. Four general classes of hydraulic valves are shown; also different types of hydraulic fittings, such as accumulator controls, pressure gages, hydraulic valves, etc. Many of these devices are of improved design and are described for the first time in this catalogue.

PORTABLE FORGES.—The Buffalo Forge Company, Buffalo, N. Y., has issued a catalogue entitled *Buffalo Forges*, describing the complete line of portable machines manufactured by that company. In order to simplify the catalogue and make changes and additions easy, it has been punched, and the new sections may be attached by suitable brass fasteners. Section No. 108 has been recently issued, to be added in this way. It covers the line of stationary forges manufactured by the company.

Railway Construction

BALTIMORE & OHIO.—A contract has been given to the Empire Engineering Company, Inc., Baltimore, Md., and work is now under way putting in additional yard tracks at Claremont and Mt. Winans, Md., both in the westerly section of Baltimore. The work will be heavy and includes rearrangement of existing tracks and the extension of the bridge carrying Curtis Bay branch over the main line. The work calls for the construction of two 85-ft. steel spans.

This company has awarded a contract for the construction of a new locomotive shop at Cumberland, Md., to Westinghouse, Church, Kerr & Co., New York. The estimated expenditure is \$1,200,000.

CHICAGO & ALTON.—This company is preparing plans for a brick freight house, 520 ft. by 36 ft. to be built at Kansas City, Mo. The building will have a slate roof supported by timber trusses and for a distance of 300 ft. will have a second story, which will be occupied by the general agent and the division superintendent's forces.

The Alton is also asking for bids on the reinforcing of a bridge 5 miles north of Godfrey, Ill., on the line from Godfrey to Roodhouse. The work will involve jacketing five 40-ft. stone arches with concrete. The railroad is also preparing to rebuild its bridge over the Wood river two miles south of Alton, Ill. This work is necessitated by the widening and deepening of the channel of the river. The bridge will be lengthened and the substructure will be rebuilt. The Alton will use spans which it has in stock for the superstructure.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—This company is preparing to build second track on its Cleveland-Indianapolis division from Farmland, Ind., to Ansonia, Ohio, 26 miles, and from Bellefontaine, Ohio, to Marion, 39 miles. The Big Four will also undertake the improvements of yards in the vicinity of Cincinnati, Ohio, which will cost approximately \$500,000. At Galion, Ohio, the company expects to construct an engine terminal consisting of a 15-stall roundhouse and a 90-ft. turntable and appurtenances. Some small additions will also be made to the Beech Grove and Brightwood yards at Indianapolis, Ind.

ELECTRIC POINT MINING COMPANY.—This company has completed preliminary surveys for a railroad between Leadpoint, Wash., and Boundary, 11 miles. The construction of this line will involve the erection of two bridges totaling 120 ft. in length. The principal commodity which will be carried by the line will be ore. R. A. Young, president, Northport, Wash.

ILLINOIS CENTRAL.—This company has awarded a contract to the Walsh Construction Company, Davenport, Iowa, for grading work in its Markham yard, Chicago. The new yard will be east of the right of way and south of One Hundred and Seventy-first street, Chicago. Between 6,000,000 and 7,000,000 cu. yds. of material will have to be handled before the yard is finally completed. This year, however, only 1,500,000 cu. yds. will be handled. The Walsh Construction Company has been allowed a certain profit per cubic yard above the cost of labor and allowance for the use of its equipment. All other costs will be borne by the road. The track work will be done by the Illinois Central's own forces.

The Illinois Central has awarded contracts to T. S. Leake & Co., Chicago, for the construction of mechanical facilities at Champaign, Ill.; to the Leyden-Ortseifen Company, Chicago, for mechanical facilities at Carbondale, Ill.; to George B. Swift & Co., Chicago, for mechanical facilities at Mounds, Ill.; to Joseph E. Nelson & Sons, Chicago, for mechanical facilities at Fulton, Ky., and to W. J. Zitterell & Co., Webster City, Iowa, for mechanical facilities at Amboy, Ill. (May 17, page 1203; June 14, page 1450.)

BRITAIN BUILDS CONCRETE SHIPS.—Twelve concrete shipbuilding yards were organized in Great Britain recently, with capital stock varying from \$25,000 to \$300,000. *See Railway Fleet Notes.*

Railway Financial News

BRAZIL RAILWAY.—W. Cameron Forbes, receiver of this company, has presented the outline of a plan of reorganization of the company so far as it relates to the company's outstanding fifty-year five per cent gold debentures. Holders of the issue received notice of a meeting to be held in London, August 16, 1918, at which a composition agreement will be offered them by which their present holdings would be refunded at par into a new issue of debentures, part of a total issue of \$5,000,000, which is to be secured by trust deeds containing a specific charge on the company's assets, placing them in order of preference immediately after the charges given for securing prior lien bonds. This will place the new issue after the French series international bonds, the six per cent notes and the convertible debentures. All existing unpaid coupons on the old debentures must be surrendered with no claim to payment.

BUFFALO & SUSQUEHANNA.—The directors at their meeting on June 27 took no action on the common dividend. An official statement was issued as follows: Because the dividends on the common stock have not been at the same rate for three years, the statute requires the permission of the government to continue them at the present regular rate of 7 per cent per annum. Application for this permission has been made, showing that the corporation has ample cash on hand apart from what it may receive as rental from the government, and that its earnings have been and are sufficient to justify a 7 per cent dividend, but the application has not yet been acted upon, and pending that action, the declaration of the usual quarterly dividend is delayed.

CANADIAN NORTHERN.—William A. Read & Co. have purchased \$5,000,000 of Canadian Northern Railway equipment trust 6 per cent certificates, Series A. The certificates mature in different amounts annually from July 1, 1919, to July 1, 1928, inclusive.

See article in last week's issue, page 1562, on the Canadian Northern stock value.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—This company has declared an extra dividend of 3½ per cent on the common stock in addition to the regular common of 3 per cent and the regular preferred of 1¼ per cent.

DENVER & SALT LAKE.—A protective committee has been formed in the interest of the holders of the Denver & Salt Lake Railroad 5 per cent equipment notes dated March 1, 1913, and the 6 per cent equipment certificates dated July 1, 1915. The members of the committee are: Chairman, John H. Mason, president of the Commercial Trust Co. of Philadelphia; Pierpont V. Davis, of the National City Company of New York; Sewall S. Watts, Baker, Watts & Co. of Baltimore; Arthur Dorrance and Reynolds D. Brown, Philadelphia. The Commercial Trust Company of Philadelphia has been designated as depository, and the Empire Trust Company of New York, agent for the depository. Noteholders are requested to deposit their holdings before July 15.

ILLINOIS CENTRAL.—David R. Burbank, of New York, has been elected a director.

INTERBOROUGH RAPID TRANSIT.—Application was filed with the New York Public Service Commission on Saturday for approval of a proposed collateral trust agreement securing \$37,700,000 in three-year 7 per cent notes and for authority to issue and dispose immediately of \$33,000,000 thereunder. Several days ago the company filed an application for permission to issue about \$58,500,000 bonds to be used as collateral for the contemplated note issue. The commission set July 10 as the date for the hearing on the bond issue, and at the same time will consider the merits of the note issue proposal, as the two are linked. The money is sought to complete the new rapid transit lines.

WABASH.—The directors have declared the regular dividend of 1 per cent on the preferred "A" stock, subject to the approval of the Director General.

Railway Officers

Executive, Financial, Legal and Accounting

M. Manly, treasurer of the Norfolk Southern, with office at Norfolk, Va., has been appointed local treasurer.

F. W. Russell, assistant secretary and assistant treasurer of the Virginian Railway, with office at Norfolk, Va., has been appointed local treasurer.

Claude Waller, general counsel of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been appointed general solicitor of that road.

E. Marvin Underwood, general counsel of the Seaboard Air Line, has been appointed general solicitor. **R. L. Nutt**, treasurer and assistant secretary, has been appointed local treasurer; both with offices at Norfolk, Va.

D. W. Bigoney, treasurer of the Erie, has been appointed local treasurer; **C. P. Crawford**, controller, has been appointed general auditor, and **F. A. Clark**, general auditor, has been appointed assistant general auditor; all with headquarters at New York.

W. H. Davies, controller of the Delaware & Hudson, has been elected treasurer of the same road and the Quebec, Montreal & Southern, and the Napierville Junction, with office at New York, vice **C. A. Walker**, retired, and **W. E. Eppler**, auditor expenditures, has been appointed controller, to succeed Mr. Davies.

Edward Buckland, who has been elected president of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., as has already been announced in these columns, was born on

December 31, 1866, at Buffalo, N. Y. He graduated from Washburn College, Topeka, Kan., in 1887, and two years later graduated from Yale University. In 1898 he was appointed attorney of the New York, New Haven & Hartford for Rhode Island, and subsequently served as attorney for Rhode Island, Connecticut and New York. In January, 1907, he was chosen vice-president and later also general counsel of the same road, and subsequently also vice-president of the Central New England; the New England Navigation Company; Connecticut Company and the Rhode Island Company.



E. G. Buckland

Operating

E. L. Brown, president of the Denver & Rio Grande, has been appointed federal general manager.

W. G. Bied, president of the Chicago & Alton, has been appointed federal manager of the same road.

J. E. Taussig, vice-president of the Wabash, has been appointed federal general manager of the Wabash, west of St. Louis.

G. F. Hawks, vice-president and general manager of the El Paso & Southwestern, has been appointed federal general manager.

J. M. Herbert, interregional director at St. Louis, has resigned to resume duties as president of the St. Louis-Southwestern.

F. E. Clarity, assistant general manager of the Denver & Rio Grande, with office at Salt Lake City, Utah, has been appointed transportation assistant, with office at Chicago.

F. N. Beal, general manager of the Sandy River & Rangeley Lakes, has been appointed superintendent, with office at Phillips, Maine.

E. A. Crosby, general manager of the Bridgton & Saco River, has been appointed superintendent, with office at Bridgton, Maine.

J. P. Beckwith, vice-president of the Florida East Coast, has been appointed general manager of that road, with office at St. Augustine, Fla.

H. W. Stanley, receiver of the Tennessee Central with office at Nashville, Tenn., has been appointed general superintendent of the same road.

Lyman Delano, vice-president of the Atlantic Coast Line, has been appointed federal manager of that road and the Winston-Salem Southbound, with office at Wilmington, N. C.

W. J. Jackson, president of the Chicago & Eastern Illinois, has been appointed federal manager of that road, the Evansville & Terre Haute, and the Chicago, Terre Haute & South-eastern.

E. E. Calvin, president of the Union Pacific, the Oregon Short Line, and the St. Joseph & Grand Island, has been appointed federal manager of those roads and of the Los Angeles & Salt Lake.

C. M. Kittle, whose appointment as federal manager of the Illinois Central Lines in southern territory has already been announced, has been appointed to the same position in central western territory.

W. H. Farrell, superintendent of terminals of the Grand Trunk, with office at Toronto, Ont., has been appointed general manager of the Algoma Eastern, with headquarters at Sudbury, Ont., vice **A. L. Smith**, resigned.

W. G. Vollmer, assistant to the president of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed assistant regional director of southwestern railroads, with the same headquarters, effective July 1.

A. Robertson, vice-president of the Missouri Pacific, has been appointed federal manager of that road and the St. Louis Southwestern lines, north of Texas, and the Louisiana & Arkansas, with headquarters at St. Louis, Mo.

W. R. Scott, vice-president and general manager of the Southern Pacific, has been appointed federal manager of the Southern Pacific, lines west of El Paso and Ogden and south of Ashland, Ore., and also of the Western Pacific.

H. A. Scandrett, assistant director of traffic and commerce counsel of the Union Pacific, with office at Chicago, has been appointed traffic assistant to the regional director of the central western roads, with headquarters at Chicago.

William Sproule, president Southern Pacific, has been appointed district director, with office at San Francisco, of all lines west of Ogden and Salt Lake City, Utah; Albuquerque, New Mexico; El Paso, Texas, and south of Ashland, Oregon.

Le Roy Kramer, vice-president of the Pullman Company, whose appointment as federal manager of the St. Louis-San Francisco was noted last week, has also been appointed the federal manager of the Missouri, Kansas & Texas, lines north of Texas.

W. L. Seddon, vice-president in charge of operation of the Seaboard Air Line, has been appointed general manager, with office at Norfolk, Va. **W. L. Stanley**, assistant to president, has been appointed assistant to federal manager, with office at Atlanta, Ga.

J. E. Gorman, whose appointment as federal manager of the Rock Island in southwestern territory has already been announced, has been appointed to the same position in charge of Rock Island Lines, north of Herrington, Kan., and west of Tucumcari, N. M.

J. A. Edson, president of the Kansas City Southern, has been appointed federal manager of that road, and the Texarkana & Ft. Smith, the Houston East & West Texas, the Midland Valley and the Vicksburg, Shreveport & Pacific, with headquarters at Kansas City, Mo.

W. P. Bruce, superintendent of terminals of the Nashville, Chattanooga & St. Louis, with office at Nashville, Tenn., has been appointed federal general manager of that road, and **H. F. Smith**, president and traffic manager, is now traffic manager, with headquarters at Nashville, Tenn.

W. B. Storey, vice-president in charge of operation of the Atchison, Topeka & Santa Fe, has been appointed federal manager of the Atchison, Topeka & Santa Fe, the Panhandle & Santa Fe, the Rio Grande, El Paso & Santa Fe, the Kansas Southwestern, and the Grand Canyon Railway.

N. J. Abram, assistant superintendent of transportation, of the Chicago, Burlington & Quincy, with office at Chicago, has been appointed acting superintendent of transportation in place of **W. L. Barnes**, who is assistant manager of the car service section of the Railroad Administration at Chicago.

J. C. O'Donnell, superintendent of the Western lines of the Canadian Northern, with office at Fort Rouge, Man., has been transferred temporarily as acting general superintendent of the Western division to Edmonton, Alta., in place of **W. A. Brown**, who was injured recently in a track motor car accident.

G. F. Dickson, superintendent of the Georgia & Florida, and the Augusta Southern, with office at Douglas, Ga., has been appointed general superintendent of these lines, with office at Augusta, and the offices of superintendent, at Douglas, and superintendent car service, at Augusta, have been discontinued.

W. B. Scott, president of the Southern Pacific lines in Louisiana, has been appointed federal manager of the Southern Pacific Lines in Texas and Louisiana, excluding Houston East & West Texas, and Houston & Texas Central. The San Antonio & Aransas Pass and the Gulf Coast Lines, with headquarters at Houston, Tex.

C. W. Akers, superintendent of the Norfolk Southern, with office at Raleigh, N. C., has been appointed general superintendent—steam lines, on the same road, and **L. B. Wickersham**, general superintendent of the electric division, with office at Norfolk, has been appointed general superintendent and electrical engineer—electric lines.

M. S. Hawkins, assistant to president and secretary of the Norfolk Southern, with office at Norfolk, Va., has been appointed assistant to federal manager of the Virginian Railway and the Norfolk Southern; **J. D. Stack**, general superintendent of the Norfolk Southern, with office at Norfolk, Va., has been appointed general manager of the Virginian Railway.

F. L. Lamplough, trainmaster of the Grand Trunk, with office at Ottawa, Ont., has been appointed superintendent, Ottawa division, vice **L. G. Coleman**, resigned to take service with the United States Government. **W. E. Weegar**, passenger trainmaster at Montreal, Que., has been appointed trainmaster, with headquarters at Ottawa, vice Mr. Lamplough.

G. A. Stokes, superintendent of terminals of the Grand Trunk, with office at Port Huron, Mich., has been appointed superintendent, Toronto Terminals, vice **W. H. Farrell**, resigned to take service with another company, and **W. H. Matthews**, passenger trainmaster at Durand, Mich., has been appointed superintendent terminals at Sarnia Tunnel, Ont., vice Mr. Stokes.

E. J. Nordyke has been appointed acting trainmaster of the third district, of the Atchison, Topeka & Santa Fe Coast Lines, and of the Grand Canyon Railway, with office at Winslow, Ariz., vice **A. R. Woods**, who has been granted an indefinite leave of absence to enter military service, and **N. J. Hudson**, inspector of transportation, with office at Los Angeles, Cal., has been appointed acting trainmaster of the second district of the A., T. & S. F. Coast Line, with office at Winslow, vice **L. M. Shipley**, who has been granted an indefinite leave of absence to enter military service.

F. G. Pettibone, vice-president and general manager of the Gulf, Colorado & Santa Fe, has been appointed district director of the southwestern region, with headquarters at Dallas, Tex. Mr. Pettibone will have general charge of operations in the state of Texas, comprising the Texas lines of the several federal managers, and will report to the regional director, effective July 1.

J. L. Lancaster, receiver of the Texas & Pacific, has been appointed federal manager of that road, the St. Louis Southwestern of Texas, the International & Great Northern, except the line from Spring to Ft. Worth and the Madisonville branch; the Trinity branch of the Missouri, Kansas & Texas of Texas; the Beaumont & Great Northern, and the Louisiana Railway & Navigation Company lines west of the Mississippi river, with headquarters at Dallas, Tex.

J. H. Brinkerhoff, general superintendent of the Belt Railway of Chicago, has been appointed terminal manager of the Chicago Terminal district, effective July 1. In this position, he will have charge of all terminal operations in the terminal district, which includes the main line of the Elgin, Joliet & Eastern from Waukegan, Ill., to Porter, Ind., and all terminals between that line and Lake Michigan, including the belt and switching lines. He will report to the regional director of the northwestern region.

J. S. Pyeatt, president and general manager of the Gulf Coast Lines, has been appointed federal manager of the Gulf, Colorado & Santa Fe; the Ft. Worth & Denver; the Ft. Worth & Rio Grande; the St. Louis-San Francisco & Texas; the Missouri, Kansas & Texas Railway of Texas; the Wichita Falls & North Western; the Texas Midland; the International & Great Northern, from Spring to Ft. Worth, and Madisonville branch, and the Houston & Texas Central Railroad, with headquarters at Dallas, Tex.

R. L. O'Donnel, assistant general manager of the Pennsylvania Railroad, has been promoted to general manager, with headquarters at Philadelphia, Pa., to succeed **Elisha Lee**, who was appointed federal manager. A photograph of Mr. O'Donnel and a sketch of his career were published in the *Railway Age Gazette* of August 24, 1917, page 367. **C. S. Krick**, general superintendent of the New Jersey division, has been promoted to assistant general manager, with headquarters at Philadelphia; **Robert V. Massey**, general superintendent of the Eastern Pennsylvania division at Altoona, Pa., has been transferred as general superintendent to the New Jersey division, with headquarters at New York City; **N. W. Smith**, superintendent of the Middle division, has been promoted to general superintendent of the Eastern Pennsylvania division, with headquarters at Altoona, Pa.; **J. C. Johnson**, superintendent of telegraph, at Philadelphia, has been appointed superintendent of the Middle division, with headquarters at Harrisburg, and **J. C. Armstrong**, trainmaster on the Monongahela division, has been appointed superintendent of telegraph, with headquarters at Philadelphia.

Traffic

W. S. Yeatts has been appointed general freight agent of the Cumberland Valley Railroad, vice **Joseph Weed**, resigned to become division freight agent of the Pennsylvania Railroad.

Thornton Lewis, assistant freight traffic manager of the Chesapeake & Ohio, with office at Cincinnati, O., having resigned to become president of the White Sulphur Springs Co., Inc., the position of assistant freight traffic manager has been abolished.

W. B. Biddle, president of the St. Louis-San Francisco and of the Paris & Great Northern, with headquarters at St. Louis, Mo., has been appointed traffic assistant to the regional director of southwestern railroads, with headquarters in the same city.

R. I. Cheatham, assistant freight traffic manager of the Seaboard Air Line, has been appointed traffic manager. **B. C. Prince**, assistant to first vice-president, has been appointed assistant to traffic manager, and **G. S. Rains**, freight traffic manager, has been appointed assistant freight manager in charge of freight; all with headquarters at Norfolk, Va.

Engineering and Rolling Stock

H. A. Schnitz has been appointed inspector of tonnage rating of the Chicago, Rock Island & Pacific, effective June 15, vice **C. M. Rogers**, promoted.

C. A. Kothe, master mechanic of the Erie, with office at Port Jervis, N. Y., has been transferred as master mechanic to Brier Hill, Youngstown, Ohio.

James C. Patterson, office engineer of the Erie, has been promoted to principal assistant engineer, and the position of office engineer has been abolished.

E. A. Hadley, chief engineer of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed engineering assistant to the regional director of southwestern railroads, with the same headquarters, effective July 1.

Purchasing

L. M. Jones, assistant to general manager of the Norfolk Southern, with office at Norfolk, Va., has been appointed purchasing agent.

A. S. McKelligon, storekeeper of the Southern Pacific, at Sacramento, Cal., has been appointed general storekeeper, with headquarters at San Francisco, Cal., vice **H. G. Cook**, resigned.

Railway Officers in Government Service

Robert Collett, who was fuel supervisor and superintendent of locomotive performance of the Frisco Lines previous to 1914, and since that time assistant manager of the railroad department of the Pierce Oil Corporation, has been appointed assistant manager of the Fuel Conservation section of the United States Railroad Administration, with supervision over the Eastern region, and headquarters at New York.

Railway Officers in Military Service

F. A. Delano has resigned as a member of the Federal Reserve Board to accept a commission in the engineer corps for railroad service in France.

Obituary

J. D. McNamara, passenger traffic manager of the Wabash, whose death at St. Louis, Mo., on June 17 was announced in the *Railway Age* on June 21, was born at Keokuk, Iowa, on September 17, 1871.

He entered the service of the Chicago, Burlington & Quincy as a ticket checker at Keokuk, Iowa, in 1885. Later he was transferred to the general passenger office at St. Louis, Mo., and in 1905, he was appointed general southwestern passenger agent at Kansas City, Mo. The following year he left the Burlington to become assistant general passenger agent of the Wabash at St. Louis. Subsequently, he became general passenger agent and passenger traffic manager, which position he held at the time of his death. Mr. McNamara was recently appointed a member of the passenger traffic committee of the eastern regional district, with headquarters at New York. On June 14, he returned to St. Louis for a short visit with his family, and on the evening of the 15th he received injuries in an automobile accident which resulted in his death 5 hours later.



J. D. McNamara.

EDITORIAL

Railway Age

EDITORIAL

In attempting to control the rates of wages for track labor on the western roads the Railroad Administration is experiencing the same difficulties that confront other employees in times of acute labor shortages and it is being forced to resort to many of the same expedients which they have adopted. Early in April the western regional director established maximum rates of pay for track labor of 27½ cents per hour in the northwestern territory and in all large terminals and 25 cents per hour elsewhere. On June 13, these rates were increased to 30 cents per hour in certain specified large terminals and important industrial centers and 27½ cents outside. On July 8, the maximum rate allowed outside of the Chicago terminal district was further increased to 30 cents per hour at all points. Thus it has been necessary to raise the rates twice within the three months after their establishment and at the same time the roads have been unable to secure the forces normally employed. With the enforcement of the order after August 1 requiring all industries employing over 100 men to engage them through the United States Department of Labor, some control over the competition between these industries will be established. However, these requirements will affect the railways only to a limited extent because their competition is primarily with the small employers of labor, including the small-town contractor and the farmers. The labor problem is an exceedingly complicated one at the present time and the results of the experiments now being conducted on the western roads will be awaited with a great deal of interest.

Railroads have devised the most accurate and complete specifications for all sorts of materials which are used in locomotives, cars, tracks, bridges and other equipment. The smallest bolt must be made to fulfill certain exact requirements. Not a few railroads maintain extensive testing laboratories in charge of thoroughly trained experts. The human factor—that factor that will yield little or much according to its handling and training—has unfortunately received much less scientific study and attention. Officers have often been selected more for their technical ability or experience than because they were experts in supervising and directing the work of men. It is very necessary that critical and detailed attention be given to materials, but it is far more necessary that such attention be given to the human factor, and it is fast becoming generally recognized that the emphasis must be placed on this. Technical ability on the part of an officer is important, but executive ability and personality are vital. Far-seeing executives have realized this for a long time, but not a few railroad officers seem to be waking to it only under the abnormal conditions which exist in the present emergency. Unfortunately, also, some of those high in authority in the Railroad Administration have failed to grasp the importance of these principles in dealing with the officials with whom they have come in contact. Equipment and organization are necessary for the success of an army, but the events of the past few years have clearly indicated that the morale of the army stands first in importance. The same thing is true of

The Difficulty of Maximum Wage Rates

One Phase of the Labor Problem

our great railroad organization, and no stone should be left unturned to strengthen and develop this morale to the highest possible degree.

In a campaign which one of the large railways is conducting to increase car loading, attention was called recently to a shipment of perishable products which would require 160 cars under the then-existing methods of loading but which could be carried in 100 cars if loaded to capacity. This was called to the notice of the shipper who replied that it would cost him \$5 per car additional to load in this manner. The railroad officer offered to pay this added expense if it actually proved to be necessary. After the shipment was loaded as recommended the consignor asked for his \$500. The railway man indicated his willingness to pay the amount but stated that the shipper should in all fairness deduct from the additional cost all savings which he himself had made through using a smaller number of cars. The railroad man then pointed out that the cost of icing 60 cars at \$8 each, or \$480, had been eliminated. He likewise estimated the savings in demurrage, in labor because the shipper had only 100 instead of 160 cars to move from his door, etc.; and the shipper finally was forced to admit that he actually saved money through loading the cars heavier. This experience is worthy of emphasis among shippers in general. Often they load cars heavier only because of their desire to do the patriotic thing under present conditions while harboring the thought that they are making a sacrifice in so doing, when as a matter of fact they are themselves profiting by the expedient. When a shipper can be brought to realize that it is to his own selfish interest to load cars heavier, he will be given the strongest possible incentive to do so. In approaching shippers on this subject railway men can well afford to bear this point in mind and to consider the conditions under which their patrons operate sufficiently to be able to present these savings intelligently to them.

Heavier Loading Economical for Shippers

Concentrated attention to the repair of locomotives and the agreement with the unions to work more than eight hours a day has made it possible greatly to improve the condition of the power. It is said, for instance, that the average condition of the locomotives at the present time is better than it has been at any time during the past 18 months. This is remarkable when one considers the conditions under which the power was operated during this period and particularly throughout last winter. Gratifying as the situation appears, it does not mean that the locomotives are in anywhere nearly as good condition as they should be successfully to handle the heavy traffic of the coming fall and winter. A few of the roads, and included among them are some of the larger systems, are in bad shape as to their power at this time, but the Railroad Administration is making every effort to see that the weak spots are strengthened. Mechanical department officers in the past have sometimes complained that they

Condition of Power and Equipment

were hampered in their efforts to keep the locomotives and equipment in good condition because of the financial policies of their roads. No such excuse can be used under present conditions; it is strictly up to the head of the mechanical department to see that everything possible is done to place and maintain the equipment in the best possible condition. Unfortunately, the freight cars are not nearly in so good shape as the locomotives, and strenuous efforts will have to be made to overcome this handicap. Frank McManamy, the new mechanical assistant to the director of the Division of Operation of the Railroad Administration, has sent an order to the regional directors, which is noted elsewhere in this issue, authorizing the making of repairs to foreign equipment which under the M.C.B. rules would be classed as wrong repairs, and ordering each railroad to take the same care of foreign cars as it would of its own. This will help greatly, but on many roads it will be necessary to strengthen the organization of the car repair department and improve the supervision.

Local Interference with National Projects

IN sustaining the New York Central in its attack on the law passed by the State of New York last year, limiting the right of this road to bridge the Hudson river a few miles below Albany, N. Y., the New York State Supreme Court has added another chapter to the conflict between the state and the national governments. The main line of the New York Central passes through the city of Albany and crosses the Hudson river a short distance below the station on a low level swing bridge. The river traffic at this point is heavy, the draw bridge being opened more than 40 times a day. Furthermore, Albany lies at the foot of a grade against west-bound traffic of 90 ft. to the mile. As all traffic moving down the east side of the river into New York City (including almost all passenger and a large number of freight trains) and both freight and passenger traffic between Boston and Albany points and the west, must pass over this line, relief from these adverse operating conditions has become necessary.

The road planned to avoid them by the construction of the Castleton cutoff which would divert all freight traffic around Albany. It was planned to cross the river on a high structure (without a draw span) with spans of 600 ft. and 405 ft. across the main channel. Approval of this structure was granted on May 2, 1917, by the secretary of war who has jurisdiction over navigable streams and is responsible for the prevention of all obstructions to navigation. Shortly after this the New York state legislature in response to a demand from citizens of Albany, passed a law requiring a channel span of 1,000 ft. This extreme requirement added over \$3,000,000 to the cost of the bridge and the road contested its legality.

Pending the decisions referred to above, work on this project has been at a standstill. Thus, at a time when increased traffic facilities are greatly needed for the welfare of the entire nation, Albany and the state legislature of New York have allowed selfish local interests to stand in the way of the elimination of one of the most serious points of congestion on a main artery of national commerce. The decision of the Supreme Court states that, "It will be seen that both Congress and New York state have passed laws on the subject of proposed bridges. This being the situation, which is the controlling authority? It seems to me that there is but one answer and this answer should not be given by yielding to public sentiment or to the desires of influential public bodies who have spoken on the subject, but must be responsive to the controlling power of the supreme law of the land." While it is understood that the state will appeal from this decision, it is to be hoped that it may be sustained and that

it may exert a restricting influence on other local interference with national projects in the future.

Store-Door Delivery of Freight

STORE-DOOR delivery of freight in New York City, an improvement for which there is great need, seems now to be in sight. This proposed innovation, described in the *Railway Age* of February 1, 1918, pages 241 and 276, and on another page of this issue, bristles with such numerous difficulties that it has engaged the attention of all the principal parties in interest for many months, yet without any visible progress being accomplished. Commissioner Harlan has decided, evidently, that the situation is one in which, in the language of Grover Cleveland, "it is a condition and not a theory which confronts us"; and he is determined to make a trial. More accurately, the theories do confront us, but mainly as obstacles.

The committee's scheme, as outlined, makes no mention of a pool of trucks, nor do the railroads propose to do any trucking, but the main elements of the needed reform are accorded due prominence. These are (1) to have incoming freight loaded on to wagons as soon as practicable, no time being lost in sending notices to consignees, and, (2) to limit or entirely suspend the right of any truckman to enter a railroad pier or freight station unless he joins in the adoption of the comprehensive scheme for economy in loading and in travel which is a main feature of the proposed change, and which promises such valuable benefits to every merchant as to demand the hearty co-operation of all. In theory the railroad ought to allow each merchant a day or two in which to take away his freight; it is a time-honored right. But the granting of this right is now wasting thousands of dollars every day. In theory each consignee has a right to come with his own big wagon to get a single box; but in the extreme congestion prevailing in New York (and which prevailed long before the war) the only way to effect reasonable economy of space and effort is to limit or deny this right. In theory the railroads ought not to meddle with street traffic or to spend a cent on drayage; but, in fact, the conditions are so chaotic that there seems to be no promise of relief except as they (with the co-operation of the government) step in and boldly reorganize the draying business on radical lines. They already have the friendly co-operation of influential truckmen; and with a sufficient increase of this friendliness—of which there is every prospect—the movement ought to succeed speedily. The important desideratum is good will; for on all questions of methods, economy, etc., the extensive private trucking enterprises of Chicago, St. Louis, Kansas City, and numerous smaller places afford all needful lessons.

Slight Increase in Freight Handled

THE DIFFICULTY of increasing the amount of freight handled by the railways of the country is indicated by statistics which recently have been compiled by the Bureau of Railway Economics. We have now had six months of government operation. The statistics of the bureau referred to cover freight operations during the first three of these months, January to March, inclusive. They show that during these three months the total ton-miles of freight traffic handled were 83,355,000,000, as compared with 85,615,000,000 during the same months of last year a decline of 2.6 per cent.

This decline in the amount of traffic moved unquestionably was due chiefly to the severe weather in January. In that month the ton-miles handled were 17.2 per cent less than in the same months of 1917. While January was a very bad month in point of weather, February was a better month

than February, 1917, and there was an increase in February, 1918, over February, 1917, of 2.9 per cent in ton-miles. A still better showing was made in March, when the ton mileage increased $7\frac{1}{2}$ per cent.

The most interesting and significant statistics, of course, are those for the eastern district, where the congestion has been the most severe. It was the congestion on the eastern roads which really precipitated the adoption of government control. The statistics show that during the first three months of this year the eastern lines handled 9.4 per cent less freight traffic than during the same months of 1917. They handled 25 per cent less in January than in January of last year; 5 per cent less in February than in February of last year, and only 2.2 per cent more in March than in March of last year. On the other hand, the railways in the Southern district handled slightly more, and the railways in the western district substantially more freight in the first three months of this year than last year. This was especially the case in March. In that month while the eastern lines handled only 2.2 per cent more freight than in the same months of last year, the southern lines handled $10\frac{1}{2}$ per cent more and the western lines 15.4 per cent more. Undoubtedly the apparently better showing made by the southern and the western than the eastern lines is mainly due to the fact that the southern and western lines have not been operating so nearly to their maximum capacity as the eastern lines.

The statistics for March afford, perhaps, the best available test of the efficiency with which the railways are being operated under government control. They make clear that the greatest gain which has been secured has been in the tons per loaded car which increased from 26.4 to 28.1 or 6.4 per cent. Average miles per locomotive per day increased only from 66.6 to 66.8, while average miles per car per day decreased from 25.6 to 24.9.

The most interesting comparisons of the results gained under private operation and under the present system have yet to be made. January to March, 1917, were the last three months before the United States entered the war, and therefore the last three months before the direction of the operation of all the railways was delegated to the Railroads' War Board. Beginning with the statistics for April it will be possible, if the statistics are made on the same basis, to compare the results gained under the Railroads' War Board with those gained under the direction of the organization created by Director General McAdoo.

"Good-Bye" from E. P. Ripley

E. P. RIPLEY, having decided to remain president of the E. Atchison, Topeka & Santa Fe Company, which involves his retirement as the manager of the company's property, has written his "Good-bye" to the employees of the road. We publish his message on another page. A message such as this from Mr. Ripley means more than a similar message from most of the presidents who have decided to stay with their companies. Most of them are men young enough to anticipate that, on the return of the roads to private control, they will be placed again in direct charge of their management. Mr. Ripley, on the other hand, has been for some time considering relinquishing the active management of the Santa Fe property; and therefore, now that he is laying it down, he is not likely ever to resume it. That he will continue to be connected with the company, and to dominate in its counsels, as long as he cares to, goes almost without saying.

Mr. Ripley's "Good-bye" will cause a pang to many persons in the railroad world outside the Santa Fe family, and to many persons entirely outside the railroad world. But nobody need regret it, on his account, at least. It is true he is advanced in years, but, after having had, a few years ago, a period of precarious health, he is again strong and well. With a devoted family, a circle of friends as wide as his acquaintanceship, and as capable as he ever was of enjoying

books indoors and golf and motoring outdoors, and just enough real work to keep him busy when he really wants to work, he is so equipped and situated as to get a lot of pleasure out of life; and certainly nobody can conceive of him getting any pleasure out of managing a railway under government control!

As to his reputation, that is secure, if the reputation of any living American is. He has managed the Santa Fe over twenty-two years; he has raised it from a poor bankrupt into one of the greatest railroads in the world; and in the last year he managed it, its physical property was in the finest condition, its service was the best, its property reached the highest point, and its popularity was the greatest that it ever was. The Santa Fe has been made what it is by a management whose integrity, whose efficiency and whose loyalty to its public duty now pass unquestioned; and that the kind of management it has had is due chiefly to Mr. Ripley is universally recognized.

In view of all the facts, the *Railway Age* declines to feel or express any regret on Mr. Ripley's account because he is saying "Good-bye." On the contrary, since he, like all men, must, at some time, give up active work, we think he is to be congratulated above almost any other man we have ever known, on the conditions under which he is doing so. As to the officers and employees of the Santa Fe, and the public that the road serves, the case is different. Even so great a country as the United States does not in each generation produce many men of the size of E. P. Ripley; and the retirement of such a man is a great loss, not only to those who have been closely associated with him, but to the nation. If government control had not been adopted, the Santa Fe road and the country probably would have had his services but for a few years longer; and it is a somewhat startling, but undoubtedly true, reflection, that under permanent government management of railroads there never would be another E. P. Ripley on the railroads of the United States. Fortunately, the prospect of government ownership, with its complete extinguishment in the management of the railroads of such qualities as have enabled Mr. Ripley to do the things he has done, is every day becoming more remote.

New Books

Powdered Coal as a Fuel. By C. F. Herington. Bound in cloth, 6 in. by 9 in. 211 pages, 84 illustrations. Price \$3.00.

This book will be of special interest to those railroad officers who are studying the application of pulverized fuel to locomotive boilers, stationary plants, or furnaces. The author was for a while employed as assistant engineer for the New York Central, and a large part of the information was obtained while working in that capacity. The introductory chapter is followed by a discussion of those coals which are suitable for powdering, a description of the apparatus for powdering the coal, and a discussion of the methods for feeding and burning it. Then follow chapters on the use of powdered coal in the cement industry, in reverberatory furnaces, in metallurgical furnaces, and its use under stationary boilers. In the latter chapter attention is given to the installations on the Missouri, Kansas & Texas at Parsons, Kansas, the Schenectady works of the American Locomotive Company and its use by the General Electric Company. A chapter on the use of powdered coal for locomotives covers 17 pages and is largely devoted to a consideration of the advantages of powdered fuel for this purpose, and illustrations of applications to locomotives of the New York Central and the Central Railway of Brazil. The installations on locomotives of the Chicago & North Western and the Delaware & Hudson are also referred to. The last chapter discusses the possibility of explosions and is followed by a bibliography on the entire subject of pulverized fuel, prepared by the Engineering Society's library.

Doings of the United States Railroad Administration

Action on Freight Classification, Valuation, Mileage Tickets and Innumerable Other Things

A TOTAL of 560 railroad companies, a large number of them terminal, union station and switching companies or other subsidiaries, all or a majority of whose stock is owned by the larger companies, have now been definitely listed as being under federal control. The Railroad Administration has not yet issued a list of the short line railroads relinquished from federal control in accordance with its announcement of June 29, but it has made public a list of those included in its jurisdiction without question by issuing on July 3 Supplement No. 3 to General Order No. 27, the wage order, giving a list of 395 railroads to be added to the list of 165 larger railroads to which the wage order was made applicable. The 165 railroads include most of those in Class I, those whose total operating expenses are \$1,000,000 or over.

The supplemental list is made up largely of terminal, station and switching companies subsidiary to the other roads, but it also includes a large number of the so-called short line railroads which are independent. Therefore the list of relinquished roads includes a majority of the 765 short lines and of the 1,434 plant facility lines, as well as a large number in both of these classes which are merely paper railroads, never having been built, but included in published lists.

The following list includes both the 165 roads named in the original order and the 395 named in the supplement:

A.
Abilene & Southern.
Alhambra & Western.
Akron & Barboursburg.
Akron Union Passenger Depot Co.
Alabama & Vicksburg.
Alabama Great Southern.
Albany Railroad Bridge Company.
Allegheny Terminal Co.
Allentown Terminal.
Alton & Southern.
Ann Arbor.
Arizona & New Mexico.
Arizona Eastern.
Arkansas Central.
Arkansas & Memphis Railway.
Bridge & Terminal Co.
Arkansas Western.
Arminius Branch.
Asheville & Craggy Mountain.
Asheville & Southern.
Ashland Coal & Iron.
Atchison & Eastern Bridge Company.
Atchison, Topeka & Santa Fe.
Atchison Union Depot & Railroad Co.
Atlanta & West Point.
Atlanta, Birmingham & Atlantic.
Atlantic & St. Lawrence.
Atlantic & Yadkin.
Atlantic City.
Atlantic Coast Line.
B.
Baltimore & Ohio.
Baltimore & Ohio Chicago Terminal.
Baltimore & Sparrows Point.
Bangor & Arrowsick.
Baring Cross Bridge Company.
Bayer & Chelso.
Bath & Hammondsport.
Battle Creek & Sturgis.
Bay City Belt Line.
Bay City Terminal Company.
Beaumont & Great Northern.
Beaumont, Sour Lake & Western.
Bellingham & Terminal Co.
Bellingham & Northern.
Belt Railway of Chicago.
Bessemer & Lake Erie.
Bethel Granite.

Big Fork & International Falls.
Blue Ridge.
Boonville, St. Louis & Southern.
Boston & Maine.
Boston Terminal Company.
Bowling Green Railroad.
Brandon, Devil's Lake & Southern.
Brooklyn Eastern District Terminal.
Brookwood North & South.
Buffalo Creek.
Buffalo, Rochester & Pittsburgh.
Buffalo & Susquehanna R. R. Corporation.
Buffalo Union Terminal.
Butte, Anaconda & Pacific.

C.
Cairo & Thebes.
Calumet Western.
Camas Prairie.
Canada Southern Bridge Company.
Canada Southern.
Carolina, Clinchfield & Ohio.
Carolina & Northwestern.
Carolina & Tennessee Southern.
Centralia Eastern.
Central of Georgia.
Central Indiana.
Central New England.
Central of New Jersey.
Central Terminal.
Central Vermont.
Central Union Depot of Cincinnati.
Charleston & Western Carolina.
Cherry Tree & Dixonville.
Chesapeake & Ohio.
Chesapeake & Ohio Northern.
Chesapeake & Ohio of Indiana.
Chicago & Alton.
Chicago & Eastern Illinois.
Chicago & Erie.
Chicago, Burlington & Quincy.
Chicago, Detroit & Canada Grand Trunk Junction.
Chicago Great Western.
Chicago Heights Terminal Transfer.
Chicago, Indianapolis & Louisville.
Chicago Junction.
Chicago, Kalamazoo & Saginaw (Controlled by M. C. & N. Y. C.).
Chicago, Kalamazoo & Saginaw (Operated by Grand Trunk R. R.).

Chicago & Kalamazoo Terminal.
Chicago, Milwaukee & Gary.
Chicago, Milwaukee & St. Paul.
Chicago & North Western.
Chicago, Peoria & St. Louis.
Chicago River & Indiana.
Chicago, Rock Island & Gulf.
Chicago, Rock Island & Pacific.
Chicago, St. Paul, Minneapolis & Omaha.
Chicago, Terre Haute & Southeastern.
Chicago Union Station Co.
Chicago & Western Indiana.
Cincinnati, Burnside & Cumberland River.
Cincinnati & Dayton.
The Cincinnati Inter-Terminal.
Cincinnati, Indianapolis & Western.
Cincinnati, Lebanon & Northern.
Cincinnati, New Orleans & Texas Pacific.
Cincinnati Northern.
Cincinnati, Saginaw & Mackinaw.
Cleveland, Cincinnati, Chicago & St. Louis.
Coal & Coke.
Coal River.
Coeur D'Alene & Pend Oreille.
Colorado Springs & Cripple Creek District.
Colorado & Southern.
Columbus, Findlay & Northern.
Connecticut River.
Connecting Terminal.
Copper Range.
The Covington & Cincinnati Elevated R. R. & Transfer & Bridge Co.
Cumberland & Pennsylvania.
Cumberland.
Cumberland Valley.

D.
Dallas Terminal Railway & Union Depot Co.
Danville & Western.
Davenport, Rock Island & Northwestern.
Dayton & Union.
Dayton Union.
Deep Creek.
Delaware & Hudson Co.
Delaware, Lackawanna & Western.
Delta Southern.
Denison & Pacific Suburban.
Denver & Rio Grande.
Denver Union Terminal.
Des Moines Union.
Des Moines Western.
Detroit, Bay City & Western.
Detroit, Grand Haven & Milwaukee.
Detroit & Huron.
Detroit Manufacturers'.
Detroit & Mackinac.
Detroit River Tunnel Co.
Detroit Terminal Ry. & Transportation Co.
Detroit Terminal.
Detroit, Toledo & Ironton.
Detroit, Toledo & Milwaukee.
Detroit & Toledo Shore Line.
Direct Navigation Co.
Dover & Rockaway.
Duluth & Iron Range.
Duluth, Missabe & Northern.
Duluth, South Shore & Atlantic.
Duluth & Superior Bridge.
Duluth Terminal.
Duluth Union Depot & Transfer Company.
Dunkirk & Duquesne Bridge Co.

E.
Easton & Western.
E. St. Louis Belt.
E. St. Louis & Carondelet.
E. St. Louis Connecting.
E. St. Louis National Stock Yards Co.—E. St. Louis.

E. St. Louis & Suburban.
Edgewater Connecting.
Edgewater Terminal.
Elgin, Joliet & Eastern.
Elk Horn & Beaver Valley.
El Paso & Southwestern.
Englewood Connecting.
Ensley Southern.
Erie.
Erie Terminals.
Escanaba & Lake Superior.
Evansville & Indianapolis.
F.
Farmer's Grain & Shipping Co.'s Railroad.
Fargo, East Coast.
Fort Dodge, Des Moines & Southern.
Fort Smith & Western.
Fort Smith Suburban.
Fort Smith & Van Buren.
Fort Street Union Depot Co.
Fort Worth & Denver City.
Fort Worth & Rio Grande.
Fort Worth Belt.
Fort Worth Union Passenger Station Co.

G.
Gallatin Valley.
Galveston, Harrisburg & San Antonio.
Galveston, Houston & Henderson.
Gaulay & Meadow River.
Georgia R. R. Lessee Organization.
Georgia Southern & Florida.
Gilmore & Pittsburg.
Grand Canyon.
Grand Rapids & Indiana.
Grand Rapids Terminal.
Grand Trunk Junction.
Grand Trunk Milwaukee Car Ferry.
Grand Trunk Western.
Granite City & Madison Belt Line.
Gray's Point Terminal.
Great Falls & Teton County.
Great Northern.
Great Northern Terminal Company.
Green Bay & Western.
Greenwich & Johnsonville.
Gulf & Ship Island.
Gulf, Colorado & Santa Fe.
Gulf, Mobile & Northern.

H.
Hamilton Belt.
Hannibal Union Depot Co.
Harriman & Northeastern.
Hartwell.
Hawkinsville & Florida Southern.
Helena Terminal.
Hibernia Mine.
High Pt. Randeaman, Asheboro & Southern.
Hocking Valley.
Houston & Brazos Valley.
Houston & Shreveport.
Houston & Texas Central.
Houston Belt & Terminal.
Houston, Texas & Western Texas.
Hudson & Manhattan.
Huntingdon & Broad Top Mountain.

I.
Iberia & Vermillion.
Illinois Central.
Illinois Terminal.
Illinois Transfer.
Indiana Harbor Belt.
Indianapolis & Frankfort.
Indianapolis Union.
International & Great Northern.
Interstate.
Interstate Car Transfer Co.
Iowa & St. Louis.
Iowa Transfer.
Island Creek.

J.

Jay Street Terminal.
Joliet & Northern Indiana.
Joplin Union Depot.

K.

Kanawha & Michigan.
Kanawha & W. Virginia.
Kanawha Bridge & Terminal Co.
Kankakee & Seneca.
Kansas City, Clinton & Springfield.
Kansas City Connecting.
Kansas City Southern.
Kansas City, Shreveport & Gulf Terminal Ry.
Kansas City Stock Yards Co.
Kansas City Terminal.
Kansas Southwestern.
Keeney Creek.
Kentucky & Indiana Terminal.
Keokuk & Des Moines.
Keokuk & Hamilton Bridge Co.
Keokuk Union Depot Company.
Kewanee, Green Bay & Western.
Kiowa, Hartner & Pacific.

L.

Lackawanna & Montrose.
Lake Charles & Northern.
Lake Erie & Eastern.
Lake Erie & Pittsburgh.
Lake Erie & Western.
Lake Superior & Ishpeming.
Lake Superior Terminal.
Lake Superior Terminal & Transfer.
Lansing Manufacturers'.
Lansing Transit Company.
Lawrenceville Branch.
Leavenworth Depot & R. R.
Leavenworth Terminal Ry. & Bridge Co.

Lehigh & Hudson River.
Lehigh & New England.
Lehigh & Susquehanna.
Lehigh Valley.
Lewiston & Auburn.
Lima Belt.
Litchfield & Madison.
Little Kanawha.
Little Rock Junction.
Logan & Southern.
Long Island.
Lorain, Ashland & Southern.
Lorain & W. Virginia.
Los Angeles & Salt Lake.
Louisiana & Arkansas.
Louisiana Ry. & Navigation Co.
Louisiana Southern.
Louisiana Western.
Louisville & Jeffersonville Bridge Co.
Louisville Bridge Co.
Louisville & Nashville.
Louisville, Henderson & St. Louis.

M.

Mackinac Transportation Co.
Macon, Dublin & Savannah.
Maine Central.
Manistique & Lake Superior.
Marquette & Bessemer Dock & Navigation Co.
Maumee Connecting.
Maywood & Sugar Creek.
Memphis Union Station Co.
Michigan Air Line.
Michigan Central.
Midland Valley.
Milwaukee Terminal.
Minneapolis & Eastern.
Minneapolis & St. Louis.
Minneapolis Belt Line.
Minneapolis, St. Paul & S. Ste. Marie.
Minneapolis Western.
Minnesota & International.
Minnesota Northwestern Elec.
Minnesota Transfer.
Mississippi Central.
Missouri & Illinois Bridge & Belt.
Missouri, Kansas & Texas.
Missouri, Kansas & Texas of Texas.
Missouri Pacific.
Missouri Pacific Corp. in Illinois.
Missouri Pacific Corp. in Nebraska.
Missouri Valley & Blair Ry. & Bridge Co.
Mobile & Ohio.
Monongahela.
Montana Eastern.

Montpelier & Wells River.
Morenci Southern.
Morgan's, Louisiana & Texas R. R. & Steamship Co.
Morris Terminal.
Muncie Belt Railway.

N.

Narragansett Pier.
Nashville, Chattanooga & St. Louis.
Natchez & Louisiana Railway Transfer Co.
Natchez & Southern.
New Iberia & Northern.
New Jersey & New York.
New Orleans & Northeastern.
New Orleans Great Northern.
New Orleans, Texas & Mexico.
New River, Holston & Western.
New York Central.
New York Connecting.
New York Dock Co.
New York & Long Branch.
New York, Chicago & St. Louis.
New York, New Haven & Hartford.
New York, Ontario & Western.
New York, Philadelphia & Norfolk.
New York, Susquehanna & Western.
New Westminster Southern.
Norfolk & Portsmouth Belt Line.
Norfolk & Western.
Norfolk Southern.
Norfolk Terminal.
Northern Alabama.
Northern Maine Seaport.
Northern Ohio.
Northern Pacific.
Northern Pacific Terminal Co. of Oregon.
Norway Branch.
Northwestern Pacific.
Northwestern Terminal.

O.

Ogden Mine.
Ogden Union Railway & Depot Co.
Oklahoma Belt.
Oklahoma City Junction.
Ontonagon.
Orange Branch (Southern Ry.)
Orange & Northwestern.
Oregon Electric.
Oregon Short Line.
Oregon Trunk.
Oregon-Washington R. R. & Navigation Company.

P.

Pacific Coast.
Panhandle & Santa Fe.
Paris & Great Northern.
Pennsylvania Co.
Pennsylvania R. R.
Pennsylvania Terminal.
Peoria & Bureau Valley.
Peoria & Pekin Union.
Peoria Railway Terminal Co.
Pere Marquette.
Philadelphia & Reading.
Philadelphia Belt Line.
Philadelphia, Baltimore & Washington.
Pierre & Port Pierre Bridge.
Pierre, Rapid City & Northwestern.
Pine Bluff & Arkansas River.
Piney River & Paint Creek.
Piqua & Troy Branch.
Pittsburgh & Lake Erie.
Pittsburgh & Shawmut.
Pittsburgh & West Virginia.
Pittsburgh, Chartiers & Youghiogheny.
Pittsburgh, Cincinnati, Chicago & St. Louis.
Pittsburgh, Ohio Valley & Cincinnati.
Pond Fork.
Pontiac, Oxford & Northern.
Port Huron Southern.
Portland Terminal Company.
Port Reading.
Port Townsend-Puget Sound.
Poteau Valley.
Pueblo Union Depot & R. R. Co.
Puget Sound & Willapa Harbor.

Q.

Qanah, Acme & Pacific.
Quincy, Omaha & Kansas City.

R.

Railway Transfer Co.
Richmond, Fredericksburg & Potomac.
Rio Grande, El Paso & Santa Fe.
Rio Grande Junction.
Rio Grande Southern.
Rio Grande Southwestern.
Riverside, Rialto & Pacific.
Rock Island, Arkansas & Louisiana.
Rock Island & Dardanelle.
Rock Island-Frisco Terminal.
Rock Island Memphis Terminal.
Rock Island, Stuttgart & Southern.
Roslyn Connecting.
Roswell.
Rutland.

S.

San Antonio & Aransas Pass.
Seaboard Air Line.
Southern Pacific Co.
Southern.
Southern Ry. in Mississippi.
Spokane International.
Spokane, Portland & Seattle.
Staten Island Rapid Transit.
St. Charles Air Line.
St. Clair & Western.
St. Johnsbury & Lake Champlain.
St. Joseph & Grand Island.
St. Joseph Belt.
St. Joseph & Central Branch.
St. Joseph, South Bend & Southern.
St. Joseph Terminal.
St. Joseph Union Depot Co.
St. Louis & O'Fallon.
St. Louis Belleville Electric.
St. Louis Belt & Terminal.
St. Louis Bridge Co.
St. Louis, Brownsville & Mexico.
St. Louis Merchants Bridge Terminal.

St. Louis-San Francisco.
St. Louis, San Francisco & Texas.
St. Louis Southwestern.
St. Louis Southwestern of Texas.
St. Louis National Stock Yards Co.
St. Louis Terminal.
St. Louis Transfer.
St. Louis, Troy & Eastern.
Sainte Marie Union Depot Co.
St. Paul Bridge & Terminal.
St. Paul & Kansas City Short Line.
St. Paul Union Depot Co.
Salt Lake City Union Depot & R. R. Co.
San Antonio Belt & Terminal.
San Antonio, Uvalde & Gulf.
Sandy Valley & Elkhorn & Iowa Fork.
Sandy Valley & Elkhorn.
Sapulpa & Oil Field.
Sault Ste. Marie Bridge Company.
Seattle, Port Angeles & Western.
Sharpville.
Shreveport Bridge & Terminal Co.
Sierra & Knoxville.
Sioux City Bridge Company.
Sioux City Terminal.
South Chicago & Southern.
South Dayton.
Southern Illinois & Missouri Bridge Co.
Southern Pacific Electric.
State University.
Stock Yards Terminal Ry. Co. of St. Paul.
Sullivan County.
Sulphur Mines.
Sunday Creek.
Sunset.
Sweet City Bridge Company.
Sweet City Terminal.
Sylvania Central.

Tacoma Eastern.
Tallulah Falls.

Tennessee Central.
Tennessee & Carolina Southern.
Terminal Railroad Association of St. Louis.
Terminal Railroad of East St. Louis.
Texarkana & Fort Smith.
Texas & New Orleans.
Texas & Pacific.
Texas Mexican.
Texas Midland.
Tidewater Southern.
Toledo & Ohio Central.
Toledo, Peoria & Western.
Toledo, St. Louis & Western.
Toledo, Saginaw & Muskegon.
Toledo Terminal.
Trans-Mississippi Terminal.
Troy Union Railroad.
Tug River & Kentucky.
Tunnel Railroad of St. Louis.
Tylerdale Connecting.

U.

Ulster & Delaware.
Union Depot Co. of Columbus.
Union Depot Company of St. Louis.
Union Freight.
Union Pacific.
Union Railway.
Union Railway & Transfer (of Illinois).
Union Railroad of Baltimore.
Union Railroad (Pennsylvania).
Union Stock Yards (Omaha).
Union Terminal Co. (St. Paul).

V.

Van Buren Bridge Co.
Vermont Valley.
Vicksburg, Shreveport & Pacific.
Virginia Air Line.
Virginia-Carolina.
Virginian.

W.

Wabash.
Washington Southern.
Washington Terminal.
Waterloo Cedar Rapids & Northern.
Waupaca-Green Bay.
Washington, Mineral Wells & Northwestern.
Wellston & Jackson Belt.
West Jersey & Seashore.
Western Maryland.
Western Pacific.
Western of Alabama.
West Side Belt.
West Tulsa Belt.
Wheeling & Lake Erie.
Wheeling Terminal.
White & Black River Valley.
White Oak.
Wichita Falls & Northwestern.
Wichita Union Terminal.
Wichita Valley.
Wiggins Ferry Company.
Wilkes-Barre & Scranton.
Williamson & Pond Creek.
Winona Bridge.
Winston-Salem, South Bound.
Wyoming & Northwestern.

Yazoo & Mississippi Valley.
York Harbor & Beach.
Zanesville & Western.
Zanesville Terminal.

The Congressional Resolution

President Wilson has applied the pocket veto by failing to sign within ten days the joint resolution hurriedly passed by Congress on June 29 extending the period within which a railroad may be released from federal control, but with a provision designed to prevent the release of a short line unless connecting and competing lines are released at the same

time. The resolution was practically rendered nugatory by the action of the Railroad Administration in releasing a large number of short lines just before it was passed. A number of senators called on the President on July 3 and urged him not to veto the resolution.

Railroad Compensation Contract

The latest draft of the proposed standard contract for use in ordinary cases between the railroads and the Railroad Administration governing the compensation to be paid to the railroad companies under federal control was to be submitted to a meeting of railway executives in New York this week by the law committee which has been representing the roads in the negotiations with the law department of the administration. In advance of its consideration by the executives and its approval by the director general, it is difficult to say as yet how near the negotiations have approached toward a settlement, but the latest drafts that have been made indicate marked progress over earlier copies that have been under consideration.

One of the important points of difference has been the extent to which the government may retain control of the disposition of the amounts paid to the companies as compensation. In the draft of the proposed contract as it stood a few days ago, it was provided that from any of the quarterly installments there may be deducted any amount due by the company on account of expenses arising out of railway operations prior to January 1, 1918, on account of transactions which do not enter into those used in determining the company's standard return, the amount of excess expenditures during federal control for maintenance, as compared with the test period before federal control, or for taxes due from and not paid by the company; also all amounts required to reimburse the United States for the cost of additions and betterments made to the property of the company not justly chargeable to the United States, unless such matters are financed or otherwise taken care of by the company to the satisfaction of the director general. It was provided, however, that the power to deduct additions and betterments shall not be so exercised as to prevent the company from paying out the sums required to support its corporate organization, to keep up sinking funds for the company's debts required by contracts in force December 31, 1917, and for interest on loans issued under federal control and approved by the director general. Provision was also made that such deductions should not be made for additions and betterments which are for war purposes and not for the normal development of the company, or for road extensions. In the event of a difference as to the fact whether additions and betterments are for war purposes or as to whether an addition is a road extension, it was provided that the question may be referred to and determined by the Interstate Commerce Commission.

In an effort to give the company some assurance as to the continuity of its dividends, a paragraph was inserted as follows: "The power provided in this paragraph to deduct the amount due to the company for the cost of additions and betterments not justly chargeable to the United States is further declared to be an emergency power, to be used by the director general only when he finds that no other reasonable means is provided by the company to reimburse the United States, and, as contemplated by the President's proclamation and by the federal control act, it will be the policy of the director general to so use such power of deduction as not to interrupt the regular payment of dividends as heretofore made by the company." It is understood, however, that this has since been further modified for the purpose of merely expressing the policy of the government without tying its hands in the event of an emergency.

The question of interest upon the cost of additions and betterments less retirements in connection therewith and upon the cost of road extensions made to the property of the com-

pany during federal control was covered by a provision that the director general shall pay the company a reasonable rate of interest to be fixed by him, and that in fixing such rate he shall take into account not merely the value of money, but all pertinent facts and circumstances, whether the money used was derived from loans or otherwise. As to balances due the companies, an interest rate of 5 per cent was provided. All expenditures made by the director general under federal control for additions, betterments or extensions begun prior to January 1, 1918, are to be charged to the company, according to the draft under consideration, and if the completion of the work is approved or ordered by the director general the company is to be entitled to interest on the cost from the completion of the work, except for work done prior to January 1. Payments for equipment ordered or under consideration by the company prior to January 1, but delivered on or after that date, are to be considered as expenditures made by order or approval of the director general.

All salaries and expenditures incurred by the company during federal control for purposes which relate to the existence and maintenance of the corporation or to properties not taken over, or to negotiations, contracts, valuations, or any business controversy with the government or any branch thereof, not specially authorized by the director general, are to be borne by the company, except that the expense of valuation to the extent considered necessary by the director general to the co-operation of the company in the making of such valuation, is to be charged to operating expenses.

The director general is given the option to be substituted in the place of the company in respect to the benefits and obligations of any contract in relation to operation, providing that a source of supply which the company had acquired to safeguard its own operations shall not be depleted or reduced for use on other transportation systems, except in cases of emergency to be determined by the director general, in which event an accounting shall be made to the company at the fair value.

The director general is to pay or save the company harmless from expenses incident to or growing out of the possession, operation and use of the property, which are enumerated in detail.

Regarding the upkeep of properties, it is provided that the director general shall annually as nearly as practicable, expend and charge to railway operating expenses such sums for the maintenance, repair, renewal, retirement and depreciation of the property as may be requisite in order that it may be returned to the company in substantially as good repair and complete equipment as it was on January 1, and an average annual expenditure equal to that during the test period shall be taken as a full compliance with the foregoing, after making allowance for differences in cost of labor and materials and the amount of property involved.

One section of the proposed contract which has involved considerable difference of opinion between the railroads and the administration is stated as follows: "The company further and expressly accepts the covenants and obligations of the director general in this agreement set out and the rights arising thereunder in full adjustment, settlement, satisfaction and discharge of any and all claims and rights, at law or in equity, which it now has or hereafter can have, otherwise than under this agreement, against the United States, the President, the director general, or any agent or agency of either, for compensation under the constitution and laws of the United States, for the taking of its property, or for the possession, use, control and operation thereof, during federal control, and for any and all loss and damage to its business by reason of the diversion thereof or otherwise which has been or may be caused by said taking or by said possession, control and operation."

The draft also contained a provision that "nothing in this agreement shall be construed as expressing or prejudicing

the future policy of the federal government concerning the ownership, control or regulation of the company, or the method or basis of the capitalization thereof."

Director General McAdoo Studying Western Railroad Conditions

Far western and transcontinental railroad operations are to come in for a greater degree of the attention of the Railroad Administration than they have been receiving, with a view to the more intensive application of the new principles introduced by federal control, as a result of Director General McAdoo's western trip. While the trip was undertaken primarily for the purpose of affording the Director General an opportunity for recuperation after his arduous labors in connection with the reorganization of the railroads and the Liberty Loan campaign, and particularly to enable him to recover from his throat trouble, Mr. McAdoo is extending it into a general inspection trip for the purpose of obtaining a first hand view of western railroad conditions. In the course of his travels he has developed many ideas for possible changes in the routing and handling of traffic to, from and in the Pacific coast and intermountain territory, the terminal situation and other matters, which are to be discussed at a conference called for San Francisco on July 15 with the central western and northwestern regional directors, Hale Holden and R. H. Aishton, the federal managers of the lines in those regions, C. R. Gray, director of the division of operation, and Edward Chambers, director of the division of traffic. These two regions include all the western and transcontinental lines with the exception of those from St. Louis into the southwest. Mr. Gray left Washington several days ago to join Mr. McAdoo and Mr. Chambers left on Tuesday of this week.

Because of the concentration of war traffic in the eastern territory and the acute situation there during the early part of the year, the railroads in that part of the country have been receiving a large share of the attention of the administration and have become more accustomed to the ideas of unified non-competitive railroading than have the western railroads. Also the new federal organization has been in existence for a longer time on the eastern roads, while Mr. McAdoo has had little opportunity to get into touch with the new organization of the western roads since their division into three regions.

Mr. McAdoo left Washington nearly a month ago and while the trip has enabled him to keep away from detail and has eliminated the necessity of devoting time to callers, he has been "on the job" as far as keeping in touch with important matters is concerned and aside from a short period spent in Yosemite Valley a large part of the time has naturally been spent on the trains. The number of telegrams of suggestions and observations which he has sent into the Washington office also indicates that much of the travelling has been on the rear platform and that the director general has kept his eyes open. Many of his telegrams have, therefore, been made the basis of more detailed study and investigations on the part of the staff of the Railroad Administration and the various subjects will be brought up at the conference. Mr. McAdoo planned to cover more railroads during the present week before the conference and also after it and he is expected to return to Washington by about July 25.

Consolidated Classification No. 1

The new consolidated freight classification No. 1, on which the Interstate Commerce Commission is to begin hearings throughout the country on August 1, is a book of 597 pages. A description of the classification changes which it includes is given in a statement filed with the commission by the classification committee as follows:

The commission is advised that while the 10 years' specific

effort on the part of the carriers to effect a uniformity of classification rules, regulations, descriptions of articles and carload minimum weights resulted in substantial steps in the direction of uniformity, it had not brought a completion of the work at the time the United States Railroad Administration came into control of the operation of the railroads. In fact, only a few months prior thereto a comparison of conditions inaugurated at the commission's request showed that there were in operation more than one thousand instances in which the three territorial freight classifications were non-uniform in the particulars named.

While many of these differences were being rapidly reconciled, there still remained a great volume of non-uniform matter, much of which was of considerable consequence, when the commission inquired into the question of consolidation, and the administration concluded to direct the immediate preparation of this consolidated publication.

The important changes shown in that publication are summarized as follows:

1. Carload minimum weights are increased to the higher figures as maintained in one or two of the territories except where, in the opinion of the committee appointed to prepare a consolidated classification, such weights have been on an unreasonably high basis and are reduced, it being believed that neither existing transportation conditions nor those which may reasonably be expected during many future years warrant continuance of minimum weights resulting from competition or other influences.

2. Where minimum weights are reduced to fit actual loading conditions on light and bulky articles, ratings have been correspondingly increased.

3. Ratings are revised where minimum weights for articles in less-than-carload quantities are waived, as, for instance, on certain large agricultural implements and vehicles.

4. Increases are made in certain instances in less-than-carload ratings where less carload and carload ratings are substituted on commodities heretofore handled upon the any-quantity basis.

5. Revisions of ratings are made where a careful comparison of the ratings in the three territories show that articles have been incorrectly or illogically rated.

6. The bringing into effect of changes that have been under investigation, based upon changed commercial conditions with which the classification committees failed to keep pace.

7. The removal of cause of complaint, by increasing one group and reducing another group of related articles or containers, thereby minimizing or removing discrimination.

8. The revision of descriptions to render the terms definite and conclusive, thereby removing opportunity for undue advantage or misrepresentation.

9. The recognition of a proper relationship of containers.

10. The similar application of a given principle to different commodities under similar circumstances and conditions.

In the endeavor to work out changes without unreasonable disturbance of commercial conditions the territorial classification committees had previously docketed many of these changes, and it should be borne in mind that prior to the appointment of the special committee many of the changes were the subject of public discussion in the respective classification committees without publication being reached; notably, agricultural implements, cereal foods, grain and grain products, furniture, glass, iron or steel articles, petroleum, stoves and vehicles are among the many important items thus affected.

Many of these changes, due to the necessary reconciliation of differing conditions in the several territories, represent adjustments that have been worked out in whole or in part to the general satisfaction of interested shippers; in other cases it has been found impossible for the terri-

territorial committees to satisfy shippers with a uniform adjustment; in still other cases the adjustments believed to be proper must be brought forward at some time in the future when further opportunity has been afforded for an examination of conditions and the submission in classification dockets of changes that may be necessary.

Perhaps the question of greatest consequence that must necessarily be brought to an issue in this Consolidated Freight Classification is that of specific carload mixtures vs. mixtures by rule; further important changes are necessarily involved in the revision of other rules. A change of far-reaching consequence is the complete substitution, as between the East and West, of the application of less-than-carload and carload rates where in one territory there has been an any-quantity rating on an article moving in carload quantities that in the other territory was given a carload rating; such important articles of commerce as butter, eggs, cheese, drugs, chemicals, hardware and alcoholic liquors are involved in this change.

The following shows the number of increases and reductions in ratings and minimums: Number of increases in ratings, 3,857; number of reductions in ratings, 1,840; number of carload ratings eliminated, 141; number of increases in minimum weights, 1,135; number of reductions in minimum weights, 363; number of carload minimum weights to which Rule 34 is added, subjecting them to sliding scale of minimum weights, 220; number of additions, 3,234; total number of changes, 10,790.

There is probably no source of railroad revenue wherein the effort to obtain reductions of charges has to be watched so carefully as in the matter of classification. This for the reason that classification conditions and terminology are designed to be expressive of commercial conditions and terms and the constant change in commerce with the interrelation and competition of commodities makes it necessary to constantly guard against the losses that result from indifferent descriptions or would necessarily result where a lowering of the average rate is effected by lowering the ratings. The effort of the classification committees to guard against this erosion by shoring up the structure here and there may create an impression of design to accomplish increases in revenue by increasing classification ratings, but in fact it is the effort to maintain the principle of correct relationship which is the essence of classification making.

It is the firm belief of the classification committee representatives that these changes in ratings and minimum carload weights represent just and reasonable revisions of such items in the three classifications, and the effect, aside from the increases, which necessarily must result from such a general revision, will be to concede reductions in certain cases and remove undue advantage which shippers and commodities have been obtaining in other instances. It is in this belief in the essential justice of the changes proposed that this revision is respectfully submitted.

In presenting a petition for permission to file this classification under these extraordinary circumstances it is not possible to present the justification for the changes in detail, but if it shall be the pleasure of the commission to place the classification upon the docket for public hearing we are confident that full justification for the changes will be made.

To the end that the public may be fully advised of the changes, 10,919 copies of the proposed classification have been mailed direct to the home office of all shippers, state railroad commissions and shippers' organizations who are upon the mailing lists of the several territorial classification committees, and in addition to this number, copies have been sent to every carrier participating in the three classifications, embracing practically every carrier in the United States. It is believed that with this wide and comprehensive

distribution to those interested in freight classifications in Canada and every state and territory in the United States, there will have been given a much broader publicity than is possible in ordinary procedure before the Commission; and to a corresponding degree we believe the way will have been prepared for any early docketing, hearing and determination of this petition.

Rule No. 10

With respect to proposed changes in rules, there is probably most interest in Rule 10. Apparently it is the only rule in the Consolidated Classification that can be identified by number. It reads as follows in the proposed Consolidated Classification:

Section 1. Except as otherwise provided, when a number of different articles, for which carload ratings or rates are provided, are shipped at one time by one consignor to one consignee and destination, in a carload (see Rule 14), they will be charged at the carload rate applicable to the highest classed or rated article, and the carload minimum weight will be the highest provided for any of the articles in the carload.

Section 2. When the aggregate charge upon the entire shipment is made lower by considering the articles as if they were divided into two or more separate carloads, the shipment will be charged accordingly; charges on each separate carload will be based upon the carload rate applicable to the highest classed or rated article therein and the highest carload minimum weight provided for any of the articles therein.

Section 3. When the aggregate charge upon the entire shipment is less on basis of carload rate and minimum carload weight (actual or authorized estimated weight to be charged for if in excess of the minimum weight) for one or more of the articles and on basis of actual or authorized estimated weight at less-than-carload rate or rates for the other article or articles, the shipment will be charged for accordingly.

Note. Rule 10 will not apply when articles for which ratings or rates are not provided, nor upon shipments of live stock.

Rule 34 will not apply to mixed carload shipments when any article in the carload would be subject to Rule 34 if shipped in straight carloads.

Packages containing articles of more than one class will be rated in accordance with the terms of Rule 12, Section 1.

Valuation Expenses

"Whatever expenses may be necessarily incurred by carriers" in making the valuation which is now being made by the Interstate Commerce Commission may be charged to operating expenses under federal control, according to P. S. & A. Circular No. 10 issued by C. A. Prouty, director of the Division of Public Service and Accounting on June 29. The director general will not pay, however, the circular stated, expenses incurred to test the accuracy of this valuation or to test the same before the commission or the courts. This means that a considerable part of the expenses which have been incurred by the railroads in connection with the valuation will have to be borne by the corporation out of the amounts which they receive as compensation from the government. The circular states that this valuation is of great importance to the corporation and it is entirely proper that the corporation should assure itself of its correctness, but that it is also manifest that the corporation and not the director general must determine the manner and extent of all this and that it should decide the amount of the outlay necessary to test such correctness and pay it.

In the application of this rule the following classes of expenditure will be borne by the director general as an operating cost.

1. Whatever is necessary to comply with the valuation orders of the Interstate Commerce Commission.
2. Whatever is necessary to prepare and furnish the in-

formation required by the Bureau of Valuation. This includes requirements by its employees who are conducting the valuation in the several districts.

3. Whatever may be necessary to co-operate in the field by the furnishing of men to point out the property of the company, to assist in the taking of the inventory, etc.

4. For computers when, and only when, they work with the computers of the Bureau of Valuation or under its direction or on preparation of data required by the Bureau of Valuation.

5. For land appraisers provided they proceed in the same general manner as the appraisers of the commission in the collection of facts and opinions bearing upon the value of the lands to be appraised, and provided further that they will after such information is accumulated exhibit the same to the employees of the Bureau of Valuation in an effort to agree upon reasonable values. Expenses for expert opinions will not in any case be paid for.

6. When the field work of the Bureau of Valuation in any branch has been completed no further outlay by the carrier for account of the director general in respect of that branch will be paid for and charged to federal operation without special authority obtained from this office.

The above rules will apply as of July 1, 1918, and thereafter, leaving open for further consideration and instruction the six months then already elapsed.

Pullman Company Operating Department Taken Over

The Railroad Administration on July 3 cleared up the uncertainty which has existed as to the status of the Pullman Company under federal control by issuing Supplement No. 2 to General Order No. 27, the order increasing wages of railway employees, providing that the terms and conditions of the order will apply to the Pullman Company operating department, except that on account of the peculiar character of the employment of conductors, porters and maids, in that provision is made for rest and sleep while actually on duty, it is impracticable to apply a basic eight-hour day to such service. It is therefore ordered that with respect to conductors, porters and maids, the increases shall be upon the basis shown in Section A of Article Two relative to "monthly wages"; but Article Three relative to the basic eight hour day will not be applicable thereto.

It is estimated that the increase in wages to the operating department employees of the company will amount to about \$2,750,000 a year. The commission has required the company to make a report of the affairs of the operating department, which are, therefore, required to be kept separate from those of the manufacturing department.

Universal Mileage Scrip

The Railroad Administration has announced that there will be placed on sale on or about August 1 a universal mileage scrip book at the basic rate of three cents a mile, each coupon of which will represent the value of three cents and can be used for the payment of sleeping and dining car charges and transportation of excess baggage, as well as transportation charges, on all trains on railroads under government control. The scrip books will be good for bearer and will contain coupons for 1,000 miles. They will, therefore, be sold for \$30, no reduction being made in accordance with the former practice as to mileage books, but they are expected to serve the convenience of many people who have to make short trips on short notice, by relieving them of the necessity of purchasing tickets in advance. They are, therefore, expected to relieve the pressure on ticket agencies at busy centers. It will be necessary to have the war tax collected by conductors at the time of the presentation of the mileage scrip because the rate of war tax is different on passage tickets and Pullman tickets. For the longer trips it is not expected that the mileage books will be used on trains

because the mileage must be collected by each separate conductor and the books will carry a notation explaining that tickets in many cases may be purchased for a slightly lower cost than the mileage rates because short line fares will be met by longer lines to some extent.

Adjustment of Labor Differences

In Circular No. 39 the director general orders that to preserve uniformity of application of decisions affecting labor matters, no agreement should be reached between officers and employees of any railroad to adjust their differences in any other manner than that prescribed in Orders 13 and 29, and by other orders hereafter issued.

Order No. 13 created Railroad Board of Adjustment No. 1 to which all disputes between railway employees, members of the train service brotherhoods, and the railroads, that cannot be satisfactorily adjusted, are to be referred for investigation and disposition. Order No. 29 creating Railroad Board of Adjustment No. 2 carries with it a like assignment of duties as to mechanical department employees. Where controversies are not amicably adjusted and where they do not fall within the provisions of General Orders 13 and 29, they are to be referred to the director, Division of Labor.

The circular was issued because attention had been called to an arbitration held by agreement between the employees and officers of a certain railroad to adjust matters in controversy in a manner different than that prescribed.

Women to Be Trained for Ticket Sellers

Because of the need for skilled ticket sellers and the difficulty of obtaining enough trained men, the Railroad Administration has opened schools in several sections of the country for training women as well as men to fill these positions. The present force of trained men ticket sellers will be retained whenever possible because of the expert character of their work, but it has been found necessary to supplement their activities with women. This is due partially to the increase of traffic and partially to the loss of men to the Army and Navy.

Advertisements have been inserted in the newspapers announcing the opening of an agency for the instruction of men and women who wish to engage in the transportation service and stating that special instruction will be given in the ticket agency branch, including handling the public, sale of tickets, routes, fares, and accounting. The course will consume about two months and from two to three classes will be held daily, morning, afternoon and evening. A salary of \$50 a month will be paid to those who are accepted in the agency and who attend any two classes and \$25 a month will be paid to those who attend any one class. For those who successfully complete the course, positions will be arranged and when thoroughly trained, women ticket sellers will be paid the same salaries as men doing the same work. It was stated that already enough applications had been received to fill the schools for the present. After a preliminary training of from one to two months the women who show aptitude will be given the work of actually selling the simpler forms of tickets and gradually will be worked into the sale of more complicated forms.

Already some women have been employed in the various consolidated ticket offices, particularly where annexes have been established for the handling of government orders and reduced fare tickets for soldiers and sailors. A new practice was established last week in a number of the consolidated ticket offices, which will give an opportunity for the introduction of women into the work of ticket selling before they become accustomed to the more complicated forms of tickets. Special windows and clerks were established for the sale of the simple tickets used between large cities, which constitute the bulk of the sales at many points. At the Washington

office these tickets are for trips to New York, Philadelphia, Wilmington and Baltimore, and where a clerk handles only one form of ticket for which the rate is well known, the crowds of ticket purchasers can be handled very rapidly and with only the delay incident to making change. Passengers who desire to purchase tickets which require more work are, therefore, not allowed to delay those who want a simple ticket in a hurry.

Committee on Standards for Locomotives and Cars

A permanent committee on standards for locomotives and cars has been created by the Railroad Administration, with Frank McManamy, assistant director, mechanical department of the division of operation, as chairman, to succeed the car and locomotive standardization committee, which has had charge of the development of the designs for the standard cars and locomotives recently ordered by the Railroad Administration. The new committee, which includes several members of the old committee, will have the function of following up the standardization plans for the purpose of recommending any changes which may be found necessary in the standards already adopted as to the cars, locomotives or the specialties used thereon, or of developing additional standards. Forms have been prepared on which a record will be kept of the performance of the standard cars and locomotives for the purpose of recording any failures or any defects which may be developed in operation so that the records may be available when any additional orders for equipment are to be placed. The members of the committee, in addition to Mr. McManamy, are as follows: H. T. Bentley, Chicago & North Western; H. Bartlett, Boston & Maine; J. T. Carroll, Baltimore & Ohio; C. E. Fuller, Union Pacific; F. F. Gaines, Central of Georgia; A. W. Gibbs, Pennsylvania Railroad, eastern lines; H. L. Ingersoll, New York Central; J. E. O'Brien, Missouri Pacific; John Purcell, Atchison, Topeka & Santa Fe; F. P. Pfahler, mechanical engineer, locomotive section, Railroad Administration; J. W. Small, Seaboard Air Line; J. J. Tatum, Railroad Administration; and W. H. Wilson, Northern Pacific. E. A. Woodworth, who was assistant to Mr. Bentley as mechanical assistant in the division of operation, has been appointed secretary of the committee, which will hold a meeting at Washington on July 16, and thereafter monthly on the third Tuesday of each month.

Supervisors of Equipment

A number of the district inspectors of the Interstate Commerce Commission's Bureau of Locomotive Inspection, have been transferred to the Locomotive Section of the Railroad Administration under the direction of Frank McManamy, whose title has recently been changed from manager, Locomotive Section, to assistant director, mechanical department, of the Division of Operation, and have been appointed supervisors of equipment. These supervisors of equipment have been distributed throughout the country and travel from road to road on orders from the Washington office, checking up the work of railroad shops engaged on the repair of locomotives and cars to see whether the shops are adequately equipped for their work, whether the work is being properly performed and whether the proper output is being obtained. A considerable portion of their time has been taken up recently in efforts to prevent strikes among the shop employees.

The list of supervisors of equipment who have been engaged in this work since some time in March is as follows: John G. Adair, Joe Beene, Harvey Boltwood, George N. DeGuire, George E. Dougherty, John M. Hall, John P. Kane, William Martin, John McManamy, Charles J. Scudder, John Wintersteen, and R. H. Collins, assistant supervisor of equipment.

Rules for Delivery of Locomotives

The following rules for the purpose of expediting the delivery of new locomotives from the builders and also of facilitating the movement of locomotives to and from foreign line shops for repairs will be issued by Regional Director A. H. Smith, at the instance of Frank McManamy, mechanical assistant to the director of the division of operation:

Builders will be required to put the locomotive in condition for service before leaving the plant, and new road locomotives, except oil burners moving over lines which are not equipped to provide fuel, will be delivered under steam and be used in hauling a train when practicable. They will be accompanied by a messenger furnished by the builders, whose duties will be to see that bearings run cool and that the machinery is properly cared for until the locomotive is delivered.

Road locomotives repaired at foreign line shops will be returned to the home line under steam, hauling a train when practicable.

Road locomotives sent to foreign line shops for repairs will be sent under steam when their condition will permit, hauling a train when practicable.

Each road will give to such locomotives the same care and attention they give their own power and will be held responsible for their condition whether delivered to connections or home line.

The use of such locomotives when moving under steam will be accepted as full payment for transportation charges.

Such locomotives will be given preferred movement and will not be held at terminals except for rest for crews, and necessary repairs. Switching locomotives and other light locomotives not suitable for service on delivering line, and oil burners passing over lines which are not equipped to provide fuel, may be handled dead in train in the usual way.

Car Repairs

At the instance of Frank McManamy, mechanical assistant to the director, division of operation, Regional Directors are issuing the following instructions to all railroads under federal control:

Each railroad is responsible for the condition of all cars on its lines, and must give to all equal care as to inspection and repairs. When material standard to the car is not readily obtainable, suitable material of equal strength that is not standard to the car may be used, and the use of such non-standard material will not constitute wrong repairs. When using such material, changes that will prevent standard material from being used in future repairs should be avoided as far as practicable. Railroads are responsible for damage done by unfair usage, derailment or accident to any car they handle, and must make proper repairs at their own expense.

Purchasing Committee Appoints Fuel Distributor

B. P. Philippe, assistant to the purchasing agent of the Pennsylvania Railroad in charge of the purchase of fuel and building materials, has been appointed fuel distributor of the Central Advisory Purchasing Committee, with office in Washington, having been detailed until further orders to handle matters pertaining to coal distribution and contracts for the Railroad Administration. In this office Mr. Philippe is the point of contact between the Railroad Administration and the Fuel Administration and to him are referred all matters pertaining to the relations of the railroads with the Fuel Administration regarding railroad fuel supply. While railroads in ordinary instances under the supervision of the regional purchasing committees make their own contracts for coal with the producers, where they are unable to do so requisitions are made through the Fuel Administration, which has appointed W. A. Marsh, formerly general sales manager of the Pittsburgh Coal Company, as manager of railroad fuel

distribution. If a railroad desires assistance in producing its coal supply, application is made in the first instance to the regional purchasing committee of the region in which the road is located, which refers the matter to the Central Advisory Purchasing Committee, and the fuel distributor of the committee deals direct with the Fuel Administration through its fuel distributor. Mr. Phillippe also acts as the representative of the Central Advisory Purchasing Committee on the building materials section of the priorities committee of the War Industries Board.

Simplified Bases for Apportioning Interline Passenger Revenues

General Order No. 32 issued on June 29, provides that, effective with the settlement of interline passenger accounts for the month of June, 1918, and thereafter, during the period of federal control, the following rules and regulations shall govern the apportionment of revenues from the sale of tickets, collection of excess baggage revenues, and other analogous revenues, derived from interline passenger service, by one road under federal control to other roads under such control:

(1) Interline passenger revenue shall be apportioned to interested carriers under federal control by the initial carrier on bases of mileage applying via route over which the service is performed.

(2) Each selling carrier shall determine monthly:

- (a) The total passengers carried one mile separately for each carrier over whose line tickets are sold.
- (b) The total revenue applicable to the total passengers carried one mile, as determined by *a*.
- (c) The average revenue per passenger per mile by dividing the total revenue (*b*) by the total passengers carried one mile (*a*); such average to be extended to four points beyond the decimal.
- (d) The revenue accruing to each carrier by multiplying the passengers carried one mile for each carrier (*a*) by the average revenue per passenger per mile (*c*).

(3) The revenues derived from the various classes of traffic, such as mileage and scrip exchange passage tickets, excess train fare tickets or coupons, etc., which are based upon rates other than three cents a mile, shall be eliminated from the regular sales and apportioned separately on the passengers-carried-one-mile basis. This should also be done in the case of special excursion, military or other traffic interchanged between two or more carriers where, if included, it would serve to distort the average revenue per passenger per mile that would obtain for other carriers interested in the distribution of the entire sales.

(4) Excess baggage revenue shall be divided on the same general basis.

(5) A carrier which, on and after June 10, 1918, may have a standard rate of fare in excess of three cents a mile, shall be allowed, in the apportionment of revenue on interline tickets, a constructive mileage; such constructive mileage shall be based on the ratio that the excess rate bears to the standard rate of three cents a mile. Carriers should not claim constructive mileage when fares to be divided are not made a combination of the local fares based on the higher rate per mile. Revenue derived from such traffic should be apportioned as provided in paragraph 3.

(6) The selling carrier shall be held responsible for the correctness of rates and the collection of the proper revenues derived therefrom.

(7) The initial or reporting carrier shall be held responsible for the prompt and proper reporting and distribution of interline revenues collected by it in the manner

herein prescribed. Claims should be made for unreported tickets. Claims for substantial errors in apportionment, due to the use of erroneous mileage or erroneous average revenue per passenger per mile, shall, if correct, be accepted and adjusted in reports for the subsequent month. Claims for arithmetical errors, such as errors in calculation, addition, etc., which affect a single carrier's proportion to the extent of \$5 in any one item, shall likewise be made, and if correct, adjusted; no adjustments shall be made for such errors under \$5.

(8) Land grant revenues and revenues affected by land grant equalizations, shall, until otherwise ordered, be reported and apportioned separately on bases heretofore applicable.

(9) Arbitraries on account of water transfers, bridge tolls, omnibus and baggage transfers and other similar arbitraries heretofore considered in the division of interline fares, shall be allowed to the carrier to which such arbitraries accrue. Proportions accruing to carriers not under federal control, including boat and stage lines, etc., shall also be determined and allowed on regular bases heretofore in effect, and reported direct to such lines; such arbitraries and proportions shall be deducted from the gross revenue and the remainder shall be used in establishing the average revenue per passenger per mile for apportionment of revenues to carriers under federal control.

(10) Interline passenger revenues shall be reported to interested carriers in such manner and on such forms as may be prescribed by the Director of Public Service and Accounting, in instructions to be issued by him, which instructions shall be complied with. For the present, the standard Association form of blanks may be used.

(11) The methods herein prescribed for apportioning interline passenger revenues should be extended to carriers not under federal control as far as practicable; therefore should carriers not under such control desire to avail themselves of the simplified bases for apportioning interline passenger revenues, as herein prescribed, in conjunction with carriers under such control, arrangements may be made between such interested carriers for the extension of such methods.

Interpretation of Accounting Order

The Division of Public Service and Accounting has issued the following interpretation of General Order No. 31, in reply to questions as to whether per diem reports, charges, credits, and collections, which accrued prior to July 1, 1918, should be discontinued:

The order contemplates that per diem reports, charges, credits, collections, reclaims, and all claims in reference to per diem other than those due to arithmetical errors, up to and including June 30, 1918, shall be continued as heretofore and that the provisions of the order relate only to accruals on and after July 1, 1918.

Accounts Not to Be Scrambled

Although in several instances railroad systems have been divided or combined for purposes of operation, in connection with the appointment of federal managers, the accounting of the roads is not to be similarly scrambled or unscrambled, according to Circular No. 11 issued by the Division of Public Service and Accounting, which states that the division and combination of railroads will produce no effect upon the accounting organization or personnel of those railroads, which shall remain and act exactly as in the past until instructions are issued. This will preserve to a considerable extent the continuity of the accounts of the individual railroads as they have been handled in the past.

Appointments in the Division of Operation

The Division of Operation in Circular No. 11 makes formal announcement of the following appointments: W.

T. Tyler, senior assistant director; J. H. Keefe, assistant director, office; Frank McManamy, assistant director, mechanical department; and F. C. Wright, assistant director, marine department.

Track Scale Tests

The division of operation has issued the following circular regarding track scale tests:

The duly authorized representatives of the Bureau of Standards, Department of Commerce, with the scale-testing equipment, test weights and testing apparatus of the Bureau of Standards, shall have access to master track scales, track and other scales, and to test cars, owned by the railroads, for the purpose of testing scales, and calibrating test cars in order that the Bureau of Standards may obtain all necessary data and information upon which to reach a proper conclusion as to suitable specifications and tolerances for the various classes of scales and weighing devices when under test and when in practical operation, and as to suitable methods of testing scales and calibrating scale test cars and master track scales.

All movements of the scale-testing equipments, test weights and testing apparatus of the Bureau of Standards, with authorized attendants, made for the purpose of performing tests or calibrations in accordance with the terms of this order, shall be made free of charge by the railroads upon the request of representatives of the bureau on presentation of authorized credentials.

Reports of these tests and calibrations with recommendations shall be made by the Bureau of Standards to the interested railroads and regional directors, currently as the tests are made.

L. C. L. Embargoes

The car service section in a bulletin states that attention has been called to frequent embargoes covering l. c. l. shipments, which apply against certain transfer stations and that embargoes of this kind are confusing as foreign line representatives are not ordinarily in position to know the loading or transfer schedules of the road laying the embargo, and, as a consequence, cannot intelligently apply them.

The bulletin states that l. c. l. embargoes should be specific. They should cover certain defined territories or particular gateways. Roads are directed to have their l. c. l. embargoes now in effect carefully checked and to see that proper amendments are made; also to arrange to have future embargoes of this character handled in accordance with these instructions as far as practicable.

Cars for Company Material

The car service section has issued a circular directing that the practice of railroads delivering each other empty cars for return loading of company material, other than fuel, be discontinued. Until further notice, each railroad must take care of company material for all railroads in the same manner as it takes care of its own and arrange the same preference in car supply. In cases where the car supply is not sufficient to move material currently, roads will furnish Car Service Section full particulars.

Shop Men's Wages Up to Director General

The Board of Railroad Wages and Working Conditions, which has been conducting hearings and a general investigation into complaints made by the organizations of shop employees against the inadequacy of the increase in wages awarded them in the director general's general wage order No. 27, has forwarded its report and recommendations with respect to the wages and working conditions for mechanical shop crafts to the director general at San Francisco for his consideration and determination.

Shippers Given Representation on Traffic Committees

Shippers are to be given representation on the regional and district freight traffic committees of the Railroad Administration that are to hear and make recommendations on complaints arising from the general rate advance order which went into effect on June 25 and requests for readjustments to preserve former relationships. Where the committee consists of five members two will be shippers, and where it consists of three one will be a shipper, the others being railroad traffic officials. This plan has been worked out by the divisions of traffic and of public service and accounting in conference with representatives of the National Industrial Traffic League, who were called to Washington to assist in making the selection. In addition George H. Atkins, manager of the Shreveport, La., Chamber of Commerce, has been appointed a traffic assistant in the division of public service and accounting, to which the complaints and protests in connection with the rate order have been referred. These communications, numbering between 2,000 and 3,000, are being distributed among the regional and district committees for consideration in accordance with the director general's promise to restore any important relationships which may be for the time being disturbed. The state railroad commissioners had asked for a somewhat similar representation, but it was decided that such a plan would be inconsistent with their proper functions.

Accounting for Back Payments of Wage Increase

The Division of Public Service and Accounting has issued a circular directing that the amounts due employees for back pay in accordance with General Order No. 27, or supplements thereto, for the five months ended May 31, shall be accounted for in the following manner:

The entire amount shall, unless previously taken into the accounts, be included in the accounts for the month of June, distributed as follows:

First—There shall be determined the amount chargeable to additions and betterments, and the amount distributed to the appropriate accounts.

Second—There shall be determined the amounts collectible from individuals and companies (except for use of joint facilities by roads under federal control) and deficiency bills shall be rendered therefor.

Third—The amount representing operating expenses shall be divided among appropriate operating expense sub-primary accounts in detail by the use of one of the two following methods:

(a) By distributing the increases shown by the supplemental payrolls for each month on the basis of the distribution of the original roll for the same month, including in each primary account the amount of the payroll increase properly applicable thereto.

(b) By aggregating the operating expense payroll charges for the five months ended May 31, 1918, separately by general accounts, and apportioning the wage increases applicable to each general expense account among the appropriate primary accounts for that period on the basis of the distribution determined by the five months' payroll compilation.

If deficiency bills for increased pay rendered to individuals and companies cannot be collected, the amount thereof shall be charged to an account styled, "Back pay bills due from individuals and companies uncollectible," and the balance therein shall be charged to the income from federal operations.

In the event that it is not practicable to determine the actual figures for inclusion in the accounts for the month of June, 1918, an estimate of the amount chargeable to the various operating expense accounts shall be made and included in the accounts and in the statement of operating expenses for that month. Subsequently, when the actual amounts are de-

terminated, adjustment shall be made to the correct figures in the accounts of the month in which the actual figures are determined.

Class I carriers, in rendering the monthly income account statement for June, 1918, shall attach thereto a statement showing the amount of back pay for the months of January to May, 1918, inclusive, included in each of the general operating accounts enumerated on the monthly income account statement.

Express and Mail Section

F. S. Holbrook, vice-president of Wells, Fargo & Co., has been appointed manager of the Express and Mail Section of the traffic division of the Railroad Administration, with office at Washington, in charge of relations between the administration and the consolidated express company and of matters concerning the handling of mails by the carriers under federal control including railway mail. The committee on Railway Mail Transportation, which is studying the question of handling railway mail, will report to Mr. Holbrook until its report is completed.

Agricultural Section

The Division of Traffic has established a department to be known as the Agricultural Section, whose particular duty will be to look after the relations between the railroads and the Department of Agriculture, in order to give all possible assistance to the general agricultural development of the country. J. L. Edwards of Atlanta, Ga., who has had long experience in agricultural development work, has been appointed manager. It is expected that through the assignment of Mr. Edwards to this particular work, the encouragement and extension of agriculture, especially throughout the South and West will be actively stimulated in the relation of transportation to this most important industry.

* * *

A. P. Humburg, commerce attorney of the Illinois Central, has been appointed assistant to R. Walton Moore, assistant general counsel of the Railroad Administration, in charge of rate litigation.

Saving Car Mileage in Order to Haul More Freight

Close Attention to Routing in the West Is Overcoming the Insufficiency of Railroad Equipment

IT BECOMES INCREASINGLY evident every day that adequate transportation facilities are essential to the successful prosecution of the war. The unprecedented trials of the roads last winter and the prospect of insufficient additions to their car and locomotive equipment this year have caused many to fear a breakdown of the railroad system under the strain of the storms and severe temperatures of the coming winter. A campaign recently inaugurated by R. H. Aishton, while regional director of all western lines, is directed toward the relief of this situation. Under his direction, conservation of car mileage by the short-routing of freight is producing gratifying results and promises to play an important part in increasing the capacity of the railways. All legal restrictions which formerly forced individual lines to operate independently have been swept aside by the Railroad Control Act, and close co-operation between carriers in the matter of routing shipments has become possible. Recent reports from various western points for brief periods show a total of 4,644 carloads rerouted, which effected a saving of 1,235,664 loaded car-miles. When reports are received for all freight rerouted in the West, the saving in car mileage will undoubtedly reach a much larger figure.

The right to reroute shipments was acquired by the railroads when the director-general issued his Order No. 1, reading in part as follows: "The designation of routes by shippers is to be disregarded when speed and efficiency of transportation may be thus promoted." The authority conveyed by this order was used quite generally by railroads in January and February to divert freight from congested terminals to avoid embargoed routes. The first step taken in the West to apply the principle to all traffic was the appointment of a freight routing committee by the Central district railroad presidents on December 31, 1917. This committee, of which J. G. Woodworth, vice president of the Northern Pacific, was chairman, issued a circular on January 4, 1918, which contained general instructions for the routing of freight and the following specific provisions:

a distance of more than 110 per cent of the shortest available route may be considered impractical. Differences in distances of 25 miles or less may be disregarded.

2. Exceptions to the foregoing rule will be considered justifiable:

- (a) When by reason of grades or other operating conditions the longer route is more economical.
- (b) When congestion or blockade conditions may be thus avoided.
- (c) When important considerations of public policy demand the use of another route.

District committees were appointed at St. Paul, Minn.; Portland, Ore.; San Francisco, Cal.; Houston, Tex.; Denver, Colo., and Kansas City, Mo., to assist Mr. Woodworth's committee in promoting short routing. Following a study of the situation by these committees, additional traffic was turned to short routes under their direction and through the independent action of lines in the West. Those in charge of the work, however, finally decided that better results would be obtained by controlling routing directly through instructions from the office of the regional director, and accordingly an experienced traffic officer was assigned to the work of supervising routing throughout western territory. The conclusion was also reached that no hard and fast rules should be adopted to govern this work and no routes provided by tariffs should be closed, but that additional routes should be provided where necessary and where traffic was diverted by carriers to secure the benefit of short routes, rates via the routes specified by shippers would be protected. This provision for the protection of rates was officially announced in the regional directors' circular No. 101 of May 7, 1918.

In order to secure immediate results the regional director and his staff introduced a plan for direct supervision of traffic at important terminals in the West under which freight originating at, and moving through, those points could be supervised and rerouted where necessary to secure the benefits of reduced car mileage and to avoid the unnecessary use of other terminals. This plan is now in effect at Minnesota Transfer, Minn.; St. Paul, Minneapolis and Duluth; Superior, Wis.; Kansas City, Mo.; El Paso, Tex.; Peoria, Ill., Pekin, and in the Chicago switching district.

At Minnesota Transfer carload freight billing for all incoming trains is checked before the trains are broken up

1. Distances, and, in the original measure, and, following the determination of the Interstate Commerce Commission, any route representing

and switched out, and shipments are rerouted where necessary under the direction of a traffic officer of experience assigned to the work at that point. By rerouting traffic immediately upon the arrival of trains all unnecessary switching is avoided. Short routes to principal points from Minnesota Transfer have been selected to which the traffic is diverted. The original and corrected routing of all rerouted shipments and the reduction in haul effected are recorded. When there is a regular movement of traffic between the points covered in these records instructions are sent to the points of origin to insure proper routing on future shipments. The plan was put into effect at Minnesota Transfer on May 25, and for a period of 35 days, namely, until June 28 inclusive, 1,307 carloads were rerouted with a total reduction in loaded car-miles of 145,300.

At El Paso, Texas, the heavy traffic formerly moving via the Southern Pacific Lines through El Paso to points in Texas has been rerouted to advantage. From March 1 to June 4, inclusive, 681 carloads were rerouted at El Paso, with a total reduction of 160,230 loaded car miles.

The plan for direct routing of traffic was put into effect at Kansas City, Mo., on June 17. Between that time and June 26 242 cars were rerouted with a saving in car mileage of 48,395. At Peoria, Ill., 452 carloads were rerouted between June 11 and June 28, inclusive, with a total reduction in the number of car miles of 46,739. The plan was inaugurated at Pekin, Ill., on June 23, and in the first four days 14 carloads were rerouted with a total reduction in car mileage of 936. At Ft. Dodge, Iowa, the first two weeks of the operation of the plan resulted in the rerouting of 45 cars with a saving of 5,079 loaded car miles.

A marked reduction in car mileage has been effected by controlling the routing of wheat originating on the Oregon-Washington Railroad & Navigation Company and moving to Minneapolis, Minn. This traffic was formerly routed via Huntington, Ore., over the Oregon Short Line and the Union Pacific to Omaha, Neb., and from there over the Chicago, St. Paul, Minneapolis & Omaha to Minneapolis. From April 24 to June 11, 1,093 carloads were rerouted via Marengo, Wash., over the Chicago, Milwaukee & St. Paul via Plummer, Idaho, over the same road, and via Spokane, Wash., over the Great Northern, with a total reduction in loaded car mileage of 452,335.

A considerable saving in car mileage has also been achieved through the control of the movement of fruit and vegetables from southern California. This traffic formerly moved from points on the Southern Pacific through Roseville, to Ogden, Utah, and eastern destinations. It is now routed via Colton, Cal., over the Los Angeles and Salt Lake, reducing the haul to Ogden 465 miles per car. During April and May, 810 carloads were rerouted with the total reduction in loaded car miles of 376,650.

The rerouting plan has been introduced at a number of other points in the West, for which statistics are not yet available.

On June 24, the plan for short-routing all traffic originating in, and passing through, the Chicago switching district for western destinations was put into effect. Preferred routes to the more important railroad centers were designated and the use of congested gateways avoided wherever possible. For instance, the instructions provide that traffic for Kansas City and points West must not be routed through St. Louis, while traffic for Duluth, Minn., and Superior, Wis., must not be routed through Minnesota Transfer. The Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Chicago Great Western, the Chicago, Burlington & Quincy and the Minneapolis, St. Paul & Sault Ste. Marie were recommended as routes to St. Paul, Minneapolis, Minnesota Transfer and points beyond, in preference to the Chicago, Rock Island & Pacific, the Illinois Central (Albert Lea), Minneapolis & St. Louis, or the Chicago & Alton (Peoria), Minneapolis & St. Louis. For traffic moving to Sioux City, Iowa,

the Illinois Central, the St. Paul and the North Western were specified as routes which should be used in preference to the Burlington, the Chicago, St. Paul, Minneapolis & Omaha or the Great Northern. The Chicago & Alton, the Wabash, the Chicago & Eastern Illinois and the Illinois Central were designated as preferred routes to St. Louis, Mo.

To insure the use of the car ferry lines to the extent necessary to afford a maximum tonnage for all boats and to avoid the use of the Chicago gateway, where there are more direct routes across Lake Michigan, a comprehensive plan for the routing and control of this traffic was introduced on July 1. Under the scheme, traffic naturally tributary to car ferry routes moving to eastern destinations is being diverted from the Chicago gateway, thereby effecting a reduction in terminal operating costs in addition to a saving in mileage. During the three weeks prior to July 1, considerable traffic was rerouted on lines west of Milwaukee, Wis., and Manitowoc, and the car ferry lines were handling tonnage approximately 70 per cent of their capacity eastbound. On June 26 a meeting of representatives of rail lines and car ferry lines was held at Green Bay, Wis., and committees were appointed to supervise the routing of traffic at the lake ports. Under the plans adopted, traffic is being sent via the most direct routes and congestion at lake ports avoided. Eastern lines are co-operating with the western roads and now have under consideration a plan for joint operation of all car ferry boats, so that they may be used to the best advantage.

Because of the marked success of the rerouting plan where tried, plans are under way for its early application to all traffic in the West, and for this purpose three standard forms have been drawn up which will be used for recording all corrected routings in the future. One form will be used at points of origin to cover shipments, the routing of which has been changed by shippers at the request of the carriers. Another form will be used for recording those shipments rerouted in transit at transfer points. A third form will be used by the individual railroads to cover shipments diverted to direct routes in the course of each month at stations on the lines. Each form contains columns for entering the date of recording the shipment, the car initial number, the point of origin, the destination, the commodity, the weight of the lading, the original and corrected routes, the mileage via the two routes, and the reduction in loaded car mileage effected by rerouting.

While the routing of carload traffic has received the most attention up to the present time, the regional director of Northwestern railroads, who has jurisdiction over all Chicago terminals, has inaugurated a plan for the more economical and efficient handling of l.c.l. traffic from Chicago for common points, effective July 15. The circular announcing the plan lists all stations of any consequence in the United States and the railroads which should be used in shipping merchandise to those points. For instance, merchandise consigned to St. Louis will move only over the Chicago & Eastern Illinois and the Wabash, while that destined to Salt Lake City, Utah, will move via the Chicago, Milwaukee & St. Paul, and that destined to San Francisco, Cal., via the Chicago & North Western or the Atchison, Topeka & Santa Fe. All merchandise going to Vancouver, B. C., will move via the Minneapolis, St. Paul & Sault Ste. Marie, and that destined to Buffalo, N. Y., will be delivered to the Michigan Central and the Wabash only.

Although the rerouting plan, as outlined in this article, was initiated by the carriers, shippers generally are entering into the spirit of the scheme and are directing traffic over short routes affording the best service and in a manner to avoid congested terminals where possible. It is recognized by those who are pressing the rerouting of traffic that all routes should be kept open, to be used when the movement of freight exceeds the capacity of the short routes, and likewise that it is often necessary to use a longer route when transit or stopping privileges are permitted at intermediate points.



Norfolk & Western 267-Ton Mallet Locomotive

Many Interesting Details of Design in Both Engine
and Tender, Built in the Company's Shops

By H. W. Reynolds

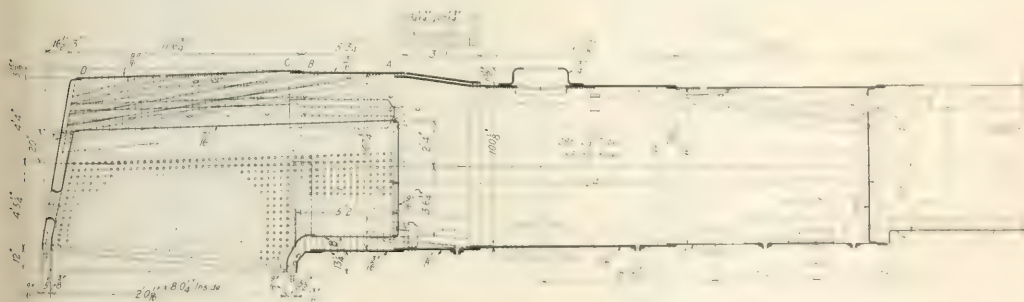
THE NORFOLK AND WESTERN has used Mallet locomotives in general road service for the past five years. Realizing the need of a more powerful locomotive of this type, it has built and now has in use a large 2-8-8-2 Mallet. This locomotive, known as Class Y2 was built in the company's shops at Roanoke, Va., and the design is the outcome of five years of close observation of the Mallet locomotives already in service.

On account of the limited clearances, compactness in design was necessary in order to obtain proper proportions. It was found that low pressure cylinders 39 inch by 32 inch were as large as could be used, and in order to secure a cylinder ratio of $2\frac{1}{2}$ to 1 it was necessary to use high pressure cylinders $24\frac{1}{2}$ inch by 32 inch, and a boiler pressure of 230 lb. per sq. in. Another evidence of close clearances will be seen in

desirable to make the low pressure valves outside admission. The McCord force feed lubricator is used for lubricating the low pressure cylinders. This lubricator is used to eliminate the flexible connections in the oil pipes to the low pressure cylinders, which have been a source of trouble. All other cylinder lubrication is accomplished by means of sight feed lubricators.

The pistons are built up of cast steel centers with cast iron wearing rings. While this design is not as light as the rolled steel piston, it is desirable because of the ease with which a new wearing ring may be applied, without necessitating the piston being again fitted to the rod.

Steam distribution is controlled by the Baker valve gear and the Norfolk & Western Class K1 standard power reverse gear. Hancock pneumatic cylinder cock operating cylinders



Boiler of the Norfolk & Western Mallet

the arrangement of the pop valves, which are laid flat on the boiler, with a shield between them to deflect the steam upward. It will also be noticed that the air pumps and bell are located on the boiler front, the bell being operated by means of a Gollmar bell ringer.

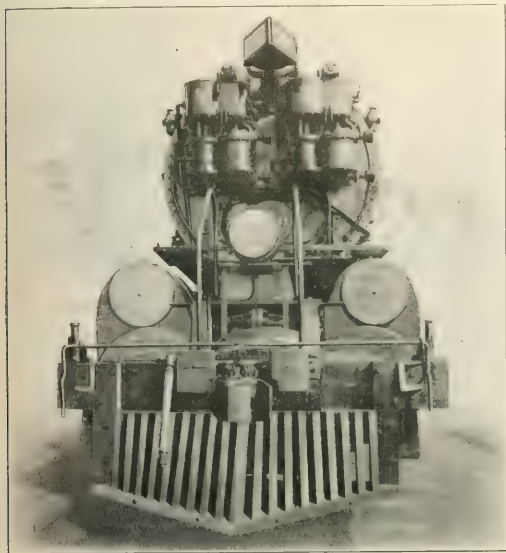
Both high and low pressure cylinders are equipped with piston valves. The valves in the low pressure cylinder are 17 in. in diameter, while those of the high pressure cylinders are 14 in. in diameter. In order to obtain steam and exhaust passages of ample area, free from abrupt bends, it was found

actuate the cylinder cocks, and the grates are operated by means of the Franklin steam grate shakers.

The driving wheels are equipped with flanged tires throughout and the locomotive is designed to take 18-deg. curves. The frames, driving boxes, driving wheel centers and all frame braces are of cast steel. The cylinders are of gun iron. Care was exercised in the design of all castings and cast steel was used liberally in order to reduce the weight and secure a boiler of ample proportions.

The boiler is of the extended wagon top type, with a cen-

tral dome and is equipped with a 53-unit Type A superheater. The firebox with its liberal grate surface of 96 sq. ft. is equipped with the Security arch supported on five water tubes



Front View of the N. & W. Mallet Locomotive

3 in. in diameter. There are 53 flues $5\frac{1}{2}$ in. in diameter, and 285 tubes $2\frac{1}{4}$ in. in diameter, 24 ft. long over tube sheets, and a combustion chamber 5 ft. 2 in. long.

plate steel was saved and the required strength of the boiler maintained. The dome is located on the second course of the boiler just in front of the gusset sheet, in order to obtain sufficient height for the Chambers' throttle valve. The firebox and combustion chamber of the boiler are electrically welded throughout, thus eliminating flanging and the possibility of cracks after two or three years of service. The tubes are located well up in the back tube sheet to prevent clogging. It has been found that a number of the lower tubes located close to the bottom of the sheet are practically of no value, as they stop up and require constant attention to keep them open.

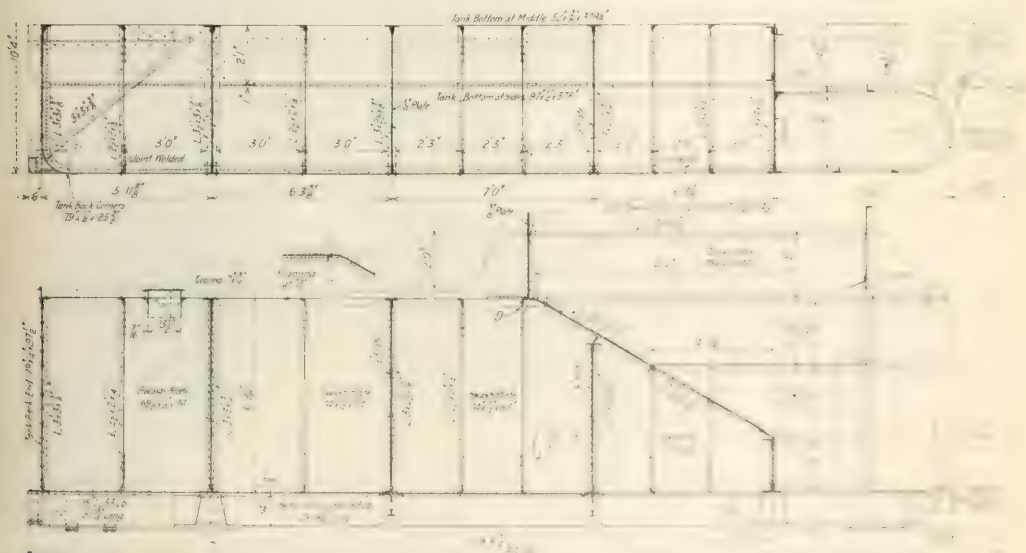
The boiler is fitted with the Sentinel low water alarm. The value of this device lies not only in the elimination of burnt or damaged crown sheets, but the water in the boiler may be worked at a lower level, resulting in increased superheat temperatures. The efficiency of the superheater on large locomotives, particularly on those with long boilers, is frequently perceptibly lowered, due to the tendency of some engineers to carry the water at too high a level. Perfect confidence may be had when carrying the water at a low level on a locomotive equipped with this alarm, for the reason that sufficient time remains after the alarm has sounded to fill the boiler to the proper level without danger of damage.

Two Sellers non-lift injectors, each having a capacity of 7,500 gal. of water per hour, are located one on each side of the engine under the cab with the steam control valves located outside and in front of the cab. Coal is fired by means of the Duplex stoker, and from road tests the boiler has been found to steam freely.

The smokebox front is of steel plate in order to provide support for the air pumps.

Among the special features of the equipment of the locomotive are radial buffers, Graham-White perfect sanders, and Pyle type K headlight equipment, with 9-in. by 18-in. headlight reflector.

The construction of the tender differs materially from usual



Elevation and Half Plan of the Tank

An unusual feature of boiler construction will be noticed in the fourth ring over the combustion chamber. By using a thin plate 13 to 16 in. thick in this location, over 3,000 lb. of boiler

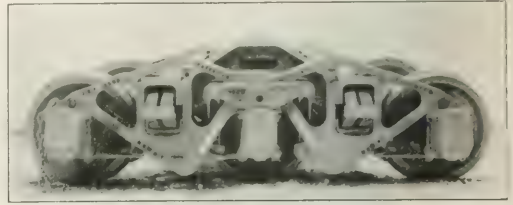
practice. The tank is made of structural shapes and the frame is built into it, resulting in increased strength and decreased weight. The body bolsters are bolted to the tank.

over the truck centers and two intermediate diaphragms are located between the body bolsters. Between the diaphragms, between diaphragms and bolsters, and between the rear bolster and the end of the tank, lateral bracing is placed to furnish the necessary strength against bulging. The center sill, riveted underneath the tank, is a Bethlehem H-section, which extends from a point just in front of the front truck center to a point back of the rear truck center. Carefully fitted and riveted to the front end of the center sill is a steel casting arranged to support the front water leg. This casting also contains pockets to receive the drawbar and safety bars. A steel casting is riveted to the back end of the center sill, to either side of which draft arms are riveted. These draft arms extend to the rear of the tank, where they are held in position by knee braces built up of plates and angles. Sessions draft gear is used in connection with the Farlow one-key attachment.

Short steel castings arranged with side bearings are fitted each side of the center sill over the truck centers and are securely riveted to the center sills and tank floor. These castings serve to transfer the load from the body bolsters to the truck centers. Cast steel knees are riveted to the center sill and tank floor at each diaphragm to provide the center sill with lateral stiffness. The tender has a capacity of 12,000 gal. of water and 20 tons of coal. The design has been found to be very successful.

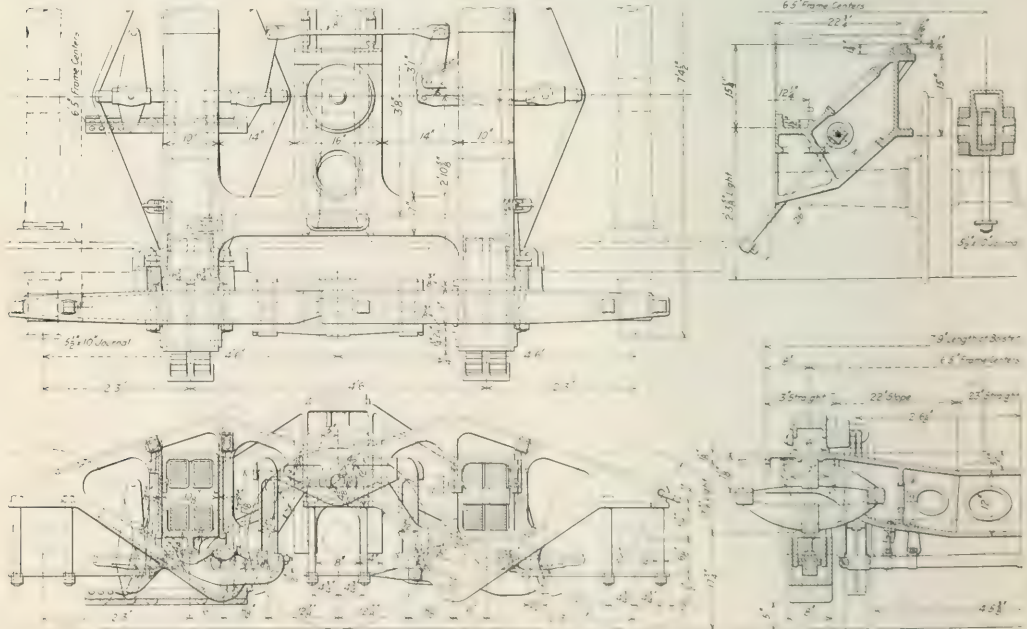
The tender is carried on two 75-ton six-wheel non-pedestal

side frame close to the outside pairs of wheels and arrange the neck of the body bolster to clear the wheels with springs solid. When the attempt was made to use elliptic springs on the Lewis truck it was found difficult to get them in and clear the wheels, so the 75-ton elliptic spring tender truck, known as Class T-27, was developed. On this truck the openings in the side frames are located midway between each two pairs



New Type of Six-Wheel Truck for the Tender

of wheels. This location causes the middle pair of wheels to be loaded in a larger proportion than the outside pairs. In order to remove the excess load from the middle wheels, the elliptic springs are placed on seats, each of which rests on one end of a lever pivoted in the side frame between the opening and the middle wheels. The other end of each lever



Plan and Elevation of the Norfolk & Western Class T-27 Tender Truck

trucks, the design of which is a departure from the Lewis six-wheel freight car truck in use on the Norfolk & Western. Helical springs are used in the Lewis truck and the openings in the side frames for receiving the springs and bolster arms are so located as to throw two-thirds of the load coming on each side frame on the journal boxes of the outside pairs of wheels. By this method proper weight distribution is obtained, but it is necessary in order to keep the wheel base within reasonable limits to have the nest of springs in each

rests against the bottom end of a strut, the top ends of which react against the end of a lever pivoted to the side frames over the middle journal boxes. It will be seen that with the levers properly proportioned, the weight on the springs will cause an upward thrust to be exerted on the levers pivoted to the side frames over the middle journal boxes equal to the amount of the excess weight on the middle pair of wheels. This relieves the middle wheels of the excess loading and gives the same weight on the rail for all three pairs of wheels.

To one side frame on each side of the truck is bolted rigidly the journal boxes of the outer and middle pairs of wheels, while to the other frame is bolted the journal box of the outer pair of wheels, and the end of the frame is passed into and rests on the rigid side frame over the middle journal box to form a flexible connection.

The usual practice of making the members at the top and bottom of the side frame openings parallel is not followed for the reason that the load is applied to the side frames at a single point under the center of the columns next to the middle wheel, the columns and wearing surfaces toward the outer wheels acting only as guides for the bolster arms. This permits the side frames being designed to secure perfect truss action.

Axles with standard M.C.B. 5½ in. by 10 in. journal boxes are used. The brake beams are hung from the side frame and the design of brake rigging is the same as that in use on the Lewis truck. The truck bolster is of cast steel in one piece, with the ends of the arms arranged to fit over and rest on the elliptic springs. On account of ample space being provided by the design of the tank, the side members of the body bolster are made deep where they pass over the middle axle. Ample wearing surfaces are provided, and the absence of all bolts and pin connections will be noted.

The principal data and dimensions of this locomotive are:

GENERAL DATA	
Gage	4 ft. 8½ in.
Service	Freight
Fuel	Bit. coal
Tractive effort, compound	104,300 lb.
Tractive effort, simple	135,000 lb.
Weight in working order	535,000 lb.
Weight on drivers	472,000 lb.
Weight on leading truck	28,000 lb.
Weight on trailing truck	35,000 lb.
Weight of engine and tender in working order	747,000 lb.
Wheel base, driving, both units	15 ft. 6 in.
Wheel base, total	57 ft. 4 in.
Wheel base, engine and tender	92 ft. 11½ in.
RATIOS	
Weight on drivers ÷ tractive effort	4.52
Total weight ÷ tractive effort	5.12
Tractive effort × diam. drivers	680.6
Equivalent heating surface* ÷ grate area	.894
Firebox heating surface ÷ equivalent heating surface, per cent.	5.6
Weight on drivers ÷ equivalent heating surface	55.0
Total weight ÷ equivalent heating surface	62.3
CYLINDERS	
Kind	Compound
Diameter and stroke	24½ in. and 39 in. by 32 in.
VALVES	
Kind	Piston
Diameter	H. P., 14 in.; L. P., 17 in.
WHEELS	
Driving, diameter over tires	56 in.
Driving, thickness of tires	3 in.
Driving journals, main, diameter and length	11 in. by 12 in.
Driving journals, others, diameter and length	11 in. by 12 in.
Engine truck wheels, diameter	30 in.
Engine truck, journals	6 in. by 10 in.
Trailing truck wheels, diameter	30 in.
Trailing truck, journals	6 in. by 10 in.
BOILER	
Style	Wagon top
Working pressure	230 lb. per sq. in.
Outside diameter of first ring	98 in.
Firebox, length and width	12 ft. by 8 ft.
Firebox plates, thickness	¾ in.
Firebox, water space	From 3½ in. back 8 in. sides 4½ in.
Tubes, number and outside diameter	285 2½ in.
Tubes, number and outside diameter	53 5½ in.
Tubes and flues, length	12.84 sq. ft.
Heating surface, tubes and flues	482 sq. ft.
Heating surface, firebox including arch tubes	482 sq. ft.
Heating surface, total	6,316 sq. ft.
Superheater heating surface	1,510 sq. ft.
Equivalent heating surface*	8,581 sq. ft.
Grate area	96 sq. ft.
TENDER	
Tank	Water
Weight	212,000 lb.
Wheels, diameter	33 in.
Journals, diameter and length	5½ in. by 10 in.
Water capacity	12,000 gal.
Coal capacity	20 tons

*Equivalent heating surface = total evaporative heating surface = 1.5 times the superheating surface.

Orders of Regional Directors

AMONG THE MORE IMPORTANT instructions issued by the regional directors during the past week are the following:

Bulletins expressing the urgent needs of the government for men should not be posted on the regular bulletin boards of the railroads, and representatives of government departments should under no circumstances be permitted to address railroad employees at the shops for the purpose of attracting men into other branches of government service.

The records indicate that the tons per loaded car from the southern region do not show a very marked increase and that considering the fact that there is such a large proportion of the tonnage from that region moving through the congested eastern region, it is most important that maximum loading be obtained in order to reduce to the fullest extent possible the number of cars moving through congested gateways into eastern territory.

The question of disposing of old ties has been under consideration, but because of the widely varying conditions it has been concluded that it is not possible to establish a uniform rule. Therefore, the determination of the problem is left to the discretion of the managements of the individual lines.—*Southern Region.*

There seems to be some unrest among supervisory forces on central western railroads, such as yardmasters, dispatchers, foremen, etc., by reason of discrepancies created in rates of pay under the application of General Order No. 27. Central western lines are asked to fill in forms, recording the specific cases in which a readjustment of pay may be considered necessary. Separate forms are provided for the mechanical, the transportation and the maintenance of way departments, with columns in each for entering the title of the position, the location of the man, his rate of pay prior to General Order No. 27, his present rate of pay, the recommended rate of pay, and the reasons why an increased rate is necessary.

Box car equipment has been used to a considerable extent at army camps for loading manure and other refuse, which makes the cars unfit for general service. Railroads are asked to issue instructions that gondola or stock cars be utilized for such loading and that the use of box cars be prohibited.—*Western Region.*

Data is requested concerning each railway's organization at coal mines for the inspection of the quality of fuel, and as to engines in service by classes and description, two copies of which are to be sent to the manager of the Fuel Conservation Section of the Railroad Administration and one copy to the regional director.—*Southwestern Region.*

Present prospects indicate that there will not be enough coal in the West to meet all requirements during the coming winter. In order to help the situation, each road is asked to review its program for storing coal and to increase, if possible, the quantity to be stored, particularly in territories farther from the mines. Storage aggregating 15 to 20 per cent of annual requirements will not be excessive in view of the desperate conditions that will confront the roads in moving coal for domestic and other purposes during the winter. Western lines are asked to report to what extent they can increase their storage coal program, showing the quantity of the expected increase at each location, and the name and location of mines from which they expect to obtain additional quantities.

Instructions governing the reconsignment of fruits and vegetables within the Chicago district, which have been worked out in detail with respect to the local conditions on each road, specify when requests for reconsignments must be received at each auction house, at team tracks and by connecting lines if the reconsignment is to be accomplished on the same day that the request is filed.

In Supplement No. 7 to Circular No. 63 to northwestern roads, dated June 8, the regional director says: Effective at

once a maximum rate of 30 cents per hour for track labor outside of the Chicago Terminal district is hereby authorized where considered necessary in addition to districts named in Supplement No. 5 to Circular No. 63, with the understanding that before the increase is made over and above the rates now in effect, lines interested in the same districts must be notified and the regional director must be advised of the date the increase will be made effective and the limits of the district to which it applies.

Storedoor Delivery of Freight In New York City

THE COMMITTEE OF COMMISSIONERS which has been studying the problem of relieving freight congestion in Manhattan, New York City, and which agreed several months ago on a tentative plan for organizing the truckmen of the city, has concluded that the time has come for putting some arrangement into operation, and it has secured approval by Director General McAdoo of its report outlining the general principles which it is proposed to adopt, and it is announced that a beginning will probably be made on August 15.

This committee consists of James S. Harlan, of the Interstate Commerce Commission; Travis H. Whitney, of the New York State Public Service Commission, first district, and R. W. E. Donges, of the Public Utilities Commission of New Jersey. Mr. Harlan has been spending most of his time lately in New York City, and is this week holding conferences with commercial and trucking interests. He designates the plan as one for "the removal of inbound freight from piers and freight stations by the consignees" in accordance with the following general basis:

1—All that part of Manhattan Island that lies south of Fifty-ninth street shall be designated as a drayage district. Team tracks within that area shall not be regarded for the present as being in the drayage district.

2—No notice hereafter shall be given to the consignee of any freight arriving at a pier within the drayage district, and no free time shall be allowed; all inbound carload and less-than-carload freight on arrival shall be handled immediately to the store door of the consignee.

3—A drayage director shall be appointed who shall have general supervision and control, for the consignees, of the trucking of freight from pier or freight stations after it has been placed upon the pier or station floor by the carrier.

4—There shall be a drayage supervisor at each pier who, under the control of the drayage director, shall have general authority over the removal of inbound freight from the pier floor or platform.

5—The salary of the drayage director and of the several drayage supervisors and other necessary assistants, together with their necessary operating expenses, shall be paid out of a fund contributed by the carriers serving the metropolitan area on a tonnage or other satisfactory basis determined by them and the drayage director. The drayage director and drayage supervisors, however, shall be appointed by the Director-General of Railroads, or under his authority, and shall report to and be responsible to him.

6—The drayage district south of Fifty-ninth street shall be divided into delivery zones having relation to their proximity to the piers and the density of their traffic.

Inbound freight as far as possible shall be distributed by the carriers on the pier platforms or floors by delivery zones; but when practicable shall be delivered immediately from the car to the trucks operating in the zone to which the freight is destined.

Inbound freight shall be delivered to consignees only in trucks registered with the drayage director, and all trucks so

registered shall be under the full authority of the drayage director. No trucks other than those so registered shall be allowed upon the piers for the removal of inbound traffic except under special permit issued by the drayage director.

For good cause shown the drayage director may cancel the registration of any truck, and his decision shall be final.

7—The drayage director, as far as possible in the conduct of the drayage service, shall utilize the equipment of existing trucking and teaming organizations and of shippers; special equipment shall be utilized as far as possible in the handling of the special commodities for which they are designed.

8—The drayage director shall make such rules and establish such regulations as will facilitate the prompt removal of freight, making only such exceptions in the use of equipment as may be in the public interest.

The drayage director shall make all necessary rules and regulations for the bonding of the owners of trucks used in the drayage service and respecting the methods of collecting the freight and drayage charges.

As at present the delivery of freight by the carrier to the consignee will continue to be effected on the pier floor or platform and its responsibility for loss or damage will remain unaffected by the consignees' drayage service herein provided; the drayage director will make all necessary rules and regulations defining the responsibility of truck operators for loss of or damage to freight while in their custody.

9—Delivery of freight shall be made to the consignee at the usual place for delivery at street level, and when a consignment so tendered is refused or when the payment of the legal freight and drayage charges is refused, the freight may be stored in a public warehouse at the cost and expense of the consignee and as a lien upon the consignment.

The drayage director shall designate the warehouses to be used for this purpose.

10—The drayage director shall make such rules and establish such regulations as will tend to build up the gathering of freight by the registered trucks for outbound movement.

11—The drayage director shall have power to make a schedule of rates and charges for the drayage service, including the charges for undue detention of a truck by a consignee at the point of delivery, and to change the same from time to time as conditions may require; he shall also have the power to fix the hours during which consignees must be prepared to receive freight.

12—The drayage director shall have power, should it become necessary in his opinion, to extend the drayage service to the docks of such water lines as are parts of the transportation system under the control of the Director General of Railroads.

In this outline of a plan for relief from pier and station congestion on Manhattan Island, an effort has been made to include only the main general features that are regarded as essential and fundamental.

Commissioner Harlan says that the railroads have indicated their willingness to supply the funds for defraying the necessary expenses of the drayage director and such assistants as he may require in supervising the service as a shippers' service, no other practicable way having been found for meeting this expense; and the largely increased traffic which the carriers will be able to move with a free working space at all times on their pier and station floors and platforms, is held to more than justify the outlay.

He points out that the plan can be put in effect with little delay and without material disturbance of present conditions; while it avoids the necessity of any new capital investment at this time by making full use of the present equipment of shippers and teaming companies; and it continues the service as a shippers' service, as it is now, by simply so regulating it as to require all inbound freight to be carried away by the consignees, through an organized trucking service, as soon as it is unloaded.

Maintenance Work Is Being Seriously Delayed

Unless Checked the Shortages of Labor, Rail and Ties Will
Lead to the Deterioration of the Tracks

RAILWAY MEN responsible for the maintenance of tracks and structures are showing much concern over the lack of progress being made in the normal repair of the roadway this year. While in the area south of the Ohio river a large part of the work can be continued throughout the year, and while, even in the Northern States, some of the renewals can be carried out during the winter, the larger part of the work on the roads north of the Ohio river (which include those lines with the heaviest traffic and the most work) is seasonal in character and must be done in the summer. This limits the period during which the larger part of the maintenance can be handled to the seven months between April and November, inclusive. The three best months of the season are now gone, with far less than the normal amount of work completed.

With the harvest season at hand and with the promise of record-breaking crops this year the demand for labor from this direction will be even greater than usual, and the high wages which are being offered will deplete track gangs more completely than even in past years. By the time the harvesting will be finished and these men return to the track the season will be so far advanced that it will be necessary to concentrate efforts on the closing of the work and the preparation of the track for the winter.

Although some roads started their routine maintenance work this year as soon as the frost was out of the ground, many other lines delayed undertaking active work until the Railroad Administration had developed its policies and made known its attitude regarding the numerous questions confronting the maintenance of way department. Furthermore, in many cases the renewal of ties and rails, comprising the heavier work of track maintenance, has been held up by the lack of materials.

Progress on additions and betterment work has been even more seriously delayed. All work on projects other than those carried over from last year was held up until May by the lack of authority to proceed. Although the Railroad Administration began issuing approvals of projects early in that month, most of the work was not authorized until late in May and is only now being started. As a result three full months have been lost on most of the additions and betterment work authorized for this year, this occurring at a time when additions and improvements to existing facilities are more needed than ever before.

This delay in starting both maintenance and improvement work follows several years of restricted expenditures. Last year the deficiency was particularly pronounced. The high cost and scarcity of materials contributed to this condition, but the lack of men was even more largely responsible. Much work was left incomplete last fall and a number of roads found themselves in the unusual position of having larger appropriations than they could spend because of their inability to get a sufficient number of men to do the work. This left the roads in none too good condition to go into last winter. With one of the most severe seasons in history, and with the traffic exceeding all previous records, the wear and tear on the property was correspondingly great and the roads required more work this spring to put them into proper condition than in any recent year. In view of this fact the delay which has already occurred, and which is still occurring this season, is all the more serious. It is for this reason that maintenance men are showing so much concern over the condition of their maintenance work.

Another factor contributing to the seriousness of the situation is the shortage of ties and rails, the two basic materials used in the largest quantities in track maintenance. Following the taking over of the control of the roads by the government, notice was issued that the central purchasing bureau would order all rails. Since that time no orders for rails have been placed either by the roads or by the government. As a matter of fact nothing is to be gained by placing orders under existing conditions, for the mills have not yet rolled the rails booked on orders placed one and two years ago, having nearly 2,000,000 tons now on order, and still undelivered, most of which was contracted for in 1916 and early in 1917. The mills are now rolling about 25,000 tons per week, at which rate only about 25 per cent of the total tonnage now on order will be available for laying this season. When it is considered that the railroads of this country use approximately 3,000,000 tons of rails annually in normal years, one realizes what is taking place. The problem is not that of ordering more rails, but rather of securing the delivery of the rails which are already ordered.

At the present time the steel output of the country is not sufficient to meet the military and industrial needs combined, in spite of the tremendous development which has taken place during the four years. Under present conditions the military demands must be met first and the railways can expect consideration only as their needs are found of vital importance to our national welfare. In order to allot the steel output where most needed, arrangements have recently been concluded between the American Iron & Steel Institute, representing the manufacturers and the government, whereby the latter will distribute the entire output of finished materials to the users.

It is commonly recognized that the continued operation of the roads at their highest efficiency is essential to our military success, and that the tracks must be properly maintained if the traffic is to be moved safely and expeditiously. In general the wear of rails is proportional to traffic moving over them, and as a result this wear has been unusually heavy during the past year. Following several years of deficient maintenance in rail replacement, as in other upkeep work, the condition of the rail in track has shown a steady decline. As a result in numerous instances the rail now in track has reached the safe limit of its wear, and further postponement of its renewal can only be done at the risk of increased breakages and derailment.

While the average condition of the rails in service has declined during the last few years, this is not universally true. A number of roads have been able to keep their maintenance up to normal and on such lines it is possible to go without rails or to do with greatly reduced tonnages this year without serious results. However, up to the present time little attempt has been made to distribute the rails now being rolled to those roads most in need of them and as a result some of the lines which are now in the best condition are receiving rails not because they are sorely in need of them, but because of their foresight in placing orders two years ago. If the output of rails is to be limited, and it would seem that the national situation now warrants this action, it would appear to follow as a necessary step that some comparison of the different roads be made whereby it would be possible to distribute the rails where most needed in order to maintain all the roads at as nearly an average condition as possible.

This condition affects seriously the maintenance of our

instances and in placing new orders with precedence over old ones in other cases. In determining which roads should take precedence in the delivery of rails, consideration should be given not only to the present condition of the rails in track, but also to the traffic now moving over them, and that which may be expected to pass over them in the next few months. In many instances rail which is now in fairly good condition, but which is bearing a heavy traffic cannot be carried over another year with as great a factor of safety as poorer rail which is carrying less traffic and subjected to relatively little wear. This condition was found in Canada recently, where some of the best maintained roads normally were found to be most in need of rail because of the heavy traffic which they were carrying.

The renewal of ties has also been delayed by a shortage of supplies on many roads. Early in the spring the government issued orders that the roads could buy ties only along their own lines and at prices not exceeding those paid last year. Where ties could not be secured in this way the government announced that it would arrange to purchase them. While this order was issued so late that it had little effect this year on the roads using treated ties, or with contracts already placed, it has shut off supplies for other roads dependent on this spring's purchases, owing to the delay in the perfecting of the government's purchasing organization. This has been accentuated by the shortage of labor in the tie-producing districts, which condition alone would have led to a reduced supply. While the early shortages which existed on a number of roads early in the season have been relieved considerably by delayed deliveries, the time lost by the track forces in placing them in track cannot be made up.

Because of the importance of this subject of adequate maintenance to all railway men, and also because of its direct bearing on the efficiency with which the railways can be operated during the next winter, we have addressed a letter of inquiry to a number of representative roads throughout the country asking specific questions about conditions on their line and in the territories traversed by them as of June 1. These questions and abstracts of some of the supplies are given below.

The Amount of Maintenance Work Above Normal

(1) How does the amount of maintenance work scheduled for this season compare with that of normal years?

Our replies to this question indicate that the amount of work scheduled for this year is equal to or in excess of that for recent years, as is evident by the following abstracts of replies:

"Maintenance work required this season to reach and preserve normal conditions is considerably more than in normal years owing to the deferred maintenance of the last two years."

"The amount of maintenance work scheduled for this season is practically the same as we have scheduled for the past three or four years."

"The amount of maintenance work scheduled for this year is approximately 5 per cent in excess of that of normal years."

"Our maintenance schedule this year considerably exceeds that of any carried out during recent years."

"The amount of maintenance work scheduled for this season is nearly normal, except in the matter of ballast. The ballast program is reduced to about 60 per cent."

Maintenance Work Badly Delayed

(2) Is it advanced as far as normally at this date? If not, what are the present factors contributing to the delay?

"Our maintenance work this year is far behind normal years. This is entirely due to a lack of labor."

"The one thing that can help us out materially is to secure labor of some kind from some source. If some arrangements

could be made to let the Mexican, Jap and Chinese labor into the western part of the United States in considerable numbers we could no doubt carry on the work satisfactorily."

"We are considerably further advanced with our tie renewals than in former years, because of our ability to secure men early in the season. We have endeavored to take advantage of this condition while the men are available, as we believe that this condition will not continue throughout the season. It may be necessary to curtail our ballast program somewhat because of labor conditions later in the season."

"On our bridge work the amount of work performed is about normal. On our tie renewals the work performed is about normal on one-half of our system, but below normal on the remainder on account of a shortage of labor in that territory. Our ballasting is below normal, principally due to lack of power."

"Our program is not as well in hand as it might and should be, due to many causes, but principally on account of the uncertainty brought about by conditions and the inability to secure materials at such a time as will best answer all purposes."

"The progress made to date is about 20 per cent less than normal at this time of year, the governing factor being the shortage of labor."

Adequacy of Maintenance Forces

(3) To what extent are your maintenance of way forces below normal?

Practically all of the roads replying reported that they were from 5 to 50 per cent short of their normal maintenance forces at this season of the year, as is indicated by the following abstracts:

"Our maintenance forces at this date are fully 30 per cent below normal, with a probability of their falling to as low as 50 per cent of normal as the season becomes further advanced."

"Our maintenance-of-way forces on one-half of our system are about normal, while on the other half they are about 10 per cent below normal."

"During the month of April, one of the best working months in this territory, the maintenance forces were 15 per cent below normal in number and a much heavier percentage below normal in efficiency."

"With the exception of one or two short stretches of territory, our labor forces are filled up to normal. However, some 700 or 800 additional track laborers could be used to good advantage if available."

"Taking the line as a whole, our maintenance forces are probably about 25 per cent below normal, although the situation is considerably spotted. The western part of the territory is considerably shorter in men than the east end of the line."

Ties and Rails

(4) What proportion of your normal season's supplies of ties and rails have you on hand or immediately in sight?

The widely varying conditions relative to ties and rails are indicated by the replies received to this question. As is evident below, some roads are encountering little difficulty from this source, while others are in serious straits.

"We have all our ties on hand for 1918, as we make it a practice to have in stock the first of the year all ties necessary for that season. We are short on rail deliveries, although the mills continue to deliver us rail, in reduced quantities. It is quite probable that we will not complete our rail program because of this fact."

"On this date, with 42 per cent of the year gone, we have received 28 per cent of our yearly tie supply. In other words, we are receiving about two-thirds of our normal requirements and anticipate that this proportion will prevail throughout the year. With reference to steel rails we are only now re-

ceiving the last of what was contracted for delivery in the summer and early fall of 1917. We are so far unable to get any assurance of delivery on our 1918 rail, contracted for nearly two years ago for delivery to begin last March.

"Our tie and rail deliveries are about normal. We had some shortage in the delivery of ties in March and April, due to the fact that on account of the lack of creosote our plant did not start up until May 1, while it usually starts up about March 1. Our rail receipts are about normal this year, owing to the fact that up to this time we have been receiving shipments of rail on our 1917 order, which was short about 22,000 tons. We have also been short, and are still short, the rail joints for maintenance work."

"At this time we have about two-thirds the normal supply of cross ties and four-tenths of 1 per cent of the normal supply of new rail."

"The outlook for normal tie requirements at this date is reasonably satisfactory. It is questionable, however, if we will be able to secure such a supply of renewal rail as will satisfactorily answer our demands."

"We have on hand or in sight about 70 per cent of the normal season's supply of ties, but only about 30 per cent of our rail requirements."

"We have on hand or in sight about 90 per cent of this season's ties. This year's contract for rail called for 50,000 gross tons and to date we have not received any of this tonnage. The rail received so far this year applied on our 1917 contract, which has just been completed. The purchasing department advises that we will possibly only receive about one-half of the 50,000 tons ordered for this year between now and January 1."

Additions and Betterment Work

(5) How does your budget of Additions and Betterment work compare with that of normal years in magnitude?

The amount of Additions and Betterment work on different roads varies widely, although in the aggregate it is equal to or in excess of that for recent years. The variation is shown in the following replies:

"Our Additions and Betterment work is somewhat behind that of normal years because we appreciated the fact that our efforts should be directed toward maintenance this year and we have avoided all improvement work that could possibly be postponed."

"Our Addition and Betterment budget for 1918 is smaller than in normal years."

"Our budget for Additions and Betterment work is greater than has been normal for the past four or five years."

"About the usual Additions and Betterments are contemplated, but it is doubtful if labor and material can be had for them all."

"Our budget of Additions and Betterment work is considerably in excess of normal years, due to the great necessity thereof. It seems doubtful, however, owing to late approval thereof, whether we will be able to carry out that program to anything like its entirety."

"Our budget of Additions and Betterment work is considerably below that of normal years. We are only undertaking to secure authority for improvements that show a very decided necessity, and we are in a great many instances getting along with facilities that we would undertake to improve under normal conditions. The shortage of rail has reduced to a very great extent the work of increasing the weight of rail in our branch lines. The cost of work has increased to such an extent that it is rather difficult to compare the work we are doing with normal years, but it will not be more than 50 or 60 per cent."

"Our budget for Additions and Betterments as compared with other years is about normal."

Progress on Betterment Work

(6) Have you been able to make the customary progress this year? If delayed, to what extent, and the cause.

In view of what has been stated above it is to be expected that the progress on the Additions and Betterment work which has been undertaken has been slow and that the work is being interfered with by shortages of labor and material. These conclusions are borne out by the following replies:

"Our progress on work other than maintenance cannot be considered as fully up to our anticipations, but our efforts are being directed against those jobs most important to us and most affecting our operating conditions."

"We have not been able to make customary progress with Additions and Betterments and probably will not, due to labor and material shortages."

"We have not been able to make as good progress on tie insertions, laying new rail and ballasting as is customary, due to shortage of labor, ties and motive power for work trains. This latter trouble is being remedied by the dropping off of business and the fact that we have received some new engine."

"Customary progress has not been made this year. The delay has primarily been due to difficulty in getting sufficient labor, and to the inefficiency of that obtained. It is also due to difficulty and delay in getting material."

"With our very restricted program we are making quite satisfactory progress, although it is rather questionable how long we can keep this up, owing to the restlessness of the laborers."

"We have not been able to make the customary progress in maintenance this year on account of the slow delivery of rail and a shortage of all classes of common labor."



Calling the Class 1919 Frenchmen for Service

The Present Status of Valuation

THOMAS A. HULME, vice-chairman of the President's Conference Committee of the Railroads on the Federal valuation of the roads, has issued a statement under date of July 1, outlining the present status of valuation work and also giving abstracts of statements made by C. A. Prouty, director of the Division of Valuation, before the Appropriations committee of the House of Representatives recently, both of which are abstracted below.

It is generally understood that the Interstate Commerce Commission has been for some time actively engaged in considering the fundamental questions involved in valuation matters, and that its opinion with reference to some of them at least will be given in connection with the decisions which it is expected will soon be delivered in the cases of the Texas Midland and the Winston-Salem Southbound railway. The approval of the director general having been obtained to charge the expenses of this organization, other than those of a legal nature, to operating expense for the balance of the year from May 1, a call to provide the necessary funds was made upon the carriers on May 15, 1918. An appropriation of \$3,500,000 to provide for the continuance of the railroad valuation work for the fiscal year beginning July 1, 1918, and ending June 30, 1919, is included in the sundry civil appropriation bill which has been passed by Congress and is awaiting executive approval. (This bill has been signed by the President.—EDITOR.)

No additional tentative valuations have been served by the Commission. The bureau of valuation is furnishing carriers with copies of inventories as completed, in preliminary form, and is asking them to point out any errors or omissions in connection therewith, and, in an informal way, make their claims with respect thereto. Carriers are advised that this action of the bureau of valuation is in the nature of a trial to ascertain whether differences cannot be eliminated in an informal way, and thus reduce the volume of the record which is made when the formal service occurs and a protest is filed.

At present the procedure is somewhat as follows: The field engineer of the carrier may take exception to the notes during the progress of the work; subsequently when the preliminary copy of the inventory is sent to it, the carrier may offer objections thereto, which will then be considered by the bureau of valuation. Subsequent to the consideration of the objections, when the inventory is completed and is formally served upon the carrier, there are 30 days in which to enter a formal protest.

A hearing in the valuation of the New Orleans, Texas & Mexico began at Chicago on April 22, 1918, before Examiner R. H. Kimball. At this hearing the carrier was required to present evidence concerning all the objections raised by its protest, excepting those pertaining to land.

At New Orleans, May 1 to May 4, there was a further hearing at which the testimony was restricted to questions relating to land. The order assigning the case for hearing eliminated all questions of the cost of condemnation and damages or of purchase. The aggregate difference between the bureau and the carrier was only about \$90,000, on the basis of acreage values. The general impression created was that this difference arose chiefly in two ways: (1) by including in the zones fixed by the bureau of valuation lands of different quality and value; such as farm lands, timber lands, and urban property; and (2) by marked differences between the values placed on urban property. The testimony of the carrier was offered to show that in several respects the original zoning and appraisal had not been accurately or correctly made. No time was fixed for filing briefs and it is presumed by the carrier that because of the agreement between it and the bureau and the commission that no finding or report will be made until after the Texas

lines of the Gulf Coast System have been fully inventoried.

Briefs and reply briefs in the valuation of the Kansas City Southern have been filed on behalf of the carrier, and the bureau of valuation, and the Interstate Commerce Commission fixed June 20 and 21 to hear arguments. Notice, however, was given to the parties in interest on June 17 of an indefinite postponement of the hearing.

Hearing Before the Committee

MR. PROUTY:—We have got to organize a new service in connection with the valuation work. We have to keep an account of all the additions which are made to the property after the date of the valuation so that we can at any time know what the entire value of the property is. In order to do that, the carriers are required to keep an account of those additions, and we have to supervise that account.

That is doubly necessary at the present time, for the reason that the director general must have this same information in determining the amount of compensation to be paid the carriers. He pays a standard return based on the condition of the property when he received it, and if capital expenditures are made by the carrier after he receives the property, he will have to pay in addition to the standard return some rate of interest on the capital expenditures. My own view has been that the bureau of valuation of the Interstate Commerce Commission ought to do that work; that it ought to organize the necessary force, which it must have organized if government control had not supervened, and do the work rather than permit the director general to do it. It seems to me that government control is a temporary thing, and that any agency of regulation which is permanent ought to be established in connection with the Interstate Commerce Commission rather than by the director general, taking care always that no work is duplicated.

THE CHAIRMAN:—What is the condition of your work now?

MR. PROUTY:—We shall begin to lay off men in our field work within a year. We shall complete our field work easily as of the average date of January 1, 1920. I said to you a year ago that we would complete our office work as of the average date of January 1, 1921. I am not sure that we will absolutely do that, although I hope to do so. The war has made very serious inroads on our work. It has not only cost us in men, but it has cost us even more in efficiency. I have felt that we should maintain our field work first and our office work second, especially in view of the fact that certain parts of our office work can not be done until the commission has decided certain cases which are now pending before it. Therefore, it is possible that we may not complete our office work by January 1, 1921, but I hope to do so.

THE CHAIRMAN:—What do you figure that the total cost will be?

MR. PROUTY:—I said, I think, the first time I was ever examined that it ought to cost not less than \$15,000,000 and not more than \$20,000,000. Of course, the war has increased the cost of this work, just as it has increased the cost of everything else, both by impairing our efficiency and by increasing the price of everything; but we shall keep pretty close to that figure of \$20,000,000. It may be a trifle exceeded, but it will not be much more.

THE CHAIRMAN:—What will be the cost of creating this division to do the work which you first spoke of, and what will be the cost of sustaining it from year to year afterwards?

MR. PROUTY:—I have discussed this matter more or less with my associates, and we think that it will require approximately one accountant and one engineer to every 10,000 miles of rail. That would amount to about 25 accountants and 25 engineers. These men will be in the field a large part of the time, or most of the time, and, in addition to that, we would require a certain office force. It would not be a large office force, but how large it would be, I can not say. We

would require one man who would be at the head of the work and who probably would be an engineer, and then we should require probably five or six clerical men and whatever stenographic force would be necessary.

THE CHAIRMAN:—Have you come to any rough estimate of that cost?

MR. PROUTY:—Yes, sir; in my own mind I have said that it would cost somewhere in the vicinity of \$350,000 or \$400,000 a year.

THE CHAIRMAN:—There is a limit upon the total activities of this nation, and, manifestly, to the extent that it is needed all activities ought first to be directed to matters directly and primarily concerned with winning the war. Now, having that in mind, what have you to say as to the desirability or undesirability of slowing down your valuation work at this time?

MR. PROUTY:—I have very carefully considered that question, and I do not think that this nation has arrived at the point where it is necessary to do that. It would add very much to the expense of the work to attempt to slow it down.

This augmentation of forces is a thing which has got to be done. If it is not done by the bureau of valuation it has got to be done by the director general. Now, my proposition has been to take one of the bureaus which we have had within the bureau of valuation and which we will call our Cost bureau and make that the nucleus of this new force.

THE CHAIRMAN:—Right now the railroads are in point of fact duplicating your work?

MR. PROUTY:—They are, and they are going to stop it; if they do not stop it, they are going to pay for it themselves. The director general is not going to permit them to pay that out of the operating expenses.

THE CHAIRMAN:—What will be said of their claim to protect themselves against a false conclusion touching valuations?

MR. PROUTY:—They ought unquestionably to have that right. They will undoubtedly be allowed to use the operating expenses for the purpose of presenting their data, but if they wish to contest in the courts or before the commission the correctness of the government's valuation it will be done by the corporations and out of the corporate funds and not at the expense of the government.

Status of Work

THE CHAIRMAN:—What, Mr. Commissioner, has been the work of your valuation department recently?

MR. PROUTY:—We have been at work during the last winter in the south on the Atlantic Coast Line, the Seaboard Air Line, the Norfolk & Western, and on the Louisville & Nashville. In the East we have finished New England. We will be at work next summer on the Pennsylvania, the Philadelphia & Reading, the Lehigh Valley, the Erie, the New York Central, and, to some extent, on the Lackawanna. West of Pittsburgh we have completed our work on the Pennsylvania lines. We have completed our work on the Big Four. We have substantially completed our work on the Great Northern, the Santa Fe, and the Rock Island. We are at work on the Northern Pacific. We are at work on the Burlington. We have completed our work on the Puget Sound line of the St. Paul, and we are at work on its eastern lines. I do not think there is a considerable railroad system in the United States upon which our work is not well advanced, with two exceptions.

SUMMARY

Mileage Completed	Total mileage
Eastern district	13,555
Southern district	20,701
Central district	19,745
Western district	28,657
Pacific district	34,935
Total	116,593

Central district	22,390	10,625
Western district	17,876	11,152
Pacific district	15,483	5,139

THE CHAIRMAN:—Speaking of all the roads in connection with the field work, what percentage of the work do you consider now completed?

MR. PROUTY:—I would say that our field work was completed on the average for about 175,000 miles with probably 75,000 miles more to finish.

Farewell from E. P. Ripley to Santa Fe Employees

E. P. RIPLEY, president of the Atchison, Topeka & Santa Fe, has decided to remain president of the company, and manage its corporate affairs. This means, of course, that he gives up the operation of the property. W. B. Storey, vice-president in charge of operation, has been appointed federal manager.

Mr. Ripley has written the following "Good-bye" to the employees of the road, which will be published in the current issue of the Santa Fe Employees' Magazine:

"CHICAGO, June 21, 1918.

"ALL EMPLOYEES:

"For some years it has been apparent that it would soon be my duty to resign the active management of the Santa Fe, but, at the urgent request of our directors and my subordinates, I have postponed taking the step, the more readily because of the personal relations existing between us.

"The time seems now to have arrived, however, when my services as executive are of little value and when I can retire with the best grace and the least friction, and I therefore resigned the active management at the June meeting of the board of directors, closing a term of service with the operating affairs of the company of practically twenty-two and a half years.

"The memories of this long period are varied. We have jointly sought to make the Santa Fe a model—the extent to which we have succeeded is not for us to say, but we surely are not called on for apology. The daily contact with all of you has been instructive; hidden springs of motive and of principle have been revealed and unsuspected angles of character developed, and human nature has stood forth as a cleaner, brighter and sweeter thing than it ordinarily is painted.

"Although the Santa Fe is now merged with other roads as a government enterprise, I am bold enough to hope for it that it will retain some of its old characteristics—that its employees shall be both courteous and efficient and its service of the best as heretofore; that relations with its neighbors shall continue good and that each employee shall render to the government the same loyal service he has heretofore given the company.

"Mr. Storey is to be the federal manager, and I bespeak for him the same loyalty that it has been my fortune to enjoy.

"For a time, at least, I shall in a sense still be related to the Santa Fe family, in charge of the interests of the stockholders, and shall always be happy to hear from my former associates—and so, good-bye.

"Yours truly,

E. P. RIPLEY."

ARE YOU GRATEFUL that 2,000,000 of our boys, enlisted in our Army and Navy, are giving us security at home? If you are, turn your gratitude into War Savings Stamps.



Ambulance Train Built by the Great Western Railway for American Forces

Two Ambulance Trains for the United States Army

The Great Western of England Has Built 14 Ambulance Trains; Has Also Repaired 25,700,000 Shell Cases

IN PURSUANCE of the general policy which the English railway companies have followed since the outbreak of war of assisting to meet the needs of the allied armies in the field in the manufacture of munitions of war and rolling stock, several complete ambulance trains have been built for the United States government. Two of them have been constructed by the Great Western Railway. The trains, which comprise 16 modern eight-wheel coaches, were constructed at the Swindon works and sent to France in January and March last.

The exterior of the trains is painted a khaki-green color,



Sick Officers' Car

with conspicuous red crosses on a white ground at each end of the coach and the letters "U. S." in red and white on either side. The interior is enamelled white throughout. Each train is 960 ft. in length (over buffers) and weighs 441 tons. It is composed of the following vehicles:

- 9 ward cars,
- 1 brake and infection car for lying down cases,
- 1 disinfecting car,
- 1 staff car,
- 1 personnel car for orderlies,
- 1 baggage car,
- 1 brake and stores car.

Altogether there is accommodation for 393 persons. In each of the cars there are 36 cots, arranged in 12 tiers of three each. There are four wards with six beds each in the brake and infection car and a dispensary, treatment and linen rooms, office and ward with 12 cots in the pharmacy car. Dining and sleeping accommodation for the staff is provided in the staff car. The kitchen cars are not only well-fitted and commodious, but contain sitting room and mess accommodation for sick officers, mess accommodation for the orderlies and a bath-room with hot and cold water. The orderlies' car, which in emergency could be used as a ward, contains accommodation for 33 persons. Each vehicle, except the brake and stores car, is fitted with lavatories.

Each coach is equipped with its own self-contained electric lighting installation, comprising a dynamo driven from a pulley on the axle of the vehicle, which generates the current and supplies the lamps and fans, while a battery of accumulators which are charged by the dynamo when the train is running supply the current required when it is standing.

A feature of the steam-heating is that the staff and personnel cars are fitted with self-contained circulating hot-water apparatus for use when an engine is not attached to the train.

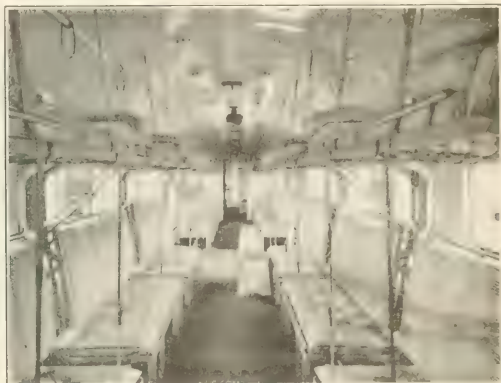
In addition to building two ambulance trains for the American Expeditionary Forces, four similar trains have been constructed at Swindon for use in England and eight for the allied armies in France or other theatres of war. A considerable number of guns and gun carriages have also been built there; and in a recent report prepared by the British Board of Trade special reference is made to Swindon works in connection with one particular item, viz., the repairing of cartridge cases. The department said that in order to get the very rapid fire required of the smaller guns—4.5 in. and 18-pounders—the cordite charge and shell are fitted into brass cartridge cases and handled in one piece. The field guns are cartridge-loaded just like rifles or machine guns. It would be very wasteful to throw away the valuable spent cases which, though often split and always needing to be renovated, are capable of being put to further use. The railway workshops have made a specialty of repairing and re-forming cartridge cases and have put down machinery for the purpose. It was out of the question to do the work with the existing plant, so an arrangement was

made with the War Office—and afterwards confirmed by the Ministry of Munitions—under which the government, at a cost of more than \$500,000, installed the requisite plant and gave the companies an option to purchase it after the war at a valuation. With the aid of this specially provided machinery the railway workshops have “renovated” more than 22,000,000 18-pounder cases, brazed and repaired 2,000,000 18-pounder cases and renovated, brazed and repaired more

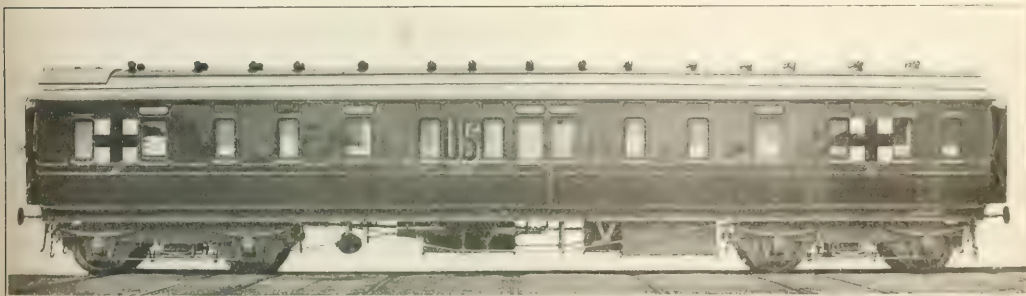
than 1,700,000 4.5 in. cases. A good many fired cases, either split in firing or develop splits during the process of re-forming. As the result of experiments in the Great Western Railway works at Swindon, a process was devised by which these splits can be brazed and repaired. The system was approved, and at first restricted to 18-pounder cases, but subsequently it was extended to 4.5 in. split cases. By this means more than 2,000,000 cases have been replaced in effective use.



Ward Car Made Up



Ward Car for Sitting Cases



One of the Ward Cars for Train No. 55



The Kitchen



Pharmacy and Ward Car for Train No. 55

Standard Specifications for Cross Ties

STANDARD SPECIFICATIONS for cross ties have been adopted by the Central Advisory Purchasing Committee of the Railroad Administration on recommendation of the regional purchasing committees and approved by C. R. Gray, director of operation, and John Skelton Williams, director of finance and purchases. Shortly after the organization of the purchasing committees, orders were issued that railroads should buy ties only along their own lines and supply ties to other roads which could not secure their requirements in their own territory. This made it necessary to establish prices for ties and difficulty ensued because of the many variations in sizes and kinds. Under the standard specifications 10 grades have been adopted, including four sawed or hewed on all sides and six sawed or hewed only on top and bottom, in place of 30 or more odd sizes formerly bought.

Only the kinds of wood and ties now in use have been adopted, but some new methods have been introduced into the practice in connection with the handling and purchasing of ties. Where formerly the tie most generally used on a road or the largest size used was classed as grade No. 1, the grade numbers have been changed so that No. 1 applied to the smallest size and the grade numbers increase with the size, on the theory that a larger size tie than is now generally used may be introduced, but it is not likely that any smaller size will be used. The grading has also been arranged so that the bearing of the rail on the tie is the deciding factor instead of the cross section. This means that from a log of a given size the manufacturer will not be paid for the sap wood which he may leave upon it if the tie is sawed or hewed only at top and bottom. All sizes of ties are provided for in the specifications, which makes it possible to utilize all the logs in the tree or all the trees in a forest. These specifications are as follows:

Kinds of Wood. Before manufacturing ties, producers should ascertain from the railroad to which they contemplate delivering them just which of the following kinds of wood suitable for cross-ties will be accepted: ash, beech, birch, catalpa, cedar, cherry, chestnut, cypress, elm, fir, gum, hackberry, hemlock, hickory, larch, locust, maple, mulberry, oak, pine, redwood, sassafras, spruce, sycamore, and walnut. Others will not be accepted unless specially ordered.

Quality. All ties shall be free from any defects that may impair their strength or durability as cross-ties, such as decay, splits, shakes, or large or numerous holes or knots.

Ties from needleleaved trees shall be of compact wood, with not less than one-third summerwood when averaging five or more rings of annual growth per inch, or with not less than one-half summerwood in fewer rings, measured along any radius from the pith to the top of the tie. Ties of coarse wood, with fewer rings or less summerwood, will be accepted when specially ordered.

Ties from needleleaved trees for use without preservative treatment shall not have sapwood more than two inches wide on the top of the tie between 20 in. and 40 in. from the middle, and will be designated as "heart" ties. Those with more sapwood will be designated as "sap" ties.

Manufacture. Ties ought to be made from trees which have been felled not longer than one month.

All ties shall be straight, well manufactured, cut square at the ends, have top and bottom parallel, and have bark entirely removed.

Dimensions. Before manufacturing ties, producers should ascertain from the railroad to which they contemplate delivering them just which of the following lengths, shapes, and sizes will be accepted.

All ties shall be 8 ft. or 8 ft. 6 in. long.

All ties shall measure as follows throughout both sec-

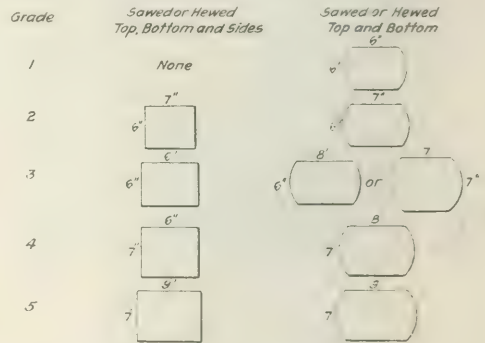
tions between 20 in. and 40 in. from the middle of the tie:

The above are minimum dimensions. Ties over one inch more in thickness, over three inches more in width, or over two inches more in length will be degraded or rejected.

The top of the tie is the plane farthest from the pith of the tree, whether or not the pith is present in the tie.

Delivery. All ties ought to be delivered to a railroad within one month after being made.

Ties delivered on the premises of the railroad shall be stacked not less than 10 ft. from the nearest rail of any track at suitable and convenient places; but not at public crossings, nor where they will interfere with the views of trainmen or of people approaching the railroad. Ties should



Standard Dimensions of Cross Ties by Grades

be stacked in alternate layers of two and seven the bottom layer to consist of two ties kept at least six inches above the ground. The second layer shall consist of seven ties laid crosswise of the first layer. When the ties are rectangular, the two outside ties of the layers of seven and the layers of two shall be laid on edge. The ties in layers of two shall be laid at the extreme ends of the ties in the layers of seven. No stack may be more than 12 layers high, and there shall be five feet between stacks to facilitate inspection. Ties may be ranked like cordwood, in which case the owner shall rehandle them while inspection is being made. Ties which have stood on their ends on the ground will be rejected.

All ties are at the owner's risk until accepted. All rejected ties shall be removed within one month after inspection.

Ties shall be piled as grouped below. Only the kinds of wood named in the same column may be piled together.

CLASS I—TIES WHICH MAY BE USED UNTREATED

Group 1a	Group 1b	Group 1c	Group 1d
Ash, Locust White Oak Black Walnut	"Heart" Pines "Heart" Douglas Fir	"Heart" Cedars "Heart" Cypress Redwood	Catalpa Chestnut Red Mulberry Sassafras

CLASS II—TIES WHICH SHOULD BE TREATED

Group 2a	Group 2b	Group 2c	Group 2d
Ashes Hackberries Honey Locust Red Oaks	"Sap" Cedars "Sap" Cypress "Sap" Douglas Fir Hemlocks Larches Pines	Birches Birches Gums Hard Maples	Elms Hackberry Soft Maples Sycamores White Walnut

Shipment. Ties shall be separated in the car according to the above groups and sizes as far as practicable.

A Forest Products Section has been organized by the Central Advisory Purchasing Committee with M. E. Townner, purchasing agent of the Western Maryland as manager, and with office in the Southern Railway building, Washington. The Forest Products Section devotes itself to such matters as specifications for lumber products, such as lumber for the cars recently ordered by the government, the distribution

of lumber to the car building plants and also the distribution of orders for ties from one region to another. Under the order that a railroad may not directly purchase ties off its own line, a railroad which cannot meet its own requirements in its own territory makes a requisition on the regional purchasing committee, which refers the matter to the Central Purchasing Committee, and the Forest Products Section acts as a clearing house. Fixed prices have been established for ties, but the prices have not been standardized because of the variation in local conditions.

Railroads Haul More Freight Than in 1917

THE RAILROADS DURING the month of April recovered from the effect of the difficult operating conditions experienced during January to such an extent that for the four months, January to April combined, they had handled an increase of 822,000,000 ton miles of revenue freight, or 7 per cent, as compared with the corresponding period of 1917, with 3.2 per cent less train miles, 7.4 per cent less car miles and 4.1 per cent less locomotive miles. This is

shown by the summary of freight train operation statistics for April compiled by the Operating Statistics Section of the Railroad Administration in the form in which it was previously compiled by the Bureau of Railway Economics for the American Railway Association.

During April the revenue ton miles increased 8.9 per cent, with an increase of only 1.3 per cent in train miles, a decrease of .3 per cent in total car miles and 2.4 per cent more locomotive miles. The tonnage per train increased 6.9 per cent, and the average load per car increased 14.4 per cent, while the average mileage per locomotive per day increased 1.5 per cent, although the average car mileage per day decreased 5.1 per cent as compared with April, 1917. For the four months the increase in tonnage per train was 3.9 per cent and in car loading the increase was 10 per cent, although the average mileage for both locomotives and cars per day decreased.

For the three months including March the reports had shown a decrease in revenue ton miles of 2.6 per cent, although there had been an increase in March of 7.5 per cent and in February of 2.9 per cent. The decreases up to April 1, therefore, were attributable to the effect of the severe weather of January.

The series of reports which has now been taken over by

APRIL, 1918									
UNITED STATES*					EASTERN DISTRICT				
Item	1918	1917	Increase or decrease		Increase or decrease		Increase or decrease		
			Amount	Per cent			Amount	Per cent	
Freight train-miles.....	5,343,987	5,600,051	703,064	1.3					
Loaded freight car-miles.....	1,262,987,607	1,334,832,399	d 71,844,792	d 5.4	560,571,383	597,725,723	d 37,154,340	d 6.2	
Empty freight car-miles.....	594,166,634	526,980,486	67,186,148	12.7	259,373,142	246,251,997	13,121,145	5.3	
Total freight car-miles—loaded and empty.	1,857,154,241	1,861,812,885	d 4,658,644	d 0.3	819,944,525	843,977,720	d 24,033,195	d 2.8	
Freight locomotive-miles.....	62,066,394	60,586,700	1,479,694	2.4	26,815,985	26,650,893	164,792	0.6	
Revenue ton-miles.....	34,250,247,914	31,464,837,365	2,785,410,549	8.9	16,598,678,157	15,274,029,164	1,234,648,993	8.1	
Non-revenue ton-miles.....	2,878,388,826	2,815,055,292	63,333,534	2.2	925,585,305	918,048,547	7,536,758	0.8	
Average number of freight locomotives in service.....	30,421	30,141	280	0.9	13,149	12,860	289	2.2	
Average number of freight locomotives in or awaiting shop.....	4,667	4,336	331	7.6	2,161	1,953	208	10.7	
Average number of freight cars in service.....	2,387,670	2,271,359	116,311	5.1	1,272,456	1,213,745	58,711	4.8	
Average number of freight cars in or awaiting shop.....	122,149	127,737	d 5,588	d 4.4	71,627	69,601	2,026	2.9	
Home.....	71,098	97,351	d 26,253	d 27.0	40,383	52,683	d 12,300	d 23.3	
Foreign.....	51,051	30,386	20,665	68.0	31,244	16,918	14,326	84.7	
Tons per train.....	696	651	45	6.9	807	740	67	9.1	
Tons per loaded car.....	29.4	3.7	14.4	31.1	27.1	4.0	14.8		
Average miles per locomotive per day.....	68.0	67.0	1.0	1.5	68.0	69.1	d 1.1	d 1.6	
Average miles per car per day.....	25.9	27.3	d 1.4	d 5.1	21.5	23.2	d 1.7	d 7.3	
Per cent of empty car-miles.....	32.0	28.3	3.7	13.1	31.6	29.2	2.4	8.2	
Per cent of freight locomotives in or awaiting shop.....	15.3	14.4	0.9	6.3	16.4	15.2	1.2	7.9	
Per cent of freight cars in or awaiting shop.....	5.1	5.6	d 0.5	d 8.9	5.6	5.7	d 0.1	d 1.8	
Revenue ton-miles:									
Per freight locomotive.....	1,125,975	1,043,921	81,954	7.9	1,255,508	1,167,716	67,792	5.7	
Per freight car.....	14,345	13,853	492	3.6	12,974	12,584	390	3.1	
Average miles operated—single track.....	217,784.02	217,336.43	447.59	0.2	57,272.24	57,468.93	d 196.69	d 0.3	

d Decrease. * The returns included in the monthly statement represent about 94 per cent of the total operated mileage of the roads of Class 1.

SOUTHERN DISTRICT									
Increase or decrease					WESTERN DISTRICT				
Item	1918	1917	Amount	Per cent	1918	1917	Amount	Per cent	
Freight train-miles.....	10,017,899	9,012,808	1,005,091	11.2	1,720,664	21,745,601	d 2,55,337	d 0.1	
Loaded freight car-miles.....	220,159,441	211,309,260	8,850,181	4.2	482,256,783	525,797,416	d 43,540,633	d 8.3	
Empty freight car-miles.....	108,909,477	89,603,759	19,305,718	21.6	225,884,015	191,124,730	34,759,285	18.2	
Total freight car-miles—loaded and empty.	329,068,918	300,913,019	28,155,899	9.4	708,140,798	716,922,146	d 8,781,348	d 1.2	
Freight locomotive-miles.....	11,275,334	10,101,108	1,174,226	11.6	23,975,175	23,834,699	140,476	0.6	
Revenue ton-miles.....	5,995,908,818	5,334,863,620	660,435,198	12.4	11,746,272,939	10,855,944,581	890,328,358	8.2	
Non-revenue ton-miles.....	516,181,108	479,285,431	36,895,677	7.7	1,136,622,413	1,417,721,314	18,901,099	1.3	
Average number of freight locomotives in service.....	5,147	5,049	98	1.9	12,125	12,232	d 107	d 0.9	
Average number of freight locomotives in or awaiting shop.....	603	603	.....	.....	1,903	1,780	123	6.9	
Average number of freight cars in service.....	348,992	284,456	64,536	22.7	766,222	773,158	d 6,936	d 0.9	
Average number of freight cars in or awaiting shop.....	14,536	16,932	d 2,396	d 14.2	35,986	41,204	d 5,218	d 12.7	
Home.....	8,538	12,830	d 4,292	d 33.5	22,177	31,838	d 9,661	d 30.3	
Foreign.....	5,998	4,102	1,896	46.2	13,809	9,366	4,443	47.4	
Tons per train.....	650	645	5	0.8	207	564	43	7.6	
Tons per loaded car.....	27.5	29.6	2.1	7.3	27.3	4.0	17.2		
Average miles per locomotive per day.....	73.0	66.7	6.3	9.4	65.9	65.0	0.9	1.4	
Average miles per car per day.....	31.4	35.3	d 3.9	d 11.0	30.8	30.9	d 0.1	d 0.3	
Per cent of empty car-miles.....	33.1	29.8	3.3	11.1	31.9	26.7	5.2	19.5	
Per cent of freight locomotives in or awaiting shop.....	11.7	11.9	d 0.2	d 1.7	15.7	14.6	1.1	7.5	
Per cent of freight cars in or awaiting shop.....	4.2	6.0	d 1.8	d 30.0	4.7	5.3	d 0.6	d 11.3	
Revenue ton-miles:									
Per freight locomotive.....	1,164,814	1,056,618	108,196	10.2	968,765	887,504	81,261	9.2	
Per freight car.....	17,179	18,755	d 1,576	d 8.4	15,330	14,041	1,289	9.2	
Average miles operated—single track.....	37,035.46	36,797.02	238.44	0.6	123,476.32	123,070.48	405.84	0.3	

d Decrease. * The returns included in the monthly statement represent about 94 per cent of the total operated mileage of the roads of Class 1.

COMPILED FOUR MONTHS JANUARY TO APRIL, 1918

UNITED STATES*

INCREASE OR DECREASE

Item	1918	1917	Increase or decrease		1918	1917	Increase or decrease	
			Amount	Per cent			Amount	Per cent
Freight train-miles.....	1,462,460	211,018,455	d 6,762,175	4.6	79,581,086	87,120,021	d 7,538,935	-8.7
Loaded freight car-miles.....	1,414,244,101	4,081,889,488	d 433,146,278	-10.7	1,885,278,982	2,200,886,338	d 315,607,356	-14.3
Empty freight car-miles.....	1,514,613,777	2,035,149,293	d 85,447,916	-4.2	883,369,139	960,187,624	d 76,818,485	-8.0
Total freight car-miles—loaded and empty.....	6,498,444,587	7,017,038,781	d 518,594,194	-7.4	2,738,848,121	3,161,073,962	d 422,225,841	-13.4
Freight locomotive-miles.....	1,089,848,906	248,529,154	d 10,083,161	4.1	99,269,522	106,658,948	d 7,389,426	-6.9
Revenue ton-miles.....	119,000,290,489	118,727,513,684	822,276,775	0.7	54,584,829,442	57,317,411,504	d 2,732,582,062	-4.8
Non-revenue ton-miles.....	11,105,652,017	11,152,867,685	d 47,215,668	-0.4	3,506,079,177	3,478,943,249	27,135,928	0.8
Average number of freight locomotives in service.....	30,401	30,025	376	1.2	13,066	12,787	279	2.2
Average number of freight locomotives in or awaiting shop.....	4,670	4,444	226	5.1	1,840	1,867	-27	-1.4
Average number of freight cars in service.....	2,353,318	2,353,318	0	0.0	1,120,520	1,120,520	0	0.0
Average number of freight cars in or awaiting shop.....	11,651	125,777	d 6,062	-0.1	69,541	69,541	0	0.0
Home.....	76,686	98,235	d 18,549	-19.3	42,594	52,043	d 9,141	-17.6
Foreign.....	45,765	30,542	12,487	40.9	17,496	8,504	8,504	100.0
Tons per train.....	87	616	7.30	69.8	27.6	3.2	11.6	362.5
Average miles per locomotive per day.....	65.4	69.0	-3.6	-5.2	63.3	69.5	-6.2	-9.0
Average miles per car per day.....	23.0	25.8	-2.8	-10.8	18.5	21.9	-3.4	-15.5
Per cent of empty car-miles.....	23.0	29.0	-6.0	-20.7	31.2	30.4	0.8	2.6
Per cent of freight locomotives in or awaiting shop.....	15.4	14.8	0.6	4.1	14.1	15.2	-0.9	-6.5
Per cent of freight cars in or awaiting shop.....	5.1	1.9	3.2	166.3	5.6	5.8	-0.2	-3.3
Revenue ton-miles.....	3,684,074	3,955,954	d 21,880	-0.6	4,196,986	4,482,475	d 285,579	-6.4
Per freight locomotive.....	50,822	52,467	d 1,645	-3.1	44,274	37,742	6,532	17.3
Average miles operated—single track.....	220,357.42	220,238.73	118.69	0.05	57,189.66	57,457.27	d 267.61	-0.5

d Decrease. * The returns included in the monthly statement represent about 94 per cent of the total operated mileage of the roads of Class 1.

SOUTHERN DISTRICT

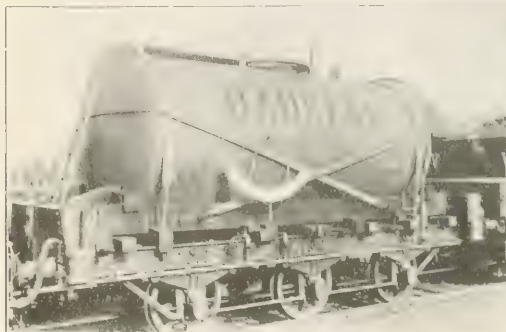
WESTERN DISTRICT

Item	1918	1917	Increase or decrease		1918	1917	Increase or decrease	
			Amount	Per cent			Amount	Per cent
Freight train-miles.....	399,406,683	38,273,973	1,666,678	4.4	84,734,541	83,624,459	d 889,918	-1.0
Loaded freight car-miles.....	847,399,922	861,689,141	d 24,289,219	-2.8	1,826,064,306	1,919,314,009	d 93,249,703	-4.9
Empty freight car-miles.....	396,464,054	377,788,654	23,687,400	6.4	699,866,184	703,203,015	d 3,336,831	-0.5
Total freight car-miles—loaded and empty.....	1,233,845,976	1,239,477,795	d 6,601,819	-0.5	2,525,950,490	2,621,517,024	d 95,566,534	-3.6
Freight locomotive-miles.....	44,849,775	42,745,808	2,103,967	4.9	94,324,696	99,124,998	d 4,799,702	-4.8
Revenue ton-miles.....	22,291,156,385	21,491,876,072	799,280,513	3.7	42,723,804,432	39,968,226,108	2,755,578,324	6.9
Non-revenue ton-miles.....	2,083,487,887	2,070,681,551	12,806,336	0.6	5,516,084,953	5,603,242,885	d 87,157,932	-1.6
Average number of freight locomotives in service.....	5,161	5,067	94	1.9	12,174	12,171	3	0.0
Average number of freight locomotives in or awaiting shop.....	646	637	9	1.4	1,926	1,862	64	3.4
Average number of freight cars in service.....	348,916	290,562	58,354	20.1	771,524	772,710	d 1,186	-0.2
Average number of freight cars in or awaiting shop.....	14,157	14,944	d 787	-5.2	36,654	41,296	d 4,642	-11.2
Home.....	9,049	11,671	d 2,622	-22.0	24,683	31,519	d 6,836	-21.7
Foreign.....	5,108	3,273	1,789	54.7	11,971	9,777	2,194	22.4
Tons per train.....	610	616	-6	-1.0	569	532	37	7.0
Average miles per locomotive per day.....	72.4	70.3	2.1	3.0	64.6	67.9	-3.3	-4.9
Average miles per car per day.....	29.5	35.4	-5.9	-16.7	27.3	28.3	-1.0	-3.5
Per cent of empty car-miles.....	32.1	30.2	1.9	6.3	27.7	26.8	0.9	3.4
Per cent of freight locomotives in or awaiting shop.....	12.5	12.6	-0.1	-0.8	15.8	15.3	0.5	3.3
Per cent of freight cars in or awaiting shop.....	4.1	5.1	d 1.0	-19.6	4.8	5.3	d 0.5	-9.4
Revenue ton-miles.....	4,319,155	4,241,539	77,616	1.8	3,509,430	3,283,890	225,540	6.9
Per freight locomotive.....	10,822	73,967	d 10,080	-10.8	55,376	51,725	3,651	7.1
Average miles operated—single track.....	38,167.79	38,167.79	206.91	0.5	125,001.97	124,822.58	179.39	0.1

d Decrease. * The returns included in the monthly statement represent about 94 per cent of the total operated mileage of the roads of Class 1.

the Operating Statistics Section was inaugurated by the Railroad War Board and the first issue was for April, 1917, but as the board did not begin its active work until the latter part of that month the first real comparison of the results

obtained under its direction and under the direction of the Railroad Administration will be afforded by the report for May. The complete summary is given on this and the preceding page.



The "Water-Wagon" and Showers of a Hun Bath Train

Federal Appointments in the Southwestern Region

THE FEDERAL MANAGERS in the southwestern region have recently announced the appointments of their staffs effective July 1. As there have been far-reaching changes in the organization and personnel of the railroads in this territory, the new staffs will be of especial interest to readers of the *Railway Age*.

Southern Pacific-Gulf Coast Lines

W. B. Scott, federal manager of the Galveston, Harrisburg & San Antonio, the Texas & New Orleans, Morgan's Louisiana & Texas, the Louisiana Western, the New Orleans, Texas & Mexico, the St. Louis, Brownsville & Mexico, and the San Antonio & Aransas Pass, announces the appointment of G. S. Waid, vice-president and general manager of the Southern Pacific lines in Texas, as general manager of all the above-mentioned lines except the San Antonio & Aransas Pass, of which J. S. Peter, first vice-president and general manager under the former organization, is made general manager under the new arrangement. Gentry Waldo, general freight agent of the Southern Pacific Texas lines, has been appointed traffic manager of all lines under Mr. Scott's jurisdiction. Baker, Botts, Parker & Garwood, of Houston, Tex., have been appointed general solicitors of all lines, with headquarters at Houston, Tex., and I. A. Cottingham, special engineer of the Southern Pacific Texas lines, has been appointed chief engineer, with office at Houston. The purchasing agent for all of Mr. Scott's lines will be N. P. Randolph, purchasing agent of the Southern Pacific lines in Texas. Mr. Randolph will have headquarters at New Orleans, La.

G. R. Cottingham, secretary and auditor of the Southern Pacific, Texas lines, has been appointed general auditor of the Galveston, Harrisburg & San Antonio and the Texas & New Orleans, with headquarters at Houston, Tex. Three auditors also have been appointed, namely, G. B. Herbert, auditor of the Southern Pacific lines in Louisiana, who becomes auditor of Morgan's Louisiana & Texas and the Louisiana Western, with headquarters at New Orleans; J. W. McCullough, general auditor of the Gulf Coast lines, who becomes auditor of the New Orleans, Texas & Mexico and the St. Louis, Brownsville & Mexico, with headquarters at Houston; and J. W. Terry, secretary and auditor of the San Antonio & Aransas Pass, who becomes auditor of the same road under the new arrangement, with headquarters at San Antonio, Tex. Five local treasurers have been named as follows: C. B. Udell, treasurer of the Southern Pacific lines in Texas, becomes local treasurer of the Galveston, Harrisburg & San Antonio, with headquarters at Houston, Tex.; E. Dargan has been appointed local treasurer of the Texas & New Orleans, with office at Houston; St. D. J. DeBlanc, secretary and treasurer of the Southern Pacific lines in Louisiana, becomes local treasurer of Morgan's Louisiana & Texas and the Louisiana Western, with headquarters at New Orleans, La.; J. H. Lauderdale, treasurer and assistant secretary of the Gulf Coast lines, has been appointed local treasurer of the New Orleans, Texas & Mexico and the St. Louis, Brownsville & Mexico, with headquarters at Houston, Tex.; and Haden F. Smith, treasurer of the San Antonio & Aransas Pass, becomes local treasurer of that road, with headquarters at San Antonio, Tex.

Texas & Pacific—International & Great Northern

J. L. Lancaster, federal manager of the Texas & Pacific, the Louisiana Railway & Navigation Company (lines west of the Mississippi river), the St. Louis Southwestern Railway of Texas, the International & Great Northern (excluding the line from Spring to Ft. Worth and the Madisonville

branch), the Trinity branch of the Missouri, Kansas & Texas Railway of Texas, and the Beaumont & Great Northern; announces the appointment of Phil Carroll, general manager of the Texas & Pacific, as general manager of the first two of the above-named roads, and A. G. Whittington, general manager of the International & Great Northern, as general manager of the remaining lines. J. B. Payne, traffic assistant to the receivers of the Texas & Pacific, becomes traffic manager of all lines; George Thompson, general attorney of the Texas & Pacific, has been appointed general solicitor; E. F. Mitchell, chief engineer of the Texas & Pacific, becomes chief engineer; and R. L. Irwin, purchasing agent of the Texas & Pacific, becomes purchasing agent of all lines under Mr. Lancaster's jurisdiction.

A. J. Biard, auditor of the Texas & Pacific, has been appointed general auditor of the same road under the new organization, with headquarters at Dallas, Tex.; W. J. Werner, auditor of the International & Great Northern, retains that position under the new arrangement, with headquarters at Houston, Tex. A. R. Wood, assistant auditor of the St. Louis Southwestern of Texas, becomes auditor of the same road with headquarters at Tyler, Tex.; J. J. Tippin, secretary and auditor of the Louisiana Railway & Navigation Company, has been appointed auditor of the same line with headquarters at Shreveport, La.; O. H. Bower, auditor of the Missouri, Kansas & Texas of Texas and the Beaumont & Great Northern becomes auditor of the Trinity branch of the Katy and the B. & G. N. In addition the following local treasurers were appointed: L. S. Smith, assistant treasurer of the Texas & Pacific, becomes local treasurer of that road at Dallas, Texas; A. R. Howard, treasurer of the International & Great Northern, becomes local treasurer of that line with headquarters at Houston, Texas; J. W. Hogan, treasurer of the St. Louis Southwestern of Texas is made local treasurer of the same line at Tyler, Texas; L. M. McFarlin, treasurer of the Louisiana Railway & Navigation Company becomes local treasurer of that line with headquarters at Shreveport, La.; and R. P. Roach, treasurer of the Missouri, Kansas & Texas of Texas and the Beaumont & Great Northern becomes local treasurer of the latter road and of the Trinity branch of the Katy.

G. C. & S. F.—Frisco—Katy (in Texas)

J. S. Pyeatt, federal manager of the Gulf, Colorado & Santa Fe, the Ft. Worth & Rio Grande, the St. Louis-San Francisco & Texas, the Texas Midland, the International & Great Northern (from Spring to Ft. Worth and the Madisonville Branch), the Missouri, Kansas & Texas Railway of Texas, the Wichita Falls & Northwestern, the Ft. Worth & Denver City and the Houston & Texas Central, has appointed W. E. Maxson, general superintendent of the Gulf, Colorado & Santa Fe, as general manager of the first five of the afore-mentioned lines under his jurisdiction, while W. A. Webb, chief operating officer of the Missouri, Kansas & Texas lines, has been appointed general manager of the remaining lines under the jurisdiction of Mr. Pyeatt. J. L. West, freight traffic manager of the Missouri, Kansas & Texas system, has been appointed traffic manager of all the lines under Mr. Pyeatt, with headquarters at Dallas, Tex. J. W. Terry has been appointed general solicitor; F. Merriitt, chief engineer of the Gulf, Colorado & Santa Fe, has been appointed chief engineer of all the lines under Mr. Pyeatt's jurisdiction; while J. E. Anderson has been appointed purchasing agent, all with headquarters at Dallas, Tex.

D. W. McLeod, auditor of the Gulf, Colorado & Santa Fe, retains that position, with headquarters in Galveston, Tex., and W. C. Logan, auditor of the Ft. Worth & Denver City, continues in that capacity with office at Ft. Worth. C. S. Snow, auditor of the Ft. Worth & Rio Grande, has been appointed auditor of that line and of the St. Louis-San Francisco in Texas. O. H. Bower continues as auditor of the

Missouri, Kansas & Texas of Texas, with headquarters at Dallas, and J. T. Mahaney remains auditor of the Wichita Falls & Northwestern with office at Wichita Falls, Tex. T. E. Corley, treasurer and auditor of the Texas Midland, has been appointed auditor of that line with headquarters at Terrell, Tex., and W. J. Werner continues as auditor of the International & Great Northern with office at Houston, Tex. G. R. Cottingham, secretary and auditor of the Southern Pacific Lines in Texas, has been appointed auditor of the Houston & Texas Central with office at Houston. The following local treasurers have been appointed: A. C. Torbert, formerly secretary and treasurer of the Gulf, Colorado & Santa Fe, who will have headquarters at Galveston; W. O. Hamilton, secretary and treasurer of the Ft. Worth & Denver City, with offices at Ft. Worth; L. C. Wilds, treasurer of the Ft. Worth & Rio Grande, headquarters, Ft. Worth; R. P. Roach, treasurer of the Missouri, Kansas & Texas of Texas, office Dallas, Texas; A. W. Eichenberger, treasurer of the Wichita Falls & Northwestern, office Wichita Falls; A. R. Howard, treasurer for the receiver of the International & Great Northern, headquarters Houston; and C. B. Udell, treasurer of the Southern Pacific Lines in Texas, who becomes local treasurer of the Houston & Texas Central, with office at Houston.

Kansas City Southern Group

J. A. Edson, federal manager of the Kansas City Southern, the Texarkana & Ft. Smith, the Midland Valley, the Houston East & West Texas and the Vicksburg, Shreveport & Pacific announces the appointment of C. E. Johnston, general manager of the Kansas City Southern, as general manager of all the lines under his jurisdiction, with headquarters at Kansas City, Mo.; J. F. Holden, vice-president of the Kansas City Southern, has been appointed traffic manager of all of Mr. Edson's lines with headquarters at Kansas City; S. W. Moore, general solicitor of the Kansas City Southern, has been appointed to the same position for all of the lines, with office at Kansas City; J. M. Weir, chief engineer of the K. C. S., becomes chief engineer of all of Mr. Edson's lines, with office at Kansas City; and W. S. Atkinson, purchasing agent of the K. C. S., takes the same position for all of the lines under Mr. Edson's authority with headquarters at Kansas City.

L. J. Hensley, auditor of the Kansas City Southern, has been appointed general auditor of that road with headquarters at Kansas City; E. L. Parker, auditor and freight claim agent of the Texarkana & Ft. Smith, has been appointed auditor of that road with headquarters at Texarkana, Texas; A. W. Lefebvre, vice-president and general manager of the Midland Valley, has been appointed auditor of that road with office at Muskogee, Okla.; G. R. Cottingham, secretary and auditor of the Southern Pacific lines in Texas, has been appointed auditor of the Houston East & West Texas with headquarters at Houston; and H. H. Leroy, auditor of the Alabama & Vicksburg, has been appointed auditor of the Vicksburg, Shreveport & Pacific with headquarters at New Orleans, La. H. Visscher, treasurer of the Kansas City Southern, has been appointed local treasurer of that road with office at Kansas City, Mo.; J. M. Salter, treasurer and paymaster of the Texarkana & Ft. Smith, becomes local treasurer of that road with office at Texarkana, Texas; E. L. Dubois, assistant treasurer and purchasing agent of the Midland Valley, becomes local treasurer of that road with office at Muskogee, Okla.; C. B. Udell, treasurer of the Southern Pacific lines in Texas, has been appointed local treasurer of the Houston East & West Texas with office at Houston, Texas; and Udolpho Wolfe, secretary and treasurer of the Alabama & Vicksburg, has been appointed local treasurer of the Vicksburg, Shreveport & Pacific with headquarters at New Orleans.

Katy-Frisco

L. Kramer, federal manager of the Missouri, Kansas & Texas and the St. Louis-San Francisco, has appointed B. T. Wood, vice-president of the Birmingham Belt Railroad, as

assistant to the federal manager. He has named C. N. Whitehead, assistant to the receiver of the Missouri, Kansas & Texas, as general manager of that road, and J. M. Kurn, vice-president of the St. Louis-San Francisco, as general manager of that line. C. Haile, chief traffic officer of the Katy, has been appointed traffic manager of all the lines under Mr. Kramer's jurisdiction; W. F. Evans, general solicitor of the St. Louis-San Francisco, has been appointed to the same position for all the lines under Mr. Kramer. V. K. Hendricks, assistant chief engineer of the St. Louis-San Francisco, has been appointed chief engineer of all lines, while G. E. Scott, purchasing agent of the Missouri, Kansas & Texas, has been appointed purchasing agent for the federal manager. J. G. Livengood, general auditor of the Missouri Pacific, has been appointed general auditor of the Missouri, Kansas & Texas; R. S. Hoxie, auditor of the St. Louis-San Francisco, retains that position under the new organization. F. Johnson, general treasurer of the M., K. & T., has been appointed local treasurer of that line, and F. H. Hamilton, secretary and treasurer of the Frisco, becomes local treasurer of that road.

Missouri Pacific—Cottonbelt

A. Robertson, federal manager of the Missouri Pacific, the St. Louis-Southwestern and the Louisiana & Arkansas, has appointed M. C. Markham, assistant to the vice-president in charge of traffic of the Missouri Pacific, as assistant to the federal manager. J. F. Murphy, general manager of the Missouri Pacific, and W. N. Neff, general manager of the St. Louis-Southwestern, will retain their positions under the new organization. In addition Mr. Neff will have jurisdiction over the Louisiana & Arkansas. C. E. Perkins, freight traffic manager of the Missouri Pacific and C. L. Stone, passenger traffic manager of that railway, have been appointed to the same positions on all the lines under Mr. Robertson's jurisdiction. E. J. White, vice-president and general solicitor of the Missouri Pacific, has been appointed general solicitor, and H. R. Carpenter, assistant chief engineer of the Missouri Pacific, has been appointed chief engineer of all lines reporting to the federal manager. The purchasing agent of the federal manager's lines will be C. A. Howe, general purchasing agent of the Missouri Pacific. J. G. Drew, vice-president in charge of accounting of the Missouri Pacific, has been appointed general auditor of that road. R. D. Cobb, auditor of the St. Louis-Southwestern, and F. S. Carroll, auditor of the Louisiana & Arkansas, retain those positions under the new organization. F. M. Hickman continues as local treasurer of the Missouri Pacific, and G. K. Warner, treasurer of the St. Louis-Southwestern, and F. S. Carroll, auditor of the Louisiana & Arkansas, have been appointed local treasurers of their respective roads.

Rock Island Lines

J. E. Gorman, federal manager of the Chicago, Rock Island & Pacific and the Chicago, Rock Island & Gulf, has appointed T. H. Beacom, general manager of the second district of the C. R. I. & P. at El Reno, Okla., as general manager, with headquarters at Chicago. S. H. Johnson and L. M. Allen will continue as freight and passenger traffic managers respectively. W. F. Dickinson, general attorney, has been appointed general solicitor, while C. A. Morse, chief engineer and chairman of the valuation committee, and F. D. Reed, general purchasing agent, have been appointed chief engineer and purchasing agent respectively. W. H. Burns continues as general auditor of the Chicago, Rock Island & Pacific, and Henry Lucas as auditor of the Chicago, Rock Island & Gulf. Carl Nyquist, assistant secretary and assistant treasurer of the C. R. I. & P., has been appointed local treasurer of that road, while L. D. Parkinson, secretary and treasurer of the C. R. I. & G., has been appointed local treasurer of that line. All of the above-named officers will have headquarters at Chicago, Ill., with the exception of Messrs. Lucas and Parkinson, who will have headquarters at Ft. Worth, Texas.

General News Department

Airplane letter carriers between New York and Philadelphia are reported to have missed only one trip in three weeks.

A fire at Napoleon, Ohio, on July 4, destroyed the roundhouse of the Detroit, Toledo & Ironton, together with four freight cars; and damaged ten locomotives; estimated loss \$50,000.

The Boston Elevated Railway is now operated by a board of five trustees, appointed by the governor of the state, under a law recently passed by the legislature. The chairman of the board of trustees is L. A. Frothingham.

The Macon, Dublin & Savannah is now being operated by the government, according to an announcement made in Macon on June 26. The road has been looked upon as one of the "short lines" and its status has been in doubt.

The Interstate Commerce Commission's preliminary summary of railway returns for May, covering 123 roads, shows a net operating income of \$61,000,000, as compared with \$75,000,000 in May, 1917. The net operating income for five months was \$110,000,000 less than the corresponding period of 1917.

A "Secretary of Transportation and Telegraph" is proposed in a bill to create a government department of transportation and telegraph, to administer the operation of the railways and telegraph lines, which was introduced in Congress on July 6 by Senator Lewis, of Illinois. The secretary would have a seat in the cabinet.

The proposed tunnel for automobiles between New York and Jersey City is the subject of bills which have been introduced in Congress by Senator Calder, of New York, and Representative Eagan, of New Jersey. These bills propose that the federal government contribute \$6,000,000 and each of the two states interested—New York and New Jersey—\$3,000,000.

The Kansas City, Mexico & Orient announces that its lines in Mexico are to be taken by the Mexican government and operated by it under a contract, for a period of years. It is understood that the contract will go into effect as soon as officers of the government have finished an inspection of the lines. It is proposed also to build an extension from Marquez to Presidio, on the Rio Grande, 72 miles.

The governor of Georgia, in his annual message to the legislature, on July 3, recommended that the State Railroad Commission be made a body of three members instead of five, and that it be changed into a corporation commission, having authority, including taxing power, over all corporations; the commissioners to be paid adequate salaries and to devote their whole time to the functions of their office.

The Pacific Railway Club has elected G. W. Rear, general bridge inspector of the Southern Pacific, president, to fill the vacancy caused by the resignation of P. P. Hastings, who has taken a position in the division of traffic of the United States Railroad Administration at Washington. W. R. Allberger, vice-president and general manager of the San Francisco-Oakland Terminal Railways, was elected first vice-president to succeed Mr. Rear.

The women employed on the Pennsylvania Railroad now number 10,248, or 1,481 more than on June 1. Women are working in 69 classified occupations on that road. There are six working on car repairs; 74 at cleaning locomotives; four as locomotive dispatchers; 29 as draughtswomen; one is a coal inspector; 595 as laborers; 234 are messengers and assistant messengers; nine are drawbridge attendants; 38 work as freight truckers; one is a trackwoman; and 92 are employed as crossing watchwomen. Many other kinds of work are shown in the list, including 132 signalwomen and assistants.

Prices for rails, and also for other steel articles, were discussed at a conference in Washington last week between J. L. Replogle, chairman, and other members of a subcommittee on steel products of the War Industries Board, and a committee representing the American Iron & Steel Institute. Costs and conditions of manufacture in various branches were discussed, particularly with reference to rails, high speed tool steel and wire rope, and the possibility of substituting Bessemer for open-hearth steel for rails. The War Industries Board desired further information, which was to be submitted at another meeting this week.

Seven men arrested at St. Louis, on June 28, are charged with complicity in the theft of \$100,000 worth of merchandise from box cars standing on the tracks of the Terminal Railroad Association, during the past six months. Five of the accused are railroad employees, including one yardmaster, and two are saloonkeepers. A switchman has made a confession which is said to have led to the recovery of automobile tires valued at \$25,000. At Philadelphia, a man brought before the court for robbing freight cars, and who according to reports confessed to a long series of thefts was let off, on pleading guilty, with a fine of \$300; and officers of the Railroad Administration at Washington are intimating that reprehensible leniency prevails in the courts. At Wilmington, Del., three alleged freight car robbers are held in \$1,000 bail each. Cars in the yards of the Michigan Central, at Windsor, Ont., are said to have been robbed of \$50,000 worth of merchandise during the past eight months. Two switchmen have been arrested at Windsor, charged with stealing from bonded cars; and 2,000 pairs of silk stockings are said to have been recovered.

First Government Standard Locomotive Built

On July 4 the first locomotive of the standard designs adopted by the Railroad Administration was completed by the Baldwin Locomotive Works. This locomotive is of the Mikado type with 55,000 lb. axle load, being one of the 183 included in the order given to that company. It will be assigned to the Baltimore & Ohio, and bears the name of that road on the tender.

Underground Mail Tubes Out of Service

The pneumatic tubes which have been used by the post-office department for conveying letters, for a number of years past, in Boston, New York, Philadelphia, Chicago and St. Louis, are now out of service, the appropriation bill providing for the continuance of the service until next March having been vetoed by President Wilson. The president said that he was convinced that the government was under no legal or moral obligation to continue the contracts with the owners of the tubes, and that, with the increasing efficiency of automobiles, the tube service had become out of date. In New York City the substitution of automobiles, in the streets, in place of the transportation by underground tubes, has been loudly complained of as a troublesome and unnecessary increase of congestion in streets which are crowded throughout the day. In Boston, on the other hand, it is said that since the substitution of automobiles for the tubes, the mails are closed 15 minutes later. The postmaster of Boston says:

"The superintendent of mails was able to reduce the closing time to fifteen minutes before train-departure time. Under the tube system it was impossible to make connection with trains in less than thirty minutes from the general post office. A single package of letters could be sent to the railroad terminals in a few seconds, but it was necessary to spend many minutes in assembling at the railroad stations all of the mail sent through the tubes; and there were five distinct handlings. Under the new arrangement we throw

all the mail on a given train into a mail bag at the central post office and we can despatch these sacks to the railroad terminal in five minutes; and when the mail arrives at the station it may be put aboard the train and no time is lost at the railroad terminals, as was the case under the old arrangement."

Railway Returns for April

Net operating income of the railways for the month of April was about \$3,000,000 less than in April, 1917, and for the four months ending with April was \$110,000,000 less than for the corresponding period of 1917, according to the monthly bulletin issued by the Interstate Commerce Com-

mission. The net operating income for four months was \$143,454,725, and after approximately \$100,000,000 has been taken out for the four months' proportion of the wage increase it will have been reduced to approximately \$43,000,000. The proposed guarantee to the railway companies for four months will amount to something over \$300,000,000. Revenues, except mail revenues, show a large increase for April and for four months, but operating expenses for four months increased nearly one-fourth. Traffic expenses, however, show a decrease for four months of nearly \$3,000,000, showing the effect of the discontinuance of solicitation. While the eastern roads show the largest reduction in net, the western and southern lines also show decreases for four months, but in April the southern lines showed an increase.

RAILWAY REVENUES AND EXPENSES, APRIL, 1918. (180 CLASS I ROADS AND 15 SWITCHING COMPANIES)

Item	UNITED STATES				EASTERN DISTRICT			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated....	233,038.09	231,782.98			59,379.02	59,069.48		
Revenues:								
2. Freight.....	\$263,757,312	\$227,943,184	\$1,132	\$832	\$119,329,494	\$100,423,784	\$2,010	\$1,700
3. Passenger.....	72,452,530	60,363,082	311	260	30,554,366	26,742,392	514	453
4. Mail.....	4,595,152	4,973,262	20	21	1,794,620	1,976,794	30	33
5. Express.....	9,529,136	8,564,590	41	37	4,481,268	4,110,524	75	70
6. All other transportation.....	10,092,773	9,490,733	43	41	5,504,058	5,288,966	93	90
7. Incidental.....	9,805,912	7,776,212	42	34	5,295,338	4,313,801	89	73
8. Joint facility—Cr.....	524,804	337,184	2	1	296,145	154,824	5	2
9. Joint facility—Dr.....	112,880	119,756	1	1	71,089	80,862	1	1
10. Railway operating revenues.....	\$370,614,729	\$319,328,491	\$1,590	\$1,377	\$167,184,200	\$142,930,223	\$2,815	\$2,420
Expenses:								
11. Maintenance of way and structures.....	\$46,906,769	\$38,651,179	\$204	\$167	\$19,232,847	\$15,223,983	\$324	\$258
12. Maintenance of equipment.....	73,155,347	54,496,510	314	235	36,317,932	26,214,583	611	444
13. Traffic.....	4,232,065	5,294,483	18	23	1,776,915	1,979,883	30	33
14. Transportation.....	145,474,141	119,176,186	624	514	70,888,882	58,836,736	1,194	996
15. Miscellaneous operations.....	2,973,136	2,743,159	13	12	1,406,437	1,223,904	24	21
16. General.....	8,348,290	7,786,276	36	33	3,761,276	3,433,047	63	58
17. Transportation for inv.—Cr.....	434,293	520,927	2	2	59,060	62,835	1	1
18. Railway operating expenses.....	\$280,655,455	\$227,626,606	\$1,204	\$982	\$133,325,229	\$106,849,301	\$2,245	\$1,809
19. Net rev. from ry. operations.....	\$89,959,274	\$91,701,825	\$386	\$395	\$33,858,971	\$36,080,922	\$570	\$611
20. Ry. tax accruals (excl. "war taxes").....	\$15,096,585	\$14,213,740	\$65	\$61	\$5,942,832	\$5,779,866	\$100	\$98
21. Uncollectible railway revenues.....	40,011	48,010	..	..	15,968	18,339	..	..
22. Railway operating income.....	\$74,822,678	\$77,440,075	\$321	\$334	\$27,900,171	\$30,282,717	\$470	\$513
23. Equipment rents.....	\$2,277,131	\$1,889,710	\$10	\$8	\$3,773,650	\$3,778,081	\$64	\$64
24. Joint facility rent (dr. bal.).....	1,147,564	1,108,821	5	5	668,737	746,514	11	13
25. Net of items 22, 23 and 24.....	\$71,397,983	\$74,441,544	\$306	\$321	\$23,458,184	\$25,758,322	\$395	\$436
26. Ratio of op. exp. to op. rev.....	75.73%	71.28%	..	..	79.75%	74.75%	..	..
SOUTHERN DISTRICT								
Item	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated....	42,982.97	42,737.26			130,676.10	129,926.24		
Revenues:								
2. Freight.....	\$42,441,392	\$35,303,276	\$987	\$826	\$101,986,426	\$92,216,124	\$780	\$710
3. Passenger.....	13,114,522	8,931,009	305	209	28,783,632	24,689,681	220	190
4. Mail.....	700,048	762,968	16	18	2,100,484	2,233,500	16	17
5. Express.....	1,255,816	1,173,081	29	27	3,792,052	3,280,985	29	25
6. All other transportation.....	981,612	777,676	23	18	3,607,103	3,424,091	29	26
7. Incidental.....	1,340,790	860,571	31	20	3,169,784	2,601,840	24	20
8. Joint facility—Cr.....	118,413	78,785	3	2	110,246	103,575	1	1
9. Joint facility—Dr.....	24,811	22,753	..	..	46,980	16,141	..	..
10. Railway operating revenues.....	\$59,927,782	\$47,864,613	\$1,394	\$1,120	\$143,502,747	\$128,533,655	\$1,098	\$989
Expenses:								
11. Maintenance of way and structures.....	\$6,590,460	\$5,692,265	\$153	\$133	\$21,083,462	\$17,734,931	\$161	\$136
12. Maintenance of equipment.....	11,367,184	8,732,263	264	204	25,470,331	19,549,464	195	150
13. Traffic.....	778,807	898,207	18	21	1,676,349	2,316,303	13	18
14. Transportation.....	21,402,222	16,212,007	498	379	53,183,037	44,127,443	407	340
15. Miscellaneous operations.....	282,842	262,974	7	6	1,283,857	1,256,281	10	10
16. General.....	1,269,360	1,110,574	30	27	3,317,654	3,192,655	25	25
17. Transportation for inv.—Cr.....	59,682	105,938	1	2	315,551	352,154	2	3
18. Railway operating expenses.....	\$41,631,187	\$32,952,447	\$965	\$771	\$105,699,039	\$87,894,223	\$809	\$676
19. Net rev. from ry. operations.....	\$18,296,595	\$14,912,171	\$43	\$34	\$37,803,708	\$40,748,732	\$289	\$313
20. Ry. tax accruals (excl. "war taxes").....	\$2,264,213	\$2,138,817	\$53	\$50	\$6,889,840	\$6,268,057	\$53	\$48
21. Uncollectible railway revenues.....	9,138	9,655	..	..	14,908	20,016	..	..
22. Railway operating income.....	\$16,023,247	\$12,763,099	\$373	\$299	\$30,899,260	\$34,393,659	\$236	\$265
23. Equipment rents.....	\$450,666	\$1,608,817	\$10	\$38	\$1,045,853	\$7,779,554	\$8	\$2
24. Joint facility rent (dr. bal.).....	188,843	204,037	4	5	290,384	1,588,470	1	3
25. Net of items 22, 23 and 24.....	\$16,385,070	\$14,168,479	\$379	\$332	\$31,654,729	\$34,514,743	\$243	\$264
26. Ratio of op. exp. to op. rev.....	69.47%	68.85%	..	..	73.66%	68.33%	..	..

* Debit item. † Excludes figures for Colorado Midland, Missouri Pacific and Iron Mountain.

Disastrous Collision at Nashville

In a butting collision of passenger trains on the Nashville, Chattanooga & St. Louis at a point known as Dutchman's Bend, five miles west of Nashville, Tenn., on the morning of July 9, about 100 passengers were killed and as many more injured. As we go to press, the figures appear to be rough estimates.

Most of the killed and injured were on a local train from Nashville, which carried workmen going to a powder plant, most of them colored men. The other train was an express from the west, and, after the two engines had reared and fallen beside the track, the heavy coaches of the express plowed through the baggage car on the local train and demolished two other coaches. The crews of both locomotives were killed and the reports give no indication of the cause of the collision. There were a few women among the killed. Most of the white persons killed were in the smoking car of the local train. Among the killed were several soldiers and sailors.

G. R. Loyall, operating assistant of the Southern Regional Director, was sent by the Railroad Administration on Tuesday to the scene of the collision with instructions to make a full investigation and report for the Railroad Administration, supplementing the investigation by the Bureau of Safety of the Interstate Commerce Commission.

Work on Chicago Union Station Suspended

Work on the new \$33,000,000 union station at Chicago has been suspended until after the war. This decision was reached at a conference between the city council's committee on railway terminals, representatives of the Chicago Railway Terminal Commission and representatives of the Railroad Administration, held in the office of the regional director of northwestern railroads, at Chicago, on July 3. The Twelfth street viaduct, work on which is under way, will probably be completed, and the Monroe street bridge is also expected to be finished. In addition, the double-deck viaduct on Canal street, from Taylor to Harrison streets, will probably be brought to completion in order to afford a freight outlet to the west and south sides. Between \$1,000,000 and \$2,000,000 will be expended in placing the streets now torn up in condition for use, restoring several of the other viaducts to their former condition and finishing up odds and ends so that the station program may be definitely discontinued until the war is over. Although no formal action was taken at the conference, the sentiment of the council committee was unanimous to meet the government's request that all possible work be stopped and only enough money spent to make conditions bearable during the period of the war.

Changes in M. C. B. Rules

The Master Car Builders' Association has issued Circular No. 1, dated June 22, making the following additions and amendments to the 1917 Code of the Rules of Interchange, all to become effective July 1, 1918. This is to encourage and facilitate repairs to cars under the present abnormal conditions.

Rule 86 (new paragraph).—M.C.B. standard 60,000 lb. capacity axle, with wheel seat less than the condemning limit for such axle, but above the condemning limit for non-M.C.B. standard axle, may be used until October 1, 1920, to replace M.C.B. standard 60,000 lb. capacity axle with wheel seat less than the condemning limit for such axle, but above the condemning limit for non-M.C.B. standard axle. (This paragraph abrogates the first interpretation shown under Rule 86, page 109.)

Rule 87 (new paragraph).—In order that repairs to cars may be expedited as fully as possible, foreign or private line cars may be repaired by the handling line by using material from their own stock instead of ordering material from car owner, as prescribed by Rule 122, in which event the repairing line is absolved from all responsibility for the cost of standardizing repairs thus made.

When wrong repairs are made using materials which the repairing line should carry in stock, as prescribed by Rule 122, defect card should be issued to cover both labor and material. (This provision supersedes the interpretations under Rule 122 in Circular No. 15, dated October 31, 1917, and Circular No. 19, dated December 20, 1917, and is also to be considered as an exception to Rule 13.)

Resolution for Telegraph Control

The resolution for government control of telegraph and telephone lines for the period of the war adopted by the House of Representatives on July 5, by a vote of 221 to 4, is making slow progress in the Senate. It authorizes the President to take over the properties by a procedure similar to that applied to the railroads. The Senate committee has reported it without recommendation and whether hearings will be held appears to be doubtful. It was amended by a committee of the House before its passage, to provide that government control shall not extend beyond the date of the proclamation of the President of the exchange of ratifications of the treaty of peace although the Secretary of War, the Secretary of the Navy and the Postmaster General, who have advocated the passage of the bill, had recommended that the period be left indefinite. The resolution was also amended in the House to provide that the compensation to the companies taken over shall be left to the President, and in the event of a dispute, 75 per cent of the amount shall be paid to the companies, giving them the right to resort to the courts for any additional amount.

The threatened strike of the operators employed by the Western Union Telegraph Company called for Monday, July 8, which was probably the cause of the administration's recommendation that the resolution be passed, was indefinitely postponed by the president of the Commercial Telegraphers' Union.

Wage Standardization Proposed

Standardization of wages paid by government departments and by contractors engaged in war work is proposed by the War Labor Policies Board, an advisory body composed of representatives of the government departments. This Board, finding that the uncoordinated competitive activities of government contractors have resulted in producing restlessness and wasteful movement of labor from one industry to another, and holding that all wages for both skilled and unskilled labor engaged in war work should be standardized, has resolved that wages paid by government departments and contractors engaged in war work should "after conference with representatives of labor and by industrial management be stabilized by this board."

The resolution was signed by Felix Frankfurter, chairman of the board, and by representatives of other government departments, including W. T. Tyler, assistant director of the division of operation of the Railroad Administration.

The Senate, in passing the sundry civil appropriation bill, on June 24, inserted an amendment providing an appropriation of \$7,590,000 "to enable the Secretary of Labor during the present emergency to furnish such information and to render such assistance in the employment of wage-earners throughout the United States as may be deemed necessary in the prosecution of the war and to aid in the standardization of all wages paid by the government of the United States and its agencies." It was also provided that no money now or heretofore appropriated for the payment of wages not fixed by statute shall be available to pay wages in excess of the standard determined upon by the War Labor Policies Board.

Compressed Air Definitions

Upon the recommendation of its technical committee the Compressed Air Society has adopted the following definitions of certain compressed air terms in order to eliminate confusion as to their exact meaning.

Displacement—The displacement of an air compressor is the volume displacement by the net area of the compressor piston.

Capacity—The capacity should be expressed in cubic feet per minute and is the actual amount of air compressed and delivered, expressed in free air at intake temperature and at the pressure of dry air at the suction.

Volumetric Efficiency—Volumetric efficiency is the ratio of the capacity to the displacement of the compressor, all as defined above.

Compression Efficiency—Compression efficiency is the ratio of the work required to compress isothermally all the air delivered by an air compressor to the work actually done within the compressor cylinder as shown by indicator cards, and may be ex-

pressed as the product of the volumetric efficiency (the intake pressure and the hyperbolic logarithm of the ratio of compression), all divided by the indicated mean effective pressure within the air cylinder or cylinders.

Mechanical Efficiency—Mechanical efficiency is the ratio of the air indicated horsepower to the steam indicated horsepower in the case of a steam driven, and to the brake horsepower in the case of a power driven machine.

Overall Efficiency—Overall efficiency is the product of the compression efficiency and the mechanical efficiency.

The society further recommends that the use of other expressions of efficiency be discontinued.

Making Americans on the Railroad

This is the title of a pamphlet which has been issued by the Pennsylvania Railroad telling what has been done by that company in fitting foreign-born employees to become loyal and useful citizens of the United States. This subject has been given careful attention by the officers of the company for many years. The aim is to make America seem to these people a good place not merely to make money in, but to live in; and to induce them to adopt American standards and ways of living. The immediate object has been to make Italian, Greek, and other foreign track-laborers better and more intelligent workmen, understanding the instructions and counsels of their foremen, but patriotic considerations have not been neglected.

There are on the Pennsylvania Lines, East and West, over 33,000 men of foreign birth, which number, however, is much smaller than before the war. A correspondence course in Italian-English was established some years ago under the direction of a native born Italian, a graduate of Yale; and there is now a similar course on the lines West of Pittsburgh. These activities are already well-known to readers of the *Railway Age*.

On February 20, there were 4,307 students enrolled in the Italian-English course on the Lines East of Pittsburgh, or more than one-half of all the Italian employees.

In teaching foreign-born employees the use of English, they are required, in the course of their everyday work, to accustom themselves to speaking and thinking in the new tongue. Information especially intended for employees of alien birth is usually printed in English instead of in their own language. Practically every gang of workmen has at least one man besides the foreman who can read English. Printed information in English is deciphered by him and explained to the others, so that the double purpose is served of imparting useful information and at the same time giving a language lesson. Lectures on safety and similar subjects are always accompanied by lantern slides in which English words are used.

Early in the War, a considerable number of Mexicans were induced to enter the service. They are on the main line between Pittsburgh and New York. A special course in Spanish-English was prepared for the Mexicans, similar to the Italian-English course, and on February 28, there were 451 Spanish-speaking employees learning English in this way.

The Mexican laborers have been chiefly concentrated in camps where all modern features to promote sanitation and health are adopted; also provisions for amusements and recreation, including camp recreation rooms, victrolas, etc. Instructive entertainments are given, under the auspices of the Young Men's Christian Association. Wherever possible religious services for the Mexican employees are conducted under the direction of a Catholic church.

In addition to the language courses, instruction is provided, by correspondence, in electricity (including elementary mathematics) and in stenography. Altogether, out of approximately 166,000 employees on the Lines East of Pittsburgh, 18,769, or 10.7 per cent of the total, were on February 28, enrolled in the educational courses, including a considerable number of foreigners, especially men who have mastered the language work and so fitted themselves for advancement to foremen.

Numerous safety lectures are conducted solely for the benefit of alien employees, and a moving picture entitled, "The Americanization of Tony," is doing good service. This film has been exhibited to gatherings of foreign-born

employees at eighty of the principal points along the road.

At the time when the First Liberty Loan was offered to the public, the Pennsylvania Lines East of Pittsburgh and Erie had a total of 25,827 employees who had been born in foreign countries. Of this number, 8,146 employees, or almost 32 per cent purchased Liberty Bonds, and this was within 2 per cent of the proportion of employees of American birth who subscribed.

The inquiry also brought out the interesting fact that there were in the service of the Pennsylvania Railroad, men of 42 different nationalities, besides native-born Americans, and that members of 30 alien races were included among the buyers of Liberty Bonds of the First Loan. This record may doubtless be confidently accepted as evidence of true love for America, no less than as a proof of a high degree of thrift on the part of the foreign born. As early as 1904, the Pennsylvania Railroad, with the idea of encouraging thrift among its foreign-born employees, opened a campaign to increase its Saving Fund depositors, and as a result a great many Italian and Irish employees opened accounts in the Company's Saving Fund, and large numbers of them are depositors today.

Of 25,721 aliens in the service of the Pennsylvania Lines East of Pittsburgh, it was found that 8,003 had been fully naturalized, 3,069 had taken out their first papers and 5,064 had definitely announced their intention of applying for naturalization. In other words, nearly 63 per cent of the total had either become United States citizens or had declared their intention of so doing.

On the Lines West a good showing was made.

Altogether, these experiences on the Pennsylvania have been encouraging. It is a clear duty to take care of the foreigners who come to these shores, to make life worth while for them here, and safeguard them from being spoiled and degraded.

A condition approaching the ideal will have been realized when "Little Italys" and other foreign colonies disappear from American cities and when the children of immigrants, instead of being known by the nationalities of their parents, will simply be American boys and girls.

Reorganization of A. W. Thompson's Territory

A. W. Thompson, federal manager of the Baltimore & Ohio, eastern lines and New York Terminals; the Western Maryland; the Cumberland Valley; the Cumberland & Pennsylvania, and the Coal & Coke, announces the organization of the "Potomac District," which consists of the following three divisions:

Cumberland Valley Division: Cumberland Valley Railroad, Western Maryland Railway between North Junction, Hagerstown, Md., and Shippensburg, Pa.; Edgemont, Md., and Quinsonia, Pa.; Philadelphia & Reading Railway between Shippensburg, Pa., and P. H. & P. Junction (Harrisburg, Pa.); Carlisle and Gettysburg, Pa.

Hagerstown Division: Western Maryland Railway from Virginia avenue, Cumberland, Md., to Baltimore, Md., except portion included in Cumberland Valley Division; Baltimore & Ohio Railroad, Weverton, Md., to Hagerstown, Md.

Elkins Division: Western Maryland Railway, Virginia avenue, Cumberland, to Elkins, W. Va., and Belington, W. Va.; Cumberland & Pennsylvania Railroad.

Mr. Thompson announces further that the Western Maryland, between City Junction, Cumberland, Md., and Connellsville, Pa., will be operated as a part of the Connellsville division of the Baltimore & Ohio; that the Coal & Coke railway, which extends from Charleston, W. Va., to Elkins, W. Va., and branches, will be operated as a part of the Baltimore & Ohio; and that the Wheeling Terminal Railway, Martins Ferry, Ohio, to Bellaire Bridge, W. Va., and branches, will be operated as a part of the Wheeling Division. Officers and employees of the Wheeling Terminal will report to the superintendent of the Baltimore & Ohio at Wheeling.

He has also created the Charleston division, which embraces the railroad from Charleston to Elkins, W. Va., including branches, and that portion of the Monongah Division, Weston to Pickens and Richwood. The West Virginia district is extended to include this territory. Beginning July 10 the Western Maryland Terminals at Baltimore will be operated as a part of the Baltimore division of the Baltimore & Ohio.

Traffic News

The Interstate Commerce Commission has denied the petition of the Washington, Baltimore & Annapolis electric line for permission to increase its passenger fares to three cents a mile.

Inter-mountain shipping interests appeared before the freight traffic committee of western railroads, at Chicago, on July 9, in behalf of a readjustment of transcontinental freight rates to inter-mountain points with relation to rates to the Pacific Coast.

A request by the governor of New Jersey for a one-third fare for soldiers and sailors on short leave has been denied by the Railroad Administration. A rate of one-third of the regular fare is allowed for soldiers and sailors on regular furloughs, but it has been determined that an application of the order to men on short leave would result in imposing too great a burden on the railroads.

Production of bituminous coal during the week ending June 29 resulted in the second largest weekly production on record, according to the weekly bulletin of the Geological Survey. The output is estimated at 12,458,000 net tons, which represents an increase in the average production per working day over the preceding week of 3.8 per cent, and over the corresponding week of 1917 of 7½ per cent. The percentage of full time output lost during the week ending June 22 on account of car shortage was 10.6 per cent. The Fuel Administration has issued a statement saying that the Railroad Administration is now approximating 100 per cent efficiency in car movement for coal traffic. The total production of bituminous coal during the 12 weeks from the beginning of the coal year on April 1 until June 22, according to a bulletin by the Fuel Administration, was 137,705,000 tons.

Senator Frelinghuysen of New Jersey is curious to know why the Railroad Administration, in taking over the railroads to meet conditions growing out of the war, has assumed jurisdiction over the tubes of the Hudson & Manhattan Railroad, although it later relinquished from federal control most of the short line railroads of the country. Therefore, he introduced a resolution on the subject in the Senate on July 2, hoping to have the Senate assume the same curiosity; also as to why the fare between Jersey City and New York was increased by 100 per cent by order of the Director General, which increase was subsequently annulled, and why the fare between New York and Newark was increased from 17 cents to 27 cents. The resolution was adopted by the Senate on July 5. It instructs the Committee on Interstate Commerce to inquire "why these purely local lines were taken over; whether such taking over was in accordance with the spirit and letter of the act in question," and why the fares were raised.

A. H. Smith, regional director eastern railroads, has issued to all federal managers in his territory a vigorous appeal for increased efficiency in the movement of coal. Calling attention to the good records in May and early June, he says: "Since June 15 there has been a rapid decline in production, largely due to the decreased coal supply caused by the sluggish movement of coal cars both loaded and empty. It is of vital importance that our efforts be redoubled to secure an improved circulation of coal loading equipment. Unless we can succeed in doing this, there is no question but what we shall fail in our efforts to meet the program of the Fuel Administration. As this subject is of such importance, we feel justified in asking you to advocate it vigorously with all operating officers, so that we may be enabled to make a suitable improvement. Last year there was a gradual downward tendency of coal production during the six weeks ending with August. It is hoped that we can avoid a similar decrease this summer and that we shall be able to again bring our production up to what it was during the week ending June 15, maintaining that as a consistent level during the winter months. . . ."

Commission and Court News

Interstate Commerce Commission

The commission has authorized the American Railway Express Company to file simple abbreviated tariff supplements for the purpose of putting into effect promptly the 10 per cent increase in rates recently allowed.

Personnel of Commissions

Thomas A. Gillis has been appointed assistant to the secretary of the Interstate Commerce Commission.

W. P. Borland, assistant chief of the bureau of safety of the Interstate Commerce Commission, has been appointed chief of the bureau, succeeding H. W. Belnap, who resigned on July 1 to devote his entire time to the office of manager of the Safety Section of the Railroad Administration.

State Commissions

The Railroad Commission of Louisiana has authorized an advance of 25 per cent in all railroad rates within that state; this to permit the short line railroads to put their freight rates on a parity with those of the roads which are under federal control. The minimum charge for carload shipments prescribed by the director-general, is however, disapproved by the Louisiana Commission. On sugar cane, advanced 25 per cent, the minimum is to be 15 tons a car.

Court News

Measure of Damages for Delay of Freight

The Mississippi Supreme Court holds that where a carrier admitted unreasonable delay in the shipment of saws, but the articles were not damaged, and there was no fluctuation of their market value, the shipper could recover only the reasonable rental value for the time of the unreasonable delay.—*New Orleans & N. E. v. J. H. Miner Saw Mfg. Co. (Miss.)*, 78 So. 577. Decided May 13, 1918.

Attractive Appliance Doctrine

The Louisiana Supreme Court holds that a railroad was not liable, under the attractive appliance doctrine, for the death of a little girl by drowning in a pool of water on the railroad's right of way, resulting from the dropping of drainage water from the culvert which let it through the roadbed, the pool being invisible from the street, on the other side of the tracks, and not accessible, or even visible, to children, unless they went on the tracks. For the application of the attractive appliance doctrine the thing must be so situated as to lure or attract children where they have a right and are likely to be, and the danger must be so obvious that a due regard for the safety of children necessitates taking precautions for their protection.—*Fincher v. Rock Island (La.)*, 78 So. 433. Decided April 1, 1918.

Powers of Railroad Relief Associations

A railroad employees' relief association was incorporated to collect monthly dues to create a fund to treat and care for injured and diseased members, and to run a hospital and employ physicians, etc., but there was no provision in its certificate, constitution, or by-laws prohibiting the admission of non-members to the hospital. The association was able to secure the services of competent surgeons at small salaries by allowing them, when there was room in the association hospital, to take in non-members and collect from such patients fees for medical services. The Colorado Supreme Court holds that such receiving of non-member patients was within the general scope of the purposes of the association by implication, and was not ultra vires.

Denver & Rio Grande Employees' Relief Assn. v. Rishmiller (Colo.), 171 Pac., 501. Decided March 4, 1918.

Measure of Damages Under Federal Employers' Liability Act

In an action for death under the Federal Employers' Liability Act the Louisiana Supreme Court, in determining the life expectancy of the deceased, a locomotive engineer, according to the expectation table constructed from the American Experience Table of Mortality, adopted the rule of the insurance companies of adding eight years to the age of the man because of his hazardous occupation. The formula adopted in this case for computing the present value of future benefits lost by the beneficiaries of the deceased employee in awarding compensation under the act was as follows, viz.: Subtract from the annual wages the employee was earning the annual cost of his maintenance according to the evidence, and multiply the remainder by the number of years of his life expectancy. The result discounted at the legal rate of 5 per cent for the term of the life expectancy, using annual periods or rests, is the loss of future benefits reduced to present value.—Jones v. Kansas City Southern (La.), 78 So., 568. Decided April 29, 1918.

Safety Appliance Acts—Employer's Liability

The Supreme Court of West Virginia, in the case of Ewing against the Coal & Coke Railway, holds:

1. Where an empty car marked "shop" is being switched from the yards of one carrier, where it had stood empty for several days, to the interchange track of a connecting carrier for the purpose of returning it to the latter, the owner thereof, for repairs, the switching being wholly within the state, an employee injured while engaged in the operation is not engaged in interstate commerce, though the car was forwarded promptly by its owner to its shop in another state for repair.

2. The mere use of the word "shop" on a car is not equivalent to a designation for haulage in interstate traffic.

3. Though the Federal Safety Appliance Act contains no express language conferring a right of action for the death or injury of an employee occasioned by a failure to comply with its requirements, a right of action therefor, nevertheless, is within the contemplation and intent of the Act.

4. The requirements of the Federal Safety Appliance Act, as amended, are mandatory and embrace all cars used on any railroad that is a highway of interstate commerce, whether the particular cars are at the time employed in such commerce or not, and include employees injured through a failure to comply with its terms, even though engaged in duties unconnected with interstate commerce.

5. The maintenance of one grab iron on each side of the car, near one end, is not a compliance with section 4. . . .

6. The suspension clause of the order of the Interstate Commerce Commission, entered on March 13, 1911, did not operate to extend the time for equipping each car with four grab irons. . . .

7. The suspension clause did not relieve carriers from complying with the positive provision of the same order requiring four sill steps on each car, . . . but imposed an immediate duty to equip each car.

8. The grant of an extension of time was a valid suspension only for the purpose of deferring the standardization of sill steps and other appliances therein mentioned with respect to their exact location, dimensions and manner of application, and did not relieve from the necessity of equipping each car immediately with four secure sill steps of a kind and character reasonably adequate and sufficient to answer the object and purpose contemplated by the Federal Safety Appliance Act.

9. Though the immediate occasion for passing the laws requiring grab irons was undoubtedly "for greater security to men in coupling and uncoupling cars," yet these laws are not confined to the protection of employees only when so engaged. Carriers are liable to employees in damages whenever the failure to obey the Safety Appliance Acts is the proximate cause of injury to them when engaged in the discharge of duty.

10. The liability of an interstate railway to an employee injured through a violation of the commands of these statutes exists, although the employee when injured was engaged in returning the defective car to its owner for repairs.

Equipment and Supplies

The allotment of orders for the journal boxes for the government standard freight cars, as previously announced, has been changed. Journal boxes for 4,000 cars have been ordered from McCord & Co., and the order from the Haskell & Barker Car Company has been reduced from 8,000 to 6,000.

Locomotives

THE UNITED VERDE & PACIFIC, Jerome, Ariz., is inquiring for several saddle-tank locomotives.

Iron and Steel

THE CHICAGO & EASTERN ILLINOIS has ordered four girder spans for Milford, Ill., 445 tons, American Bridge Company.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered two 90-ft. turntables for Burr Oak, Ill., and Bureau, 114 tons, American Bridge Company.

Machinery and Tools

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for eight machine tools.

THE LAKE ERIE & WESTERN is inquiring for about 10 miscellaneous tools.

THE UNION PACIFIC is inquiring for about 70 tools of miscellaneous description.

THE UNION PACIFIC is inquiring for delivery at Omaha, Neb., of two 2½-ft. radial drills.

THE NEW YORK, NEW HAVEN & HARTFORD has placed an order with the Brown Hoisting Machinery Company, of Cleveland, Ohio, for 10 locomotive cranes.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for an 18-in. by 7-ft. 6-in. engine lathe; 14-in. by 4-ft. 6-in. lathe; 30-in. radial drill, double-end punch and shear with a 20-in. throat to punch 1-in. hole; 20-in. heavy-duty shaping machine, 1½-in. single-head bolt cutter, draw cut high-speed power saw, 50-lb. power hammer and a combination rip and cross-cut saw with boring attachment.

Signaling

THE SEABOARD AIR LINE has ordered a 16-lever Saxby & Farmer interlocking machine of the Union Switch & Signal Company for installation at Salem, N. C. The installation will be made by railroad forces.

THE PENNSYLVANIA RAILROAD has ordered an electro-mechanical interlocking for installation at Birmingham, N. J. The machine will consist of a 4-lever mechanical frame, with 7 electric units. It will be provided with electric detector locks on all switch levers and electric indication locks and electric light indicators on all working levers. The Union Switch & Signal Company will furnish this machine.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered from the Federal Signal Company an electric interlocking, to be installed by the manufacturers, at Bellefontaine, Ohio. The machine will have 68 working levers and there will be detector circuits and sectional route locking throughout. The machine will be type 4, direct current, with alternating current indication.

LONDON CARS MUST USE LESS COAL.—An order has been issued requiring all street railway companies in Great Britain to reduce their coal consumption by 15 per cent as compared with that of last year.

Supply Trade News

Lieut. J. G. Russell, of the Royal Flying Corps, formerly traveling inspector for the American Steel Foundries, with headquarters at Chicago, was killed in action on the Italian Front, June 15.

Eugene E. Lewis, vice-president and director of the Timken Detroit Axle Company, Detroit, Mich., recently resigned from that company to engage in work for the government at Washington. He is an assistant to Edward R. Stettinius.

L. C. Sprague, of the railroad department of the H. W. Johns-Manville Company, at New York, has been appointed special representative of the Chicago Pneumatic Tool Company in connection with the sale of pneumatic tools to railroads.

The Baldwin Locomotive Works, according to an announcement made last Tuesday, is planning the immediate construction of a new plant at East Chicago, with an estimated cost of \$5,000,000. Specifications for various buildings are now out calling for 12,000 tons of structural steel.

A. S. Goble, sales representative of the Baldwin Locomotive Works and the Standard Steel Works at Chicago, has been appointed southwestern district representative of the same companies at St. Louis, Mo., succeeding C. H. Peterson, who has been transferred to the Chicago office as western district representative, effective July 1.

The Pittsburgh Testing Laboratory announces the removal, July 1, from its temporary quarters in the B. F. Jones Law building to its new office and laboratory buildings at 612-620 Grant street, Pittsburgh, Pa. The laboratories will be larger and better equipped than those in the company's old quarters, the P. T. L. building at Seventh and Bedford avenues, which were turned over to the government April 1.

The Quigley Furnace Specialties Company, Inc., has opened a branch office in Pittsburgh at 427 Oliver building, to handle the sale of powdered coal equipment and hysenite furnace cement. The powdered coal engineering department will be in charge of L. V. Marso, formerly maintenance engineer of the A. M. Byers Company plant at Girard, Ohio, and the specialties department will be taken care of by J. L. Cummings, Jr., formerly connected with the sales department of the company at New York.

American Car & Foundry Company

The gross volume of business done by the American Car & Foundry Company during the fiscal year ended April 30, 1918, is the largest in the history of that corporation—\$121,839,328. The gross amount of business on the books at the beginning of the new fiscal year was \$290,000,000. The volume of business done during the year in the manufacture and sale of miscellaneous supplies was much in excess of that of any prior year. A substantial portion of the profits realized from the business done has been absorbed in the payment of the taxes of various kinds imposed under federal legislation. The management has made timely and adequate provision for the payment of these taxes, and the company's obligation to the government in this regard was met without inconvenience or disarrangement of its financial program. Out of the net earnings of \$11,281,742, there has been paid during the year the usual 7 per cent dividend (\$2,100,000) upon the preferred capital stock. There has also been paid upon the common stock, quarterly, a regular dividend of 1 per cent with an extra dividend of like amount—this making 8 per cent (\$2,400,000) paid in dividends upon the common stock during the fiscal year. Since the close of the year, the common stock has been put upon a regular 8 per cent basis.

The remainder of the net earnings for the year has been disposed of as follows: \$1,000,000 has been added to the reserve for general overhauling, improvements and maintenance—which reserve had been drawn upon to the extent of \$495,439 during the year; \$2,400,000 has been added to the reserve for dividends

on the common stock, to be paid when and as declared by the board of directors, making in this reserve a total of \$4,800,000; \$250,000 has been added to the reserve for improving working conditions of employees—from which reserve \$171,007 was expended during the year; \$500,000 has been added to the reserve for insurance; and \$2,631,742 has been added to the surplus account. The company entered upon its new fiscal year with a net working capital of \$22,670,175.

ASSETS		
Property and plant account.....		\$66,782,532.51
Current assets.....		60,441,298.01
Materials on hand, inventoried at cost or less, and not in excess of present market.....		\$38,786,593.65
Accounts and notes receivable.....		21,691,056.14
Stocks and bonds of other companies and liberty bonds, at cost or less.....		2,817,152.35
Cash in banks and on hand.....		7,146,495.87
		\$127,223,830.52
LIABILITIES		
Preferred capital stock.....		\$30,000,000.00
Common capital stock.....		30,000,000.00
Current liabilities.....		27,766,819.77
Accounts payable, and bills payable not due, provision for taxes; and pay rolls (paid May 10, 1918).....		\$26,641,819.77
Dividend No. 77 on preferred capital stock (payable July 1, 1918).....		525,000.00
Dividend No. 63 on common capital stock (payable July 1, 1918).....		600,000.00
Reserve accounts.....		10,004,303.22
For insurance.....		1,500,000.00
For general overhauling, improvements and maintenance.....		3,125,309.89
For dividends on common capital stock, to be paid when and as declared by board of directors.....		4,800,000.00
For improving working conditions of employees.....		578,993.33
Surplus account.....		29,452,707.53
		\$127,223,830.52

Trade Publications

SHAY GEARED LOCOMOTIVES.—The Lima Locomotive Works, Lima, Ohio, has issued a circular illustrating the Shay geared type of locomotive and enumerating the advantages which they possess over locomotives having side rods.

ELECTRIC METERS.—Bulletin No. 50 issued by the Economy Electric Devices Company, Chicago, illustrates and describes the Sangamo Economy electric meter and its application for regulating the power consumption of electric traction units. The advantage of proper acceleration and the savings to be effected thereby are clearly set forth.

INDUSTRIAL LIGHTING.—Scientific Industrial Illumination is the title of a 36-page, illustrated booklet recently issued by the Holophane Glass Company, 340 Madison avenue, New York City. The booklet is divided into four parts showing the need for correct lighting, the fundamental principles involved, and the various types of industrial lighting units manufactured by the Holophane company. The fourth section of the catalogue contains several reference tables and general engineering data.

AUSTRALIAN HARBOR CONSTRUCTION.—Considerable progress has been made with the harbor works at Port Kembla, New South Wales, the year's expenditure for which was £59,000 (\$295,000). The sea wall was extended 355 ft, making the total length 1,457 ft. The power house is being extended for the purpose of adding facilities in the way of shipping plant and coal-loading appliances.

SCOTTISH RAILWAY STOCKHOLDERS' PROTECTION ASSOCIATION.—A revised circular of this association has been sent out by the Caledonian, North British and Highland Railways to their debenture holders. It shows that the executive of the association has been very much strengthened since the issue of the first circular. The association, the present address of which is 241 St. Vincent street, Glasgow, is to be formed into a limited liability company. Subscribers, therefore, need have no further anxiety about any further liability than the amount of their subscription, which is a single one, not annual, and ranges from 2s. 6d. to £1 1s. (\$60 to \$5.25) the amount being at the member's option.

Financial and Construction

Railway Officers

Railway Financial News

BOSTON & MAINE.—Representatives of the federal government are at work on a plan for reorganization of the Boston & Maine, according to an announcement sent on July 3, to note holders by J. P. Morgan & Co., Kidder, Peabody & Co., and Lee, Higginson & Co. In their opinion the proposed plan fully protects the interests of all holders of Boston and Maine securities. The bankers' announcement continues: "In view of this fact we believe that action on the part of the note holders to protect their interest is at present unnecessary, but should such occasion arise in the future we shall be glad to inform you." The original amount of notes was \$27,000,000, of which there are now outstanding \$13,306,060, a total of \$13,693,940 having been paid off.

CANADIAN NORTHERN.—Notes of the Canadian Northern to the amount of \$5,700,000 maturing July 10 will be paid on that date at the Canadian Bank of Commerce, New York. These are the notes issued through Wm. A. Read & Co. a year ago.

CHICAGO, BURLINGTON & QUINCY.—C. T. Sturgis, general auditor of the company, has been elected a director to succeed George B. Harris, deceased, and C. W. Bunn, general counsel of the Northern Pacific has been elected a director to succeed J. M. Hannaford, who resigned to become federal manager of the Northern Pacific.

CHICAGO, ROCK ISLAND & PACIFIC.—At the regular monthly meeting of the directors, J. E. Gorman resigned as president and director, having been appointed federal manager of the road. Charles Hayden, the chairman of the finance committee, was unanimously elected president in Mr. Gorman's place. M. L. Bell, general counsel of the company, was elected a director to fill the vacancy in the board. At a meeting of the executive committee, held immediately after the directors' meeting, N. L. Amster was unanimously elected chairman of the executive committee.

OCILLA SOUTHERN.—This road which operates 110 miles of line between Perry, Ga., and Nashville, has been placed in the hands of receivers. M. W. Garbutt, of Fitzgerald, Ga.; J. A. J. Henderson, president of the Ocilla Southern, and Joseph F. Gray, general manager, have been named receivers.

Railway Construction

BALTIMORE & OHIO.—Contracts have been given by this company for improvements as follows: Ice house at St. George, S. I., N. Y., to the Youngstown Construction Co., New York City; additional tracks at tunnels at Wharton street, and Grays Ferry Road at Philadelphia, to the Empire Engineering Company, Baltimore, Md.; additional yard and shop building at Wilmington, Del., for the yard to the Empire Engineering Company, Baltimore; for the building to Frainie Brothers & Haigley, Baltimore; extension of yards at Bay-view, Mt. Winans, Baltimore, and additional tracks at Claremont, to the Empire Engineering Company, Inc., Baltimore; thawing shed at Curtis Bay to the Surety Engineering Company, New York; passing sidings at Tuscarora, Germantown, and Metro South Junction, Md., W. J. Torrington, Philadelphia, Pa.; ice house and roundhouse at Brunswick, Md., to Frainie Brothers & Haigley, Baltimore; repair shops at Cumberland, Md., to Westinghouse, Church, Kerr Co., Inc., New York; additional yard tracks at Keyser, W. Va., to the James F. McCabe Company, Baltimore, Md.; addition to roundhouse at Grafton, W. Va., to Frainie Brothers & Haigley, Baltimore; storage tracks at Flemington, W. Va., to the Empire Engineering Company, Inc., Baltimore; heavy repair shop at Glenwood, Pa., to Westinghouse, Church, Kerr & Co., New York; extension of second track at Evans, Pa., to James F. McCabe Company, at Baltimore, and for the company's houses at Holloway, O., to the Drum Construction Company, Chicago.

Executive, Financial, Legal and Accounting

W. S. Morris, treasurer of the Georgia Railroad, has been appointed local treasurer, with office at Augusta, Ga.

Howard Bruner has been appointed freight claim agent, of the Oregon Short Line, with office at Salt Lake City, Utah, succeeding **A. R. McNitt** who has accepted service with the Union Pacific.

Louis W. Hill, chairman of the board of the Great Northern, was elected president of that road, at a meeting of the board of directors, on July 5, succeeding **W. P. Kinney**, who was recently appointed federal manager.

Dameron Black, auditor of the Atlanta, Birmingham & Atlantic, continues as auditor of that road, and has been appointed auditor also of the Atlanta & West Point and the Western Railway of Alabama, with office at Atlanta, Ga.

W. H. Bruce, secretary and treasurer of the Atlanta & West Point and the Western Railway of Alabama, has been appointed local treasurer of the same roads and of the Atlanta, Birmingham & Atlantic, with office at Atlanta, Ga.

J. L. Seager, assistant general counsel of the Delaware, Lackawanna & Western, has been appointed general solicitor, with office at New York, and **A. D. Chambers**, secretary and treasurer, has been appointed local treasurer, with office at New York.

Richard H. Swartwout, whose election as president of the Norfolk Southern, with headquarters at New York City, has already been announced in these columns, was born on October



R. H. Swartwout

16, 1875, at Morristown, N. J. Mr. Swartwout began work as a clerk in the office of the Central of New Jersey, and shortly afterwards left the service of that road to go into other business. He subsequently was engaged in the banking business at New York, and in 1906 organized the firm of Swartwout & Appenzeller, New York, bankers and brokers, of which he is now the senior partner. Since 1913, he has served as vice-president of the Norfolk Southern until his recent election as president of the same

road, as above noted. **J. H. Young**, his predecessor, is now federal manager of the Norfolk Southern, and the Virginian Railway.

R. R. Reed, assistant treasurer of the Pennsylvania Western Lines, has been appointed treasurer, with headquarters at Pittsburgh, Pa., effective July 2. **J. W. Orr**, controller, has been appointed general auditor, with headquarters at Pittsburgh, effective on the same date.

E. M. Devereux, treasurer; **H. R. Preston**, general solicitor, and **J. J. Ekin**, general auditor of the Baltimore & Ohio, have been appointed to the same positions on the Baltimore & Ohio (eastern lines and New York terminals), the Western Maryland, the Cumberland Valley, the Cumberland & Pennsylvania, and the Coal & Coke, all with headquarters at Baltimore, Md.

H. W. Colson, general claim agent of the Atlanta, Birmingham & Atlantic, continues in the same position on that road under the United States Railroad Administration, and

also has been appointed general claim agent of the Georgia Railroad, the Atlanta & West Point, the Western Railway of Alabama, the Charleston & Western Carolina, and the St. Louis-San Francisco lines east of the Mississippi river, with office at Atlanta, Ga.

E. F. Parham, assistant treasurer and cashier of the Southern Railway at Washington, D. C., has been appointed treasurer under the United States Railroad Administration of the same road, and the Cincinnati, New Orleans & Texas Pacific, the Alabama Great Southern, the New Orleans & North-eastern, the New Orleans Terminal, the Alabama & Vicksburg, the Carolina, Clinchfield & Ohio, the Carolina, Clinchfield & Ohio of South Carolina, and the Georgia Southern & Florida, with headquarters at Washington, D. C.

M. M. Joyce, whose appointment as general solicitor of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., was announced in these columns, on June 21,

was born at Emmetsburg, Iowa, on April 29, 1877. Mr. Joyce received his legal training at the University of Michigan, graduating in 1900, following which he began the general practice of law. He entered the service of the Minneapolis & St. Louis, in February, 1910, as a member of the firm of Price & Joyce, district attorneys for that road, at Ft. Dodge, Ia. On June 1, 1917, he was appointed general attorney, of the M. & St. L., with headquarters at Minneapolis, Minn., which position he held

until his promotion to general solicitor, in charge of the law department, succeeding **F. M. Miner**, general counsel, who retired from the service of the company.

L. E. Jeffries, general counsel of the Southern Railway, at Washington, D. C., has been elected vice-president and general counsel of the Southern Railway and allied companies, with duties hereafter confined to the corporate interests of such companies; **S. R. Prince**, general counsel of the Mobile & Ohio, at Mobile, Ala., has been appointed general solicitor of the Southern, with headquarters at Washington, D. C.; **John K. Graves** and **H. O'B. Cooper**, solicitors of the Southern Railway, at Washington, D. C., have been appointed general attorneys, with headquarters at Washington; **Edward Colston**, general counsel at Cincinnati, Ohio, has been appointed general solicitor with jurisdiction over his present territory; **A. P. Humphrey**, general counsel at Louisville, Ky., has been appointed general solicitor at Louisville; **J. E. Hall** has been appointed assistant general solicitor, with headquarters at Macon, Ga.; **W. A. Henderson** has been appointed assistant general solicitor, with headquarters at Washington, D. C., and **E. P. Humphrey** has been appointed division counsel, with headquarters at Louisville, Ky.

The headquarters of the corporate officers of the Southern Railway, **Fairfax Harrison**, president; **H. B. Spencer** and **L. Green**, vice-presidents; **L. E. Jeffries**, general counsel; **E. H. Kemper**, comptroller, and **T. H. Gatlin** and **E. E. Norris**, assistants to the president, are to be removed about August 1 from the general offices of the railroad in Washington, D. C., to Richmond, Va., which is the legal headquarters of the company and the place where its annual meetings are held. The general office building in Washington is to be used for the operating headquarters of the company and a large part of the staff of the Railroad Administration is located there.

W. G. Lerch, assistant to the president of the Chicago Great Western, with headquarters at Chicago, was elected secretary of that road at a recent meeting of the directors.

Mr. Lerch began his railway career in June, 1893, as stenographer in the general manager's office of the Duluth, Missabe & Northern. From January, 1894, to September, 1900, he was successively chief clerk to the vice-president of the above road; clerk in the general superintendent's office of the Chicago, St. Paul, Minneapolis & Omaha; clerk in the vice-president's office of the Missouri, Kansas & Texas at St. Louis, Mo., and chief clerk in charge of purchases of the Colorado Midland. He was then appointed secretary to the president of the Chicago & Alton, and in January, 1902, he was made chief clerk. He resigned on December 15, 1907, to join the staff of the president of the Mexican Central, and was later appointed assistant to **S. M. Felton**, who was president of that road. In June, 1909, he became acting president of the Tennessee Central at Nashville, Tenn., where he remained until October of the same year, at which time he returned to Chicago to become assistant to the president of the Chicago Great Western, which position he held until his election as secretary of that road, as mentioned above. **J. F. Coykendall**, who was secretary and treasurer of the Chicago Great Western, continues as treasurer of that company.

Operating

The appointments of the staffs of federal managers in the southwestern region are included in an article elsewhere in this issue.

The jurisdiction of **F. E. House**, general manager of the Duluth & Iron Range, has been extended over the Duluth, Missabe & Northern, effective July 8.

J. E. Elliott has been appointed superintendent of the Morris & Essex division of the Delaware, Lackawanna & Western, with office at Hoboken, N. J.

R. E. McCarty, resident vice-president of the Pennsylvania Western Lines, with headquarters at Detroit, Mich., has been appointed general manager, with headquarters at Pittsburgh, Pa.

C. A. Hawkins, superintendent, in charge of traffic, operation and accounting, of the Lewiston, Nezperce & Eastern, with headquarters at Lewiston, Idaho, has left the service of that company, effective June 24.

H. A. Kennedy, vice-president of the Minnesota Transfer, with headquarters at St. Paul, Minn., has been appointed terminal manager of the St. Paul and Minneapolis terminal, including the Minnesota Transfer, effective July 9.

P. W. Sullivan, superintendent of the Pennsylvania Lines West of Pittsburgh, with office at Akron, Ohio, has been appointed superintendent of the Indianapolis division, with office at Columbus, Ohio, vice **L. Ohliger**, retired.

G. R. Huntington, federal manager of the Minneapolis, St. Paul & Sault Ste. Marie, has had his jurisdiction extended to include the Duluth, South Shore & Atlantic, the federal manager of which, **W. W. Walker**, died a few days ago.

F. F. Small has been appointed trainmaster of the Salt Lake division, of the Southern Pacific, with headquarters at Mina, Nev., with jurisdiction over Mina sub-division, vice **G. H. Moore**, who has accepted service with the government.

C. E. Brower, superintendent of the Atlanta, Birmingham & Atlantic, at Fitzgerald, Ga., has been appointed general superintendent of the same road and the St. Louis-San Francisco lines east of the Mississippi river, with office at Atlanta.

Charles H. Hix, former president of the Norfolk Southern, has been appointed federal manager of the Norfolk & Portsmouth Belt Line and in addition will have jurisdiction over all Hampton Roads railroad terminals, with offices at Norfolk, Va.

R. K. Smith, vice-president and general manager of the Mississippi Central, has been appointed general manager of that road, of the New Orleans Great Northern and of the Mississippi Central, with headquarters at Hattiesburg, Miss., effective July 1.

W. Trapnell, superintendent of the Coal & Coke, with



M. M. Joyce

headquarters at Elkins, W. Va., has been appointed superintendent of the Charleston division of the Baltimore & Ohio, with headquarters at Gassaway, W. Va. (See notice of reorganization, under general news.)

E. R. Rouzer, superintendent of car service of the Western Maryland, at Baltimore, Md., has been appointed superintendent of transportation of the same road, also of the Cumberland Valley and the Cumberland & Pennsylvania, with headquarters at Hagerstown, Md.

Charles A. Wickersham, general manager of the Georgia Railroad, at Augusta, Ga., and president and general manager of the Atlanta & West Point and the Western Railway of Alabama, has been appointed federal general manager of those roads, with headquarters at Atlanta.

C. C. Mitchell has been appointed acting trainmaster, of the Northern Pacific, with office at Livingston, Mont., succeeding **H. D. Mudgett**, who has been granted an indefinite leave of absence to serve as captain in the Engineering Corps of the American Expeditionary Forces.

J. E. Shull, transportation inspector on the Atchison, Topeka & Santa Fe, with headquarters at Trinidad, Colo., has been appointed assistant trainmaster of the Rio Grande division, with headquarters at Hurley, N. M., effective July 5, succeeding **J. F. Anton**, who has entered the army.

The circular announcing the appointment of **W. J. Jackson** as federal manager of the Chicago & Eastern Illinois and the Chicago, Terre Haute & Southeastern, incorrectly stated that he would also have charge of the Evansville & Terre Haute. The railroad meant was the Evansville & Indianapolis.

Paul F. Keating, assistant general superintendent of the Great Northern, with office at St. Paul, Minn., has been promoted to general superintendent, with office at Superior, Wis., succeeding **F. S. Elliott**, resigned, to go with another company; **C. E. MacLaughlin**, division superintendent at Minot, N. Dak., succeeds Mr. Keating, with office at St. Paul.

J. H. O'Neill, general superintendent of the Great Northern, with headquarters at Seattle, Wash., has been appointed terminal manager of the Puget Sound terminals, effective July 3. Mr. O'Neill will have charge of all terminal operations between Everett, Wash., and South Tacoma, and will report to the district director of the Puget Sound district.

E. B. Moffatt, has been appointed assistant to general manager of the Delaware, Lackawanna & Western, with office at New York; **H. H. Shepard**, superintendent of the Morris and Essex division at Hoboken, N. J., has been appointed general superintendent, with office at Scranton, Pa., and **T. E. Clarke** has been appointed general agent, with office at Scranton.

C. P. Dugan, superintendent of transportation of the Norfolk Southern, with office at Norfolk, Va., has been appointed superintendent of transportation of the Virginian Railway, with headquarters at Norfolk, and **H. W. Sheridan** has been appointed superintendent of the new River division, with headquarters at Princeton, W. Va., vice **Victor Parvin**, assigned to other duties. The office of general superintendent is abolished.

Herman J. Klein, superintendent of the Erie, at Meadville, Pa., has been appointed assistant general superintendent, lines east, with office at New York; **Edwin H. Buhlman**, trainmaster at Meadville, has been appointed superintendent of the Meadville division, vice Mr. Klein and **Robert H. Boykin**, assistant to superintendent of maintenance, at New York, has been appointed assistant superintendent of terminals, vice **R. M. Scott**, promoted.

L. A. David, assistant division superintendent of the Missouri Pacific, with headquarters at Atchison, Kan., has been promoted to superintendent of the southern Kansas division, with headquarters at Coffeyville, Kan. **T. W. Collins**, trainmaster at Osawatimie, Kan., has been promoted to superintendent of the Valley division, with headquarters at McGehee, Ark., succeeding **J. L. Kendall**, who has been transferred to the Memphis division, with headquarters at Wynne, Ark., effective July 5.

F. K. Mays has been appointed assistant to federal man-

ager and purchasing agent, of the Atlanta, Birmingham & Atlantic, the Georgia Railroad, the Atlanta & West Point, the Western Railway of Alabama, the Charleston & Western Carolina, and the St. Louis-San Francisco, lines east of the Mississippi river, and **E. B. Rock, Jr.**, has been appointed superintendent of transportation on the same roads, both with headquarters at Atlanta, Ga. Mr. Mays was secretary, treasurer and purchasing agent, and Mr. Rock was superintendent of transportation of the Atlanta, Birmingham & Atlantic.

R. N. Begien, general manager, eastern lines, of the Baltimore & Ohio, has been appointed assistant to federal manager (operating) of the Baltimore & Ohio (eastern lines and New York Terminals); the Western Maryland; the Cumberland Valley; the Cumberland & Pennsylvania, and the Coal & Coke, with headquarters at Baltimore, Md. **J. M. Davis**, vice-president of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed manager of the company's New York terminals, including the Staten Island Rapid Transit Company, with headquarters at New York City. **S. Ennes**, general manager of the Western Maryland, with office at Hagerstown, Md., has been appointed federal general manager of the Baltimore & Ohio, (eastern lines) and the Coal & Coke, with headquarters at Baltimore, Md. **M. C. Byers**, assistant to president of the Western Maryland, at Baltimore, Md., has been appointed federal general manager of the Western Maryland, the Cumberland Valley and the Cumberland & Pennsylvania, with headquarters at Hagerstown, Md. **H. B. Voorhees**, general superintendent of transportation of the Baltimore & Ohio, has been appointed general superintendent of transportation, under the United States Railroad Administration, of the Baltimore & Ohio, (eastern lines and New York Terminals) the Western Maryland, the Cumberland Valley, the Cumberland & Pennsylvania and the Coal & Coke, with headquarters at Baltimore, Md. **E. E. Hamilton** has been appointed assistant to federal manager of the same roads, with headquarters at Baltimore. See an item in General News regarding the reorganization of the operating department.

Traffic

Charles J. Haig, commercial agent of the Grand Trunk, at Philadelphia, Pa., having been assigned to other duties, the office of commercial agent at Philadelphia has been abolished.

Nat Duke, assistant freight traffic manager of the Delaware, Lackawanna & Western, at New York, has been appointed traffic manager, with office at New York.

Ernest Williams has been appointed assistant general freight and passenger agent of the Georgia Railroad and the Charleston & Western Carolina, with office at Augusta, Ga.

R. L. Simpson, general freight agent of the Southern Railway, at Washington, D. C., has been appointed assistant to traffic manager of the Georgia Southern & Florida, with headquarters at Washington.

A. O. Dawson, has been appointed district freight agent in charge of the consolidated agencies of the Southern Railway, and the Georgia Southern & Florida, at Jacksonville, Fla., succeeding **C. M. Tyler**, district freight agent of the Southern Railway, resigned to engage in other business.

A. Fries, assistant general freight traffic manager of the Baltimore & Ohio, at Baltimore, Md., has been appointed traffic manager of the Baltimore & Ohio (eastern lines and New York terminals), the Western Maryland, the Cumberland Valley, the Cumberland & Pennsylvania and the Coal & Coke, with headquarters at Baltimore, Md.

J. L. Edwards, traffic manager of the Atlanta, Birmingham & Atlantic, continues under the United States Railroad Administration as traffic manager of the same road, and has been appointed traffic manager also of the Georgia Railroad, the Atlanta & West Point, the Western Railway of Alabama, the Charleston & Western Carolina, and the St. Louis-San Francisco lines east of the Mississippi river, with headquarters at Atlanta, Ga.

C. D. Thompson, general agent of the Great Northern, with headquarters at Spokane, Wash., has been appointed district traffic agent at Portland, Ore., succeeding **R. K.**

Pretty, who has resigned to go with a shipbuilding company. **R. J. Smith**, district freight and passenger agent at Nelson, B. C., succeeds Mr. Thompson at Spokane. Mr. Smith will continue to have supervision over the Canadian territory, the office at Nelson having been abolished.

W. H. Johnson, manager of the Star Union Line, with headquarters at Chicago, has been appointed manager of the Pennsylvania Lines' tracing information bureau, with the same headquarters, and will keep on file all available passing reports and give attention to applications for tracing information. **George W. Smith**, foreign freight agent of the Star Union Line, has been appointed foreign freight representative of the Pennsylvania Lines West of Pittsburgh and will furnish upon application information pertaining to export and import traffic.

C. B. Kealhofer has been appointed general freight agent of the St. Louis-San Francisco lines east of the Mississippi river, the Atlanta & West Point, the Western Railway of Alabama, the Atlanta, Birmingham & Atlantic, the Georgia Railroad, and the Charleston & Western Carolina; **J. E. Tilford** and **G. E. Boulineau** have been appointed assistant general freight agents; **W. W. Croxton** has been appointed general passenger agent, and **E. H. Fell** has been appointed assistant general passenger agent of all the above roads; all with headquarters at Atlanta, Ga.

Engineering and Rolling Stock

W. A. James, engineer of construction of the Canadian Pacific, has been promoted to assistant chief engineer, with office at Winnipeg, Man., succeeding **J. M. R. Fairbairn**.

J. S. Allen, general foreman of the Canadian Pacific, at North Bay, Ont., has been appointed division master mechanic, of the Sudbury division, vice **C. A. Wheeler**, promoted.

W. F. Turner has been appointed division engineer of the Salt Lake division, of the Southern Pacific, with headquarters at Ogden, Utah, vice **Otis Weeks**, who has accepted service with the government.

Robert Trimble, chief engineer maintenance of way of the Pennsylvania Western Lines, Northwest systems, with headquarters at Pittsburgh, Pa., has been appointed chief engineer of construction, with the same headquarters, effective July 2. Mr. Trimble was born at Butler, Pa., and was educated at Western University of Pennsylvania. He began railway work in 1875, as a chairman of the Pennsylvania Company, since which he has served consecutively to 1903, in various positions in the engineering department and as principal assistant engineer of the same company. In 1903 he was appointed chief engineer maintenance of way of the same lines and now becomes chief engineer of construction, as above noted.

William Shea, roadmaster on the Ottumwa division of the Chicago, Milwaukee & St. Paul, with headquarters at Ottumwa, Iowa, has been promoted to general roadmaster, with jurisdiction over all lines east of Moberg, S. D., and with headquarters at Chicago.

T. B. Farrington, assistant master mechanic of the Pennsylvania Western Lines, Southwest system, with headquarters at Columbus, Ohio, has been promoted to master mechanic of the Michigan division, with headquarters at Logansport, Ind., effective July 1, succeeding **J. R. Riggs**, transferred.

J. R. Riggs, general foreman of locomotive repairs on the Pennsylvania Western Lines, St. Louis system, with head-

quarters at Logansport, Ind., has been appointed master mechanic on the central system, Toledo division, with headquarters at Toledo, Ohio, succeeding **G. E. Sisco**, transferred, effective July 1.

R. D. McKeon, acting assistant division engineer, of the Pennsylvania Western Lines, Southwest system, with headquarters at Pittsburgh, Pa., has been appointed division engineer, of the Northwest system, with headquarters at Ft. Wayne, Ind., succeeding **Guy Scott** who has entered military service, effective July 1.

C. H. Bilty, mechanical engineer of the Chicago, Milwaukee & St. Paul, with office at Milwaukee, Wis., has been appointed mechanical engineer on the staff of the regional director, Northwestern railroads, with office at Chicago, succeeding **W. R. Wood**, who returns to the Great Northern at St. Paul as mechanical engineer.

J. M. R. Fairbairn, assistant chief engineer of the Canadian Pacific, eastern lines, with headquarters at Montreal, Que., has been appointed chief engineer of the Canadian Pacific



J. M. R. Fairbairn

System. **J. G. Sullivan**, chief engineer, western lines, with headquarters at Winnipeg, Man., has retired from the service of the Canadian Pacific to enter private practice. Mr. Fairbairn was born at Peterboro, Ont., 45 years ago, and graduated from Toronto University in 1893. Following a short private practice in British Columbia he joined the Canadian Pacific as a draughtsman at Winnipeg, Man., which position he held for two years. He subsequently served as resident

engineer at Place Viger, Montreal; assistant engineer, Toronto; assistant engineer of maintenance of way, Montreal; division engineer, Toronto, and engineer maintenance of way, Montreal. In February, 1911, he was appointed assistant chief engineer, and remained in that position until his recent appointment as chief engineer, of the same road, as above noted.

W. C. Cushing, chief engineer maintenance of way, of the Pennsylvania Lines West of Pittsburgh, Pa., with office at Pittsburgh, has been appointed chief engineer-maintenance, of the Pennsylvania Lines West, the Pittsburgh, Cincinnati, Chicago & St. Louis, the Cincinnati, Lebanon & Northern, and the Lorain, Ashland & Southern.

A. N. Ostberg, mechanical inspector of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed mechanical engineer for valuation, with the same headquarters, succeeding **W. H. Davis**, who has gone into the department of inspection and tests of the Railroad Administration at Washington, as office engineer.

W. H. Wells, chief engineer of construction of the Southern Railway, has been appointed consulting engineer construction, of the Carolina, Clinchfield & Ohio, the Carolina, Clinchfield & Ohio of South Carolina, the Georgia Southern & Florida, and the Alabama & Vicksburg; **E. M. Durham, Jr.**, assistant chief engineer construction of the same road, has been appointed chief engineer construction, both with headquarters at Washington, D. C.

F. H. Clark, general superintendent of motive power of the Baltimore & Ohio, has been appointed general superintendent, maintenance of equipment, of the Baltimore & Ohio (eastern lines and New York terminals), the Western Maryland, the Cumberland Valley, the Cumberland & Pennsylvania, and the Coal & Coke, with office at Baltimore; and **H. A. Lane**, chief engineer of the Baltimore & Ohio, has



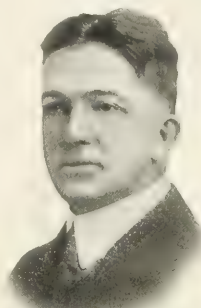
Robert Trimble

been appointed chief engineer of the same roads, with office at Baltimore.

L. L. Beall, chief engineer of the Atlanta, Birmingham & Atlantic, at Atlanta, Ga., continues under the United States Railroad Administration in the same position on that road, and is also chief engineer of the Georgia Railroad, the Atlanta & West Point, the Western Railway of Alabama, the Charleston & Western Carolina and the St. Louis-San Francisco lines east of the Mississippi river; **J. F. Sheahan**, superintendent of motive power of the Atlanta, Birmingham & Atlantic, has been appointed to the same position on all the above roads, both with offices at Atlanta.

Robert Culin White, division superintendent on the Missouri Pacific, with headquarters at Wynne, Ark., has been promoted to assistant chief engineer, with headquarters at St. Louis, Mo., succeeding **H. R. Carpenter**, promoted, effective July 1. Mr.

White was born at Bertrand, Mo., on February 8, 1881. He attended the University of Missouri, and later entered West Point, leaving the latter institution in June, 1905, to become an assistant on an engineering corps of the Missouri Pacific, with headquarters at St. Louis, Mo. The following two years he was assistant engineer and roadmaster on the eastern, central Kansas and White River divisions. From September, 1908, to April, 1914, he was consecutively assistant engineer, division engineer and general roadmaster on the Memphis, central and Arkansas divisions of the southern district. In April, 1914, he was appointed engineer maintenance of way of the southern district, with headquarters at Little Rock, Ark., and on January, 1917, he was made division superintendent, which position he has held continuously with the exception of a period of four months between June and November in 1917, during which time he was chief engineer under the constructing quartermaster in charge of the construction of the National Army cantonment at Camp Pike, Ark.



R. C. White

Purchasing

W. S. Galloway, assistant purchasing agent of the Baltimore & Ohio, at Baltimore, Md., has been appointed purchasing agent of the Baltimore & Ohio (eastern lines and New York terminals), the Western Maryland, the Cumberland Valley, the Cumberland & Pennsylvania, and the Coal & Coke, with office at Baltimore.

R. B. Pegram, executive general agent of the Southern Railway, at Memphis, Tenn., has been appointed general purchasing agent of that road, and the Carolina Clinchfield & Ohio, the Carolina Clinchfield & Ohio of South Carolina, the Georgia, Southern & Florida, and the Alabama & Vicksburg, with headquarters at Washington, D. C.

O. H. Wood, assistant purchasing agent of the Great Northern at Seattle, Wash., has been appointed special representative of the Central Advisory Purchasing Committee of the Railroad Administration, with headquarters in the same city. He will co-operate with that committee and assist in procuring railroad requirements of fir lumber.

Railway Officers in Government Service

The President's appointment of **A. G. Pack** as chief inspector of locomotives was confirmed by the Senate on July 6.

T. C. Powell, in addition to his duties as manager of inland traffic of the War Industries Board, has been appointed also special representative of the Railroad Administration with that board.

E. T. Willcox, general freight agent of the Seaboard Air Line, has been appointed chairman of the committee of freight traffic control with office in Southern Railway Building, Washington, D. C., vice **George R. Loyall**, appointed operating assistant to the regional director, Southern Region.

Martin H. Clapp, superintendent of telegraph of the Northern Pacific, has been appointed manager, telegraph section, division of operation of the Railroad Administration, with office in the Southern Railway building, Washington. Mr. Clapp will have supervision over telegraph and telephone lines belonging to the railroads under federal control.

Obituary

Francis N. Dowler, general eastern agent of the Colorado Midland, with office at New York, died on July 2, at his home in Brooklyn, N. Y.

Lawrence Dwen, general agent of the Missouri & North Arkansas at Joplin, Mo., was accidentally killed on June 21 while riding on a railroad velocipede, which suddenly left the track and plunged into a ditch.

J. L. Greatsinger, formerly for several years previous to 1901 president and general manager of the Duluth & Iron Range, and subsequently president of the Brooklyn Rapid Transit Company, died on July 2 at his home in Elmira, N. Y., at the age of 68.

Henry F. Shoemaker, formerly chairman of the executive committee, board of directors, of the Cincinnati, Hamilton & Dayton, from 1890 to 1904, and also from 1899 to 1904 chairman of the board of the Cincinnati, New Orleans & Texas Pacific, died on July 2, at his summer home in Riverside, Conn., at the age of 73.

E. S. Meloy, assistant engineer in charge of bridge erection and bridge inspection on the staff of the chief engineer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, died in that city on July 8, after an extended illness. Mr. Meloy entered the employ of the St. Paul as a draftsman in the bridge and building department in 1886 and was promoted to assistant engineer in 1890.

W. W. Walker, federal manager of the Duluth, South Shore & Atlantic, and chairman of the committee appointed to represent the railroads in handling ore, coal and grain traffic, at Lake Superior and upper Lake Michigan ports, died July 2, following an operation on June 23. Mr. Walker was born at St. Catharines, Ont., on June 3, 1868, and began railroad work as an office boy with the Grand Trunk, in 1883. The following year he went with the Queen & Crescent Route, and remained with that line for three years as a clerk in the traffic department. In 1887, he entered the employ of the Chicago & North Western in the claim department, and from October, 1888, to February, 1890, was rate clerk and chief clerk in the general freight department of the Great Northern, following which he was appointed traveling freight agent of the Duluth, South Shore & Atlantic. Seven years later he was promoted to assistant general freight agent, and from July, 1901, until December 1, 1911, was general freight agent, at Duluth, Minn. On the latter date he was elected vice-president and general manager of the Duluth, South Shore & Atlantic and the Mineral Range, with headquarters at Duluth, which position he held until his appointment as federal manager, as was announced in these columns on June 21.



W. W. Walker

Contributors to the Financial Section



John G. Lonsdale

JOHN G. LONSDALE was born in Memphis, Tenn. While still very young, he lost both parents in the yellow fever epidemic which swept that city in the late seventies. In his early youth he moved to Hot Springs, Arkansas, where he gained his first business training. At the age of 21, he was appointed receiver of the Little Rock, Hot Springs & Western Railroad. Fifteen years ago, Mr. Lonsdale moved to New York City, where he achieved pronounced business success as a member of the banking and brokerage firm of Logan & Bryan. In 1915, the offer came to him to assume the presidency of the National Bank of Commerce in Saint Louis. It was an opportunity for constructive work in his native section, and he grasped it. Under his administration the deposits of the bank have increased twenty-five million dollars in three years—and they are still on the upward swing. The bank is the largest in the Eighth Federal Reserve District.

EDWARD B. BRUCE, President of the Pacific Development Corporation of New York, is a graduate of Columbia University (1901) and of Columbia Law School (1904). He was a member of the Varsity football team. After leaving law school he went to work for Cravath, Henderson & DeGersdorff. He later went out to Manila, and in 1916 helped to form the Pacific Development Corporation and was made its president. The Pacific Development Corporation is interested in industrial and commercial development in the East. It controls the Pacific Commercial Company which has considerable interest in the Philippines, and Andersen, Meyer & Company, which is the representative in China of the General Electric Company, Pressed Steel Car Company, Baldwin Locomotive Company, and other large American manufacturers. The Pacific Development Corporation also controls Hartmann Brothers, Inc., which does a very considerable import business. In April, 1917, the Development Corporation acquired the Philippine Manufacturing Company, American Machine & Manufacturing Company, and the International Vegetable Oil Company. The business of these latter companies, which has to do with different phases of the manufacture and import into the United States of copra and of vegetable oil, has taken on a very considerable importance, especially since the restrictions which have had to be placed on the use of oils made from animal fats.

Contributors to the Financial Section



F. J. Lisman



Frank Wright Noxon

FREDERICK J. LISMAN is a New York banker who has specialized in dealing in the securities of the smaller railroads and of the so-called short line railroads. Notwithstanding the fact that Mr. Lisman is a hard-headed and a very successful practical banker, he has found time and interest to study both the history and the economics of the development of American railroads, and there are probably few men in America who know intimately what might be called the inside history of the development of so great a number of railroad projects. In testifying before the Hadley Securities Commission, which made an investigation about the issuance of railroad securities, he described fully, frankly and vividly how numerous short lines all over the United States have been financed and built; how the farmers have given the labor; how the ties have been supplied at very small cost; how the money for such necessary supplies as rails, cars and locomotives has been raised by the issue of first mortgage bonds at the rate of so low as \$10,000 per mile, which were sold possibly in Holland, in Germany or in France; and how the benefit which accrued to the farmer came from the opening up of transportation facilities, and how the profit which accrued to the banker, if in the end the project was successful, came through holding the stock over possibly a period of years and selling it eventually to some one of the larger railroad systems. About 15 years ago, before physical valuation of railroads had been considered seriously, Congress desired to have a valuation made of all the outstanding securities of railroads. Mr. Lisman undertook this enormous task and carried it out without any compensation from the government. Congress has never made any use of this work.

FRANK WRIGHT NOXON is a newspaper man of broad experience and the author of "Are We Capable of Self Government?" published in 1916, and of "The Rate Decision and Railway Credit," published in 1911. Mr. Noxon was a reporter on the Syracuse Herald for a year; was dramatic critic of the Boston Record from 1893 to 1900; and he has been managing editor of the Providence News, of the Boston Republic, and of the Boston Traveler. He was secretary to Henry M. Whitney in 1905, and was course lecturer in the Boston Public High School of Commerce in 1907 and 1908. He has been secretary of the Railway Business Association since 1908. This association was formed by the manufacturers of railway supplies with the object of putting before the public certain phases of the railroad question; and it was at one of the annual dinners of this association that James J. Hill, in 1912, made his prophetic speech outlining the country's needs of greater railway facilities and terminals.

Some Cheering Thoughts on the War Debt

The Future of Business in This Country, Despite the Great Destruction of Property Which Is Going on, Is Bright

By John G. Lonsdale

President of The National Bank of Commerce in St. Louis

A YOUNG man of our city, after sixty days at the aviation field, where he had done nothing more perilous than study aeroplanes on the ground, recently came home on leave. His uniform was new, the girls were nice to him, and he enjoyed his visit. But, what is more, he cheered up his friends, for to each of them he confidentially imparted the information that Sherman was wholly wrong: That war wasn't Hell at all; in fact, that it was very enjoyable.

However, in presenting this article, the writer must state that he is not quite so cheery as this young man. War is a thing of burdens and horrors and it is futile to deny it. Germany forced us into the conflict to defend the principles and ideals for which this nation stands, and we accept its economic consequences in the same unflinching spirit of patriotism as that which sends our boys to the trenches. Whatever may be the money costs, we will pay them. The true American feels that, unless we win, life will not be worth while and the unpatriotic resident, if such there be, knows that, if Germany wins, his property rights will not be worth while. So they both buy Liberty Bonds, and the figures of our National debt mount to higher levels. But, even so, the cost of this war, as expressed in dollars, is very deceptive. There are many reasons.

In the first place, though the figures of our indebtedness are huge, the ratio to our national wealth is very small, and will probably never reach the ratio developed by Civil War expenditures to the nation's wealth as it then existed. True, as some may point out, we have never paid all of this Civil War bill, but it was not because we couldn't. Uncle Sam has treated it much as the millionaire individual who renews from time to time a ten-thousand-dollar note at the bank. If so requested, he could pay it at any time, but the bank is glad to have his paper, and so it rocks along without serious thought from either party. If the note were \$100,000 it would probably have been paid at its first maturity. So, when Uncle Sam comes out of this war with his heavy obligations, special arrangements will be made to meet them. Liberty Bonds will be paid—and no one thinks otherwise.

Our National wealth and our annual National income have been estimated at two hundred fifty billions and forty billions respectively, while our war expenditures will be, it is thought, about fifteen billions per year when our industries are fully converted to a war basis. But, as a matter of fact, if the estimate of our income gave due consideration to war prices, the total would probably be sixty billions instead of forty billions. Some idea of the enormously increased production, which includes, of course, a great deal of war materials, may be gained from the fact that Income and Excess Profits taxes which it was originally estimated would yield two and one-half billion dollars for 1917 will probably yield over four billions. These figures are significant, too, as supporting what has previously been said about the ease with which our pre-war National debt of a billion dollars could have been discharged.

In the foregoing, we have spoken of the annual cost of war in terms of dollars. War's burden, however, would be more accurately referred to as a loss, and be treated in terms of tangible property—cloth, and steel, and foodstuffs, and all other things that minister to the wants and comfort of mankind. In a broad sense, we may say that this loss arises

on the one hand from increased consumption and destruction of commodities, and, on the other, from decreased production. We know that we are losing ships and cargoes, and that guns and munitions of war of every kind are being manufactured to last but a short time on the battle front. We know, too, that millions of men who were producers are being converted into soldiers. But then, too, we know that civilians are working harder than ever; that a great many women formerly unemployed have joined the ranks of wage earners and producers; we know that a not inconsiderable part of the war's cost is represented by wages paid to soldiers, much of which sum will be saved. We know that, as our ship-building program now stands, the end of the war will find us with more ships than ever before. We know how highly improbable it is that this country will ever be invaded by a hostile force, and our railroads, our buildings, our farms, factories and mines will therefore remain unaffected by the direct ravages of war. It must follow, then, leaving out the question of debt in terms of dollars, and considering merely property loss, that this country is not driving toward economic ruin, even if it be assumed that the war will last ten years.

The cost of war being thus properly considered as a loss of property or its equivalent, it is readily seen that this loss must be borne as we go along. No future generation can supply the materials that we need now, and that are being so freely sacrificed. What, then, is the meaning and purpose of National debt? Merely this, and nothing more: That a certain portion of our citizens own the things that are needed for the waging of warfare, while others own property of a different kind. It would be manifestly unfair to confiscate A's powder factory and his materials for government use, while B, who happens to own a candy factory, is left in full possession and ownership. But the government must have the output of the powder factory. Hence, it first acquires purchasing power by selling obligations of the government, which are in fact obligations of all the people; and it then uses this purchasing power to pay A for his powder. Thus an injustice is avoided: The cost of the war is equitably distributed. Yet, as regards the property, itself (powder in this instance), the diminution of the country's wealth is just as great as if confiscation had been the method adopted. From which it is evident that the people of the United States as a whole are neither more nor less wealthy because government bonds, representing the war's cost, have been issued to them.

There are those who think debt is wrong in principle. They believe in the old proverb, "God is not sinless; He created borrowers." But, as we have explained National debt hereinbefore, we see that it is merely a method of preventing a great injustice to property owners of a certain class. At the end of this war, the people of the United States, represented by their government, will owe the people of the United States as bondholders a certain sum of money. This money must be raised by taxation, assessed against property and income. But, it may be safely assumed that the ownership of Liberty Bonds will be distributed according to property and income also; and, insofar as this holds true, each person's payments of taxes will come back to him in the form of bond interest and re-payment of bond principal. In this respect, the financing of this war in all countries differs greatly from preceding wars.

Heretofore the bond issues have been largely purchased by the very wealthy, so that, after the war, the people at large would be paying taxes for the benefit of the few. While on this question of taxation, let us not forget, either, that one of our avowed purposes in this war is to form a league of nations and curtail or abolish national armaments. Thus will one of the great burdens of the people of all nations be forever removed.

A question in which everyone is vitally interested is whether industry will be thriving, and trade active, after the war. This cannot be definitely answered, because no one knows when the war will end, or what the economic condition of the present belligerent nations will be at the finish. But, from the trend of current events and the teachings of history, we can arrive at certain general conclusions.

First, we know that our spirit, when an American peace has been earned, will be one of pride and thankfulness. We will face whatever is to be faced in the way of economic trials with the knowledge and the confidence gained from solving war problems of equal magnitude. The menace of German autocracy being removed, we will be rich in our sense of national security and rich in memories of glorious achievements.

There must, of course, be a period of economic re-adjustment to peace conditions, just as the process of adjustment to war conditions is now going on. But this period will be short, and will perhaps be partially prepared for before the war ends. For a decade after peace comes, Europe will go through a process of rehabilitation, and the materials for this work will be largely supplied by our people, because we may depend upon the working out of some plan, probably through the government, whereby the necessary credits will be granted to those nations whose peoples desire to purchase from us. As a nation we have already become accustomed to making foreign loans, and as individuals to financing foreign business. There will be real co-operation between government and business, both in financing and in entering foreign fields. Our banks will come out of the

war in liquid condition, because liquidity of assets is the present watchword of bankers throughout the country. Returning soldiers will soon find work, because there will be much to do. Stocks of goods all over the world will have become depleted, and will need replenishment. A great amount of building and construction work in this country, both private and public, is now being deferred till the coming of peace. Railroads will need extensions and new equipment, and the railroad industry will be liberally financed. We shall be very busy with all of this, and our economic recovery from the effects of war will be rapid.

If there be those who doubt the ability of the human race to rise from the ashes and wreckage of this war, let him but read the history of France after the Franco-Prussian war; let him but consider the rapid economic rise of the United States after the Civil War. With knowledge of such achievements, one has but little sympathy with such a wail as the following, which emanates from a current writer: "How commerce will be financed, how manufactures will be revived, how banking will be carried on, how public bankruptcies on an unheard-of scale are to be avoided—these are questions which defy experience and baffle even the wisest heads." When he ignores what history might tell him on this subject, he is as wisely consistent as the man who turns off the light and wonders why it is dark. Let him read this from the "Contemporary Review" of April, 1877, with reference to France, after the Franco-Prussian War: "And so we come round to France, the people whose well-being has been so visited with the most violent assaults . . . War has desolated her broad fields and overthrown her industries over great areas of her territory. Her taxation has been suddenly raised by the gigantic sum of thirty millions of English pounds a year . . . Her share of the commercial trial has been the severest and largest of all; yet at this hour she exhibits, not the melancholy languor of business men in other countries, but the active movements of quickened recovery."

As France recovered, so will the world.

But, first, the war must be won.



Photo from Press Illustrating Service

A German Bath Train

The Future of the Railroads of the United States

A Suggestion for a Regional System of Railroads Under Private Ownership With Government Representation

By F. J. Lisman

Of F. J. Lisman & Company.

PROPHECY at all times is uncertain but never before has it been as difficult to read the future as at present.

An endeavor to judge the future by the past would probably be futile, because with the rapidly changing point of view, experience of the past is thrown to the winds and the public appears to be ready to take up rashly new doctrines. A writer in a recent issue of the *Political Science Quarterly* says: "We have become aware that the orthodox doctrines of economics, politics and law rest upon a tacit assumption that man's behavior is dominated by rational calculation. We have learned further that this is an assumption contrary to fact. But we find it hard to avoid the old mistakes, not to speak of using the new knowledge."

Our railroad system developed during the period of individualism, when private initiative was considered the ideal method of developing all resources and the chance for private profit and for the distinction of having accomplished the development of small or large sections of the country, or of some particular enterprise, was the incentive. At that time the accepted public philosophy was that the fittest should survive and the "devil take the hindmost." During the last twenty years a new philosophy has taken hold, which is based on the greatest good for the greatest number and under which the activity of the individual which we formerly greatly encouraged, is circumscribed closer and closer. Formerly individualism ran riot, now collectivism may do likewise. As individualism was preponderant in the development of the railroads, therefore, the reaction in that particular field is strongest. The managers of railroads themselves discovered in the 80's that individualism had become too pronounced and was through excessive competition threatening their own fortunes; therefore, there was an era of consolidation during which most of the present railroad systems were formed.

Some of the legislators feared that consolidation might go too far and passed the Sherman act, which in effect prohibits consolidation of any kind. This law was almost a dead letter for ten years until public opinion had matured sufficiently to demand its enforcement. Since then, with the change of the public's point of view towards what for lack of a better term is known as "social justice," railroads and other utility corporations have been so curbed they are now in a position of a man bound hand and foot who is asked to do a good day's work.

It may be said that the managements of some steam railroads were dishonest and of others incompetent, but it is doubtful whether the percentage of dishonesty and incompetence was as great in the railroad field as in other enterprises. The temptations were great but railroads were always in the lime light, which acts as a restraint. The speculative tendency of some railroad managements has led to heavy losses on part of the security holders but to none on part of the public served by the railroad companies. That dishonesty and incompetence has not been the dominant factor in the decline of railroad securities is proven by the fact that in the decade 1907-1917, there has been no conspicuous example of improvement in the financial condition of a single large railroad company. On the other hand, some of the companies which at the beginning of this ten year period were prosperous, have since gone into bankruptcy and the credit of most others has declined, irrespective of the increase in the rate of interest due to the great demand for capital for war, industrial and other purposes.

Owing to the difficulty of getting capital at fair prices, railroads have not as formerly, been able to increase their facilities so as to meet any normal increase in demand for transportation. About July 1, 1914, there was every indication that as a sequence of the unwise and repressive legislation against corporations the development of the United States would be seriously checked and that we were headed for a long and serious business depression. When there is no incentive for capital, then, of course there will be no development, and when there is no development, there is unemployment. *The sudden demand for all sorts of war supplies on part of the European belligerents entirely changed the situation before the lesson was well-learned and most people in the excitement of the times, have forgotten about this.* The railroads have had all the business they could handle since the middle of 1915 and while they made some money at first, the increased business of late was a burden rather than a benefit owing to the lack of facilities, largely brought about by lack of credit and the rapid increase in expenses.

Since we entered into the world's war, the constitution has been practically suspended and the executive, as is necessary in times like these, has been vested with far-reaching powers. It was found that the congestion of the railroads needed drastic treatment and, therefore, the Government took possession of the railroad system, through the Director General of Railroads.

An effort is now being made to operate the railroads to the best possible advantage, that is by suspending competition and onerous restrictions of the federal and state governments in every respect, and also by making the public pay the full cost price. The public has suddenly visualized that it is really interested only in good service at the lowest possible prices and that competition is not necessarily essential to achieve that purpose. Pretty soon the public will realize that for instance five competitive trains leaving Chicago for the Twin Cities or Omaha at about the same hour is just as expensive, and something they have to pay for one way or the other, as it is to have two sets of gas pipes in the same streets. This lesson had previously not been brought home to the public because it was the investor who usually paid for this duplication of service rather than the consumer.

During the last ten years investors have learned by bitter experience that money invested in developing railroad enterprises is not likely to bring any return.

The railroads which were in a development stage since the commencement of the war in 1914, have as a whole had no opportunity to demonstrate their real earning capacity. The smaller roads were greatly hampered by the car shortage and the larger roads did not receive any, or very little benefit, from certain rehabilitations made during the period in question. The larger properties are now leased to the Government at the standard return, which means the average of the net earnings for the three years ended June 30, 1917. The owners of the small roads are extremely uncertain as to their position and seeing there is very little or no chance for an income from their investment they would like in many cases to scrap their properties at the prevailing high price for second hand rail and equipment, for the purpose of saving some of their principal. The Director General in many cases has refused or is threatening to refuse to take over these lines. This refusal under present conditions of the labor market is equivalent to a death sentence, because these strug-

gling properties cannot compete with lines controlled by the government. In case of the refusal to take these properties over the owners would in most cases be prevented by the local authorities from taking up their lines; therefore, the capital invested in short lines has become subject to financial slavery.

Government Responsibility

The method of railroad regulation by federal and state governments developed between 1906-1917 and was equivalent to absolute government control without responsibility. The government fixed the price of transportation for freight and passengers; it fixed the wages and regulated the method of keeping books. *In effect the government had commandeered the capital which had been invested in the railroads.* As this capital had become fixed it could not, of course, be withdrawn except in so far as the securities representing it could be disposed of in the market at ever declining prices, but additional capital for the construction or the development of railroads became unobtainable on fair terms. The condition under which capital was expected to be furnished was substantially that if the enterprise were successful, capital would be theoretically entitled to a fair rate of interest, but if the reverse, capital should take the whole of the risk; in other words, the politicians as representing the public said to capital "heads we win and get the facilities, and you get a rate of interest which you could have obtained without taking any risk; tails you lose your money and we get the facilities anyway." This was obviously an impossible proposition.

The writer was interested in a sixty mile railroad in one of the Southern States, which, during the three years ended 1910, did quite well. Since then, for a variety of reasons, crops along the road have been a failure and interest on the company's bonds has not been paid. Notwithstanding this, the local railroad commission tried to insist some time ago that additional equipment be furnished for the purpose of accommodating a manufacturer of crates, whose traffic would have passed over but five miles of this company's track. The obvious answer to the railroad commission was that no additional capital could be found because the prospect of getting no return on the money was not attractive to capital. This same answer applies all around. To put it concisely, *too much regulation is confiscating a large amount of capital invested in the railroads and above all, it has absolutely confiscated the incentive.*

Government Does Not Practice What It Preaches

Digressing for a moment let us note how little our legislators are inclined to follow the line of action they have laid down for others. The railroads of the United States earned nearly four billion dollars annually before the war. They had to keep their books according to a standard method, giving all items of income and expense to the minutest detail. During the same period the total amount of money collected in the United States by federal and state governments and their subdivisions through taxation was about 10 per cent greater than the total gross earnings of the railroads. Neither Congress nor any Legislature has troubled itself to correlate the figures as to the total amount of taxes collected, much less has any attempt been made to follow the expenditures of these moneys; in fact in most of the states it is not even known how much the sub-division of the states, such as counties and municipalities collect, or how they spend it. In some states the electric light, electric railway companies and gas companies must keep their books according to a certain standard, but similar public utilities operated by some of the municipalities are exempted from this rule.

What About the Future?

The paramount question now is, what is going to happen to railroad enterprises after the war. Previous conditions had become intolerable and a new and constructive

policy will have to be adopted. It is barely possible the question of government ownership may become the issue between the two political parties at some congressional or presidential election but as the attitude of most voters on this subject is so very uncertain both parties will probably prefer not to make this the definite issue. The railroad problem will have to be solved, however, possibly by the Congress elected this Fall, or more likely by the Congress which is elected in 1920.

In final analysis there are only three ways of handling the railroad problem.

(1) *Government ownership and operation.* It is safe to say that all of those who have devoted their lives to the railroad problem are convinced that government ownership whenever and wherever tried, has been a serious failure. The American public has always been jealous of its liberties and it is very doubtful whether even with the present socialistic tendencies the public would be ready to put so much power into the hands of the government, which would mean practically putting this enormous power into the hands of any political party controlling the government for the time being.

(2) *To return the railroad properties to the corporations,* on the same basis as existed previous to the war.

The conditions prevailing previous to the war were equivalent to absolute government ownership without government responsibility, a return to which is not feasible because—

(a) The companies will not be able to raise the necessary capital to rehabilitate their properties which will be necessarily run down if the war lasts several years, because the government will only make such improvements as will help win the war.

(b) Enforced competition does not fit into the new system of philosophy. It is the big perspective or point of view of the time which dominates the action of each generation. What is right in one generation is frequently wrong in the next, and vice versa. The public having visualized that enforced competition is unnecessary and expensive, will insist on dispensing with it. The shipper in Chicago who had the choice of half a dozen package cars via as many different lines for a shipment of dry goods from Chicago to Atlanta has had his mentality adjusted to the fact that there is now only one daily package car between these points which should be able to give more dependable service than any one of the six formerly gave. He will not longer be interested in the question which route to ship over or which one of the glad-hand freight agents to favor with his business. This era belongs to the dead past.

(3) There would appear to be nothing left but a *compromise between public ownership and private operation.* Such a compromise may, of course, take various phases. It may come in the shape of government ownership of properties turned over to private companies for the purpose of operation. The most logical way to solve the problem would appear to be a continuance of private ownership and private operation on the best terms combined with reasonable government supervision.

Regional Railroads

It is beyond human ken for any man or even set of men to operate a railroad system of 250,000 miles, the approximate present mileage of the United States.

There has been a contest since the close of the Civil War between two different types of railroad management, departmental and divisional. Under the departmental system all details are run from headquarters by someone in charge of some department. For instance, every trifling question about engineering has to be submitted to headquarters. Under the divisional system the General Superintendent, who may have charge of 1,000 miles of railroad, or even the Division Superintendent with from 150 to 300 miles of railroad to look after, has fairly full authority over his division and is in

many cases authorized to spend as much as \$5,000 at his discretion.

Under government ownership everything would be done on a departmental basis and it would be difficult to give anybody outside of Washington authority to do anything. This would not only tend to delays, but it would take all the initiative out of every official.

Railroading, after all, is very much as Hancock said about the tariff, "strictly a local question." Very few people realize how strictly local it really is. The man in charge of any railroad in order to run it successfully must know:

1. The local problems; the nature of his territory as to traffic and seasonal movements, etc.

2. Conditions of the soil along his line as affecting track conditions.

3. The grades affecting his motive power and train loads.

4. Physical condition and type of his motive power and other equipment.

5. The class of men under him clear down to section men.

It is for this reason that the size of corporations or of regions must be kept down to a size which at least one or two big men can visualize and understand.

To operate to the best advantage 25,000 miles of railroad is a very big proposition indeed. In order to get the best results the country must be divided into not less than eight and probably not more than fifteen regions. The first region to take in the New England states, the second composing the present trunk line territory east of Buffalo and Pittsburgh and north of the Mason-Dixon line; a third the territory west thereof and north of the Ohio River and running to Chicago and St. Louis on the west, etc. The government should encourage the consolidation of companies within each region and if necessary enforce consolidation. This, of course, would involve many legal problems. The government by the law of eminent domain unquestionably would have the right to condemn the properties of the companies and these rights might go as far as to compel the stockholders to take the securities of the regional railroad instead of cash or government securities. The best way to work out this problem, would be to appoint committee to place a value on the various properties, not solely on the basis of physical value, but on a basis on which business men would deal with each other. Such a committee would have to be composed of representatives of the federal government, of the corporations, of the shippers, also experts on the subject, that is college professors, who are much disliked in many quarters, but who nevertheless are becoming more prominent and active in nearly every walk of life. These committees would have to take into consideration the following factors:

- (1.) Approximate physical value,
- (2.) Necessity to the public,
- (3.) Past earnings,
- (4.) Prospects for the future,

Physical value must necessarily be a less important factor than heretofore. Because of the tremendous change in the cost of everything no one can say what would be a fair basis at this time.

Surely the cost prevailing on July 1, 1914, which was to be the basis of the valuation previously ordered by Congress would appear to be unfair to the owners, and the high price of war times would appear to be unfair to the government. Just what basis is fair is largely a matter of individual opinion. This is especially so because this subject has to be considered within twenty-one months after the close of the war, before prices for labor and commodities have settled down to a definite level. A fair value for each property, to be determined by unbiased arbitrators must in the end become acceptable to all parties in interest.

The law authorizing regional railways must provide that the rates in all cases be high enough to enable the companies to earn interest on their outstanding bonded debt, as well as a fair rate of interest, say 6% on the outstanding capital

stock and on such stock as may be issued thereafter from time to time. Any surplus earned by the companies above say 6% on the common stock should be divided equally between the companies and the government. This would preserve the incentive of private management to obtain the best possible results and the government would not only be interested in having economical operation but would also be interested in having the rates not unduly low. The principle established in the recent organization of the American Railroad Express Company of giving the government an ever-increasing share of the surplus above 5 per cent is wrong, because it decreases the incentive of the management to make a profit.

The board of directors of each regional system should be composed of say nine members, of which four should be the nominees of the government. This board to appoint the officials and there should be nothing in the law to handicap the management by attempting to fix the salaries.

There are many companies, the lines of which traverse several regions. This, however, is no obstacle to the suggested plan, as long as the stockholders of these companies receive their proportion in each regional corporation. For instance the stockholders of the Atchison, Topeka & Santa Fe might receive 20 per cent in the capital stock in the Mississippi Valley region and 40 per cent each in the stock of the Southwestern and Pacific regional company and would fare no worse than if they received 100 per cent in stock of some one company. The stock of some one regional railway may be worth a trifle more than the stock of another, because the prospects for an extra dividend in some particular region may be somewhat better than that of another. It would probably be some time before these variations in prices would develop.

Financial and Legal Problems

The various committees which would fix the values of each property would of course have extremely complicated financial and legal problems to solve; in fact in attempting to deal with the companies on a cash basis the question of the relative position of bonds, preferred and common stocks would, of course, arise. Take the case of a company with a very simple capitalization like the Kansas City & Southern which has an issue of long time 3 per cent bonds outstanding. For the sake of round figures we will call this capitalization as follows:

\$30,000,000 3 per cent bonds, due 1940
20,000,000 5 per cent bonds, due 1940
1,000,000 4 per cent preferred stock
70,000,000 of common stock

The valuation of this property has been tentatively agreed to under the old valuation and is strongly disputed by the company. Let us assume that for the purpose of the proposed consolidation into the Southwestern Regional Railway, the company assets should be valued at \$75,000,000. This would be equivalent to par for the bond issues and the preferred stock and would leave a value of 13 1/3 per cent for the common stock. The First Mortgage bonds would then have to run to maturity about 30 years hence and be paid off at par. As a matter of fact they are selling at 60 and have never sold higher than about 75. It would probably be much fairer for the committee to say that the bond issues selling at a discount should be taken up by some 4 per cent blanket mortgage bond of the regional railway on a 4 per cent basis. This would work out approximately 82 for the 3 per cent bonds of the Kansas City Southern and the Chicago & Alton or about 88 for the great number of long time 3 1/2 per cent bonds issued by companies like the Chicago & Northwestern, New York Central, etc. If 4 1/4 per cent or 4 1/2 per cent should be the prevailing rate of interest on government bonds at the time of the merger, then these underlying railroad bonds should be taken up on a 4 1/4 per cent or 4 1/2 per cent basis. If a 4 per cent basis is applied in the case of the Kansas City Southern there would be

18 per cent discount, or \$5,400,000, which would equitably belong to the \$30,000,000 of common stock. This would be equivalent to an extra 18 per cent on the stock of this company. The legal question would arise whether the government under the right of eminent domain could enforce the retirement of a prior lien security at less than its par value.

Another question which would confront the committee would be the capitalization of preferred stock. The Atchison has outstanding 5 per cent preferred stock and the Kansas City Southern a 4 per cent preferred stock. Probably a fair way to deal with this problem would be to offer to each holder of \$100 of a good 4 per cent preferred stock \$80 of the 5 per cent preferred stock of the regional railway, thus maintaining the investors' present income but cutting down the principal or nominal value of the security. By such an exchange of the preferred stock of the Kansas City Southern, the company's capitalization would be reduced by another \$4,200,000, which would be an additional 14 per cent which should accrue to the benefit of the common stock.

Difficulties to Be Overcome

To enforce the conclusions of these committees special legislation would be necessary, and possibly even a constitutional amendment, to make the findings legal and binding.

The obstacles are innumerable. Many things have been accomplished since we entered into the war which were considered impossible and the hurdles which we have jumped are much greater than those which seem to be ahead of us in the way of adjusting the railroad situation along these lines. These obstacles resolve themselves into:

1. Financial: These matters to be determined by the committees referred to.
2. Legal: A method may have to be considered largely by what was known after the civil war as force acts.
3. Regulation: Details of government regulation which should be determined by the same or other committees.
4. Operation: The relations of the regional systems to each other which are purely detail operating problems.

Such a solution of our railroad problems will I believe do justice to the shipper, the body political, (our governmental system) and the vested interests.

Settlement of Labor Question

The question of having labor get a part of the profits above a fair rate of interest to capital must also be taken into consideration. All forward-looking men realize that some con-

structive work has to be done in that line and that previous conditions had become more or less unbearable. Exploitation of labor during hard times by capital and the profiteering of labor in good times must cease. By making the two interests partners the problem may be partially solved. It therefore might be worth considering whether the surplus above say 6 per cent on the capital should not be divided between the Government, the Stockholders and Labor. To say that each should have a third would be altogether too crude a method of determination because some of the Regional Railways would have a relatively larger capital stock than others. Roughly, it takes \$5 of Capital to produce \$1 of Railroad gross earnings and of this dollar approximately 60 cents goes to labor. Assuming that the Regional Railways will be capitalized on a basis of half bonds and half stock, then the extra dividend of 1 per cent on the capital stock would be equivalent to a bonus of approximately 4 1/6 per cent to labor on the wages earned during the year. Possibly a bonus of from 4 per cent—5 per cent to labor for every 1 per cent extra dividend paid on the stock might not be unfair.

* * *

The working out of the railroad problem on the above basis would mean that substantially all bond issues well within a reasonable valuation of the properties and the interest on which is protected by, say, a 50 per cent margin of surplus earnings, would finally become underlying securities of the regional systems and would in the end sell on approximately the same interest basis. Lawyers seem to be of the opinion that under the right of eminent domain the government can call in any security at par: therefore, bonds paying 5 per cent or over might be redeemed before maturity. Many companies have a variety of junior and income bond issues which would have to be exchanged for stocks or bonds of the regional railways on a basis of par or less, in accordance with the findings of the committees. There would be much uncertainty as to the outcome of non-dividend stocks.

Many pages could be written about each detail of the literally thousands of points and problems which would develop in the working out of the plan. This article is intended to be merely a rough sketch of what appears to be a possible and logical solution of the railroad problem.

On Thursday morning, after this paper had gone to press, Mr. Lisman received a letter from England saying that the English Railways were to be reorganized after the war on the very lines suggested in this article.



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Six Miles of the New York Barge Canal from Whitehall, N. Y.

American Trade Possibilities in the Far East

By Edward B. Bruce

President Pacific Development Corporation

STATISTICS OF IMPORTS and exports are deceptive guides in judging trade conditions and possibilities. This is particularly true of the statistics since the beginning of the great war. The growth of our foreign trade since 1914 has not been under competitive conditions and is no criterion of what our trade will be when these conditions return. The enormous increase of our foreign trade since the war has, however, done two things. It has stimulated a wide and growing interest in foreign trade and it has made the United States an exporter rather than an importer of capital. To a certain extent, the trade of the United States with the Orient presents the same questions as our foreign trade generally. It has, however, many problems and interests peculiarly its own.

Europe has for four years expended and Europe and America are now expending their man power and their treasure at a rate heretofore undreamed of. In the Far East the conditions are reversed—the man power is not only unimpaired by the wastage of the war, but as is always the case in the East, the natural rate of increase in the population is being augmented by a condition of unusual prosperity and the wealth of the Far East is being tremendously increased. China's total foreign debt of approximately one billion dollars looked large before the war; today in comparison with the indebtedness of the European countries and the United States, it is insignificant.

Under present conditions, prophecies are dangerous, but one thing seems certain and that is that the Far East has been and will be the great beneficiary of the war and will emerge from it in a condition which will demand from the rest of the world a far keener and more intelligent interest in its affairs and offer a far greater opportunity for mutually helpful and profitable intercourse than existed prior to the war.

Logically the United States should, and theoretically she can take an important place in this intercourse. The East as a whole, and in varying degrees in different countries, possesses the greatest and least utilized labor supply in the world. I venture to say, that the average adult male in China earns less than two dollars a month. I believe this to be an over-statement for I personally know of large sections in China where the average wage is much less. The East possesses great but largely undeveloped natural resources. It lacks transportation facilities, industrial development and capital. Even more than these it lacks executive and industrial training and experience to realize on and utilize its latent wealth. The United States needs the products of the Orient, can supply the capital and industrial direction and the manufactured goods which will be wanted in increasing quantities as the resources of the East are developed. Today China is buying all that she can afford to buy, and to increase materially her purchasing power, her productive capacity must be correspondingly increased.

To study what should be done one should consider the situation as it existed before the war. The total foreign trade of the United States with the Orient was divided roughly into two thirds imports from the East and one third exports to the East. Only with the Philippine Islands did our sales approximately equal our purchases. Not only was this the case, but the bulk of the business was handled in foreign ships, by foreign trading firms, financed by foreign banks and insured in foreign insurance companies.

The enormous increase in our foreign trade since the war has not been won against competition. It has whetted our appetite and we like the diet, but to keep it or any consid-

erable part of it, is going to require careful study and sustained effort.

First and foremost, we are not going to take our true place in the world's foreign trade by staying at home. Organization in a foreign country where we wish to trade is the most important element in success. This is particularly true of the Orient. If we want the trade we have got to go there and get it. We are not going to accomplish results by staying at home and dreaming about it. European countries have for years used their best brains in the development of this business. Young men of the highest grade go to the Orient to make it their home, and trade with the Orient their life work. They learn the language, become experts in the products of the country. The requirements of the people are studied and their likes and dislikes catered to. The manufacturer follows the advice of his representative abroad and produces the goods that the people want and puts it up in a package that meets the native taste. You hear no talk from the English that such and such an article is good enough for the English and therefore it is good enough for the Chinaman. Up to date the reverse has been the case with the United States. Some few Americans have gone to the Orient, but for the most part they have gone through a spirit of adventure to see the world. They demand higher wages than their European confreres and their interest is divided between the pleasure of sightseeing and a desire to get home. They leave their household goods and utensils in this country and camp out abroad—the whole atmosphere is transient. The feeling is that a certain knowledge of the world may be useful in securing them better positions at home, but that they must not stay away so long as to be out of the running here. Americans are not naturally linguists and seldom take the trouble to learn the language of the people of the country where they live.

This is not said in any spirit of criticism, but simply as a plain statement of fact. The reason for which is clear enough in that the young American has felt that he had a better opportunity at home than abroad. Indications of a change in this respect are already apparent—concerns engaged in foreign trade are finding it easier to secure the right kind of Americans for foreign service, and it seems reasonable to suppose that the war with the sending of millions of young Americans abroad, is likely to inculcate in many of them, an interest and wish for foreign service.

Next in importance to the question of men to carry on foreign trade is the question of capital. Generally speaking it is pretty clear that the amount of foreign trade any nation has with a given country depends very largely on the amount of capital which that nation has invested in the country. This is primarily true of the export trade in manufactured articles which is the most profitable kind of foreign trade for any nation and the trade which America should especially seek. It is also particularly true of the Orient. As an exporter, the Orient is a producer of raw material and, with the exception of Japan, the Orient will be a purchaser of manufactured articles. The Orient to materially increase its purchasing power must be developed and its labor utilized in productive industries—to do this she needs capital and that country which furnishes most of the capital is inevitably going to secure most of the trade.

Third in importance, is the question of transportation and the facilities and machinery for foreign trade, such as foreign banks and insurance companies. America is at present engaged in building a mighty merchant marine. This merchant marine cannot compete on the Pacific under the

existing laws when normal conditions return, but I believe it reasonable to suppose that these laws will be modified when the necessity arrives to use these ships for the arts of peace and it is found they cannot be used without a modification in the existing statutes.

There has been a large development of interest in foreign banking which has been especially stimulated by the organization of the Federal Reserve Bank and the facilities it extends to member banks for discounting acceptances. I believe, however, that the same situation which applies to trading applies to banking and that American banking interests cannot take their proper place in international banking without establishing themselves abroad and securing the services of high class experts. The same applies to insurance; so far as I know not a single American insurance company is doing business in the Orient.

The situation of the American business man abroad and especially in the Orient was clearly shown at the outbreak of the great war. Great Britain very properly and very intelligently created a black list of enemy concerns following the same procedure which we have adopted since our entry into the war. She also very properly took the attitude that while she could not control the activities of neutrals she could withdraw her facilities from those neutrals who did business with the firms on her black list. Most of the American concerns in the Orient were so heartily in sympathy with the cause of the Allies, that they thoroughly approved of the action taken by Great Britain and were perfectly willing to forego trading with the black listed firms, but the fact remains that whether they liked it or not, they had the alternative of giving up this trade or substantially going out of business because the machinery for foreign trade in the Orient was primarily in the hands of the British; the American merchant who could not ship his goods in British bottoms, who could not finance his goods through British banks and who could not insure his goods in British insurance companies, could not do business in the Orient.

So far the questions discussed relate generally to Oriental trade, but conditions vary so in the various countries in the Orient that special study must be made of each. China with its vast area, its immense population, its great but undeveloped natural resources is undoubtedly the country to which one's thoughts turn in contemplating Oriental trade. The more one studies China the more one becomes fascinated by the theoretical possibilities of the country and the more timid one becomes in expressing definite opinions as to conditions there and probable developments. The only people I have known who have no uncertainty as to the future of China and are quite clear as to the best way to develop the country, are the people who have made exceedingly short visits there. The more familiar one becomes with the people, its traditions, the more obscure and difficult the problem appears.

One thing however, seems certain—China must have for any real development a great expansion of her transportation facilities. A country with a population estimated as high as 400,000,000 and with less than 7,000 miles of railway—a country with a mile and a half of railway for every thousand square miles of area must be supplied with increased transportation facilities for any large industrial and commercial development. There are parts of China only a few hundred miles distant from each other which are farther apart commercially than Shanghai is from New York. The problem in China from the point of view of the producer of raw material is not that she does not produce the material, but that there is no way of getting it out. People cannot be large consumers of manufactured articles in a country where the porters' guild of a city opposes the introduction of draft animals because it takes away their occupation, where you can hire ten men to pull a boat on a

canal cheaper than you can one horse—or where a basket maker cannot ply his trade at night because the occupation is not sufficiently lucrative for him to afford a light.

For the United States to do its share for the development of China and secure its portion of the trade of China, the United States must be prepared to invest capital in providing for China the necessary facilities for trade in the way of railways, roads, transportation facilities and port works and for industrial development.

The situation in Japan justifies and demands the most careful consideration by the United States. One cannot travel through Japan or meet the Japanese without becoming convinced that the wish for a closer understanding with the United States and a desire for closer co-operation with this country has grown tremendously in the last few years. Japan on account of her strategic position, her industry and her tremendous increase in wealth, especially since the war, will and is entitled to take a leading position in the development of the Orient. Japan is rapidly becoming an important industrial country and so far as manufactured goods are concerned, is likely to be more of a competitor than a market for the United States. The Oriental problem so far as Japan is concerned, is to my mind not so much a matter of trade with Japan, but co-operation with Japan in the development of the rest of the Orient. There will undoubtedly continue to be a profitable and valuable trade with Japan in the exportation and importation of various commodities which one or the other countries can produce more efficiently or more cheaply than the other, but in a larger way we must look upon Japan as a competitor—an equal to be co-operated with in the development of the Orient rather than a field for development in itself.

The Philippine Islands have, or should have a peculiar interest and fascination for the people of the United States. It is there that America's only real Oriental experiment has been tried out and the results are a source of pride to every American who knows conditions there, and a constant source of irritation to these Americans that so little interest is taken in that situation in the United States. America's work in the Philippine Islands has been a fine accomplishment, has brought wealth, happiness and contentment to the people of the Islands and is a source of potential value to the United States to an extent which few people realize. It will surprise many to learn that the United States sold more goods to the Philippines in the five years ending December 31, 1915, than to the whole of China during the same period. The United States government has provided the facilities for modern commerce in the Islands—thousands of miles of beautiful roads have been built all over the Islands, railways extended and ports developed in the principal seaports. While private enterprise has not taken the interest in the Philippines that it should, what has already been done has shown most gratifying results and the people are clamoring today for assistance. The foreign trade of the Philippine Islands has grown from \$27,700,000 in 1899 to \$161,400,000 in 1917 and America's trade with the Islands has grown from \$4,700,000 in 1899 to \$100,800,000 in 1917.

What I have said of China applies largely to Eastern Siberia. The rest of the Orient, Indo China, the Strait Settlements, Java and the other East Indies will always be an important source of supply for tropical raw material and an increasingly important market for manufactured goods—the share of which America will get being dependent on her energy in going after and supplying the trade.

The great war brought the United States into closer association with other countries than ever before, and the relations which are now being established are bound to have an important bearing on the future of our activities in the Orient. One cannot study the history of the last hundred

years in China without realizing that it has been primarily a struggle between conflicting forces—a period of unhappiness for China and a period of unsatisfactory results in proportion to the effort made for the rest of the world. With the Chinese it is a conflict between the old and the new—the old China isolated from the rest of the world, its only wish to be left alone, and the rest of the world impelled by economic necessity and the immense growth of transportation, forcing its way in. The new China is developing, realizing the inevitable necessity of taking a place in the comity of nations, and seeking a way for the development of the country without submerging its nationality. The principal weapon of the Chinese during the last hundred years has been international jealousy, and the amount of ability which the Chinese have displayed during this period in playing off one nation against the other, would, had it been diverted into productive channels, have made China a very different place than that it is today.

It is my hope and belief that a way will be found whereby the allies can co-operate harmoniously in China and with the Chinese in much of the greater development especially that of a public nature necessary to China. The great public improvements such as railways, port works, harbor improvements, irrigation and drainage should be undertaken by the United States in conjunction with our Allies.

On the other hand, this policy should not be followed so far as a representation of American industries is concerned—the American manufacturer should be represented in the Orient by Americans as with all possible international amity, there should not be withdrawn the proper rivalry and competition in trade, and the American manufacturer cannot expect to have the sale of his goods pushed with the maximum energy by a foreign house whose primary purpose is to sell the goods manufactured in his own country—let us therefore not only co-operate with the other nations in the big things in the Orient, but build up our own commercial business there and push it with all the Yankee enthusiasm, ingenuity and punch that we can.

So far as the sale of American railway material in the East is concerned, this I believe is going to primarily depend on how far American capitalists are going to share in the financing of railway development in the East. Under the system which has been inaugurated in China, the rail-

ways are owned by the government and the interest of the people who build the railways and their profit in the enterprise comes through the sale of the securities issued against the cost of the enterprise and the purchase of the necessary material, supplies and equipment. Generally speaking the railway is built under the direction of engineers of the country supplying the money and the goods are bought there. It is to be hoped that the time will come when China will realize that it is for her interest to take in partners in an enterprise and arrange conditions so that the profits are shared on an equitable basis between China and those providing the money. The present system is innately vicious in that the profits to the concern which builds the railway depends upon the amount of the cost of the railway and it is hardly fair to expect human nature under these circumstances to build a railway as economically as it would be built if the profits primarily resulted from the success of operation.

Since the war there has been an increase in the demand in China for American railway supplies and equipment because the other nations could not supply them, but generally speaking unless the United States takes its share in the financing of the railways, the American manufacturer is not going to secure an important share in the equipment and supplies which are to be used by the railways of these eastern countries.

One cannot realize who has not been in the Orient, the immense effort and labor that Germany has put into building up of her foreign trade organizations there—many of these organizations have for years been doing business with little or no profits simply to establish themselves in the country, expecting to reap the reward when competition is reduced. Immense sums have been expended in providing the necessary machinery for foreign trade in the way of warehouses, shipping facilities, lighters, launches, and all the paraphernalia for foreign trade. The policy which the United States has inaugurated of Americanizing these German houses and withdrawing from Germany all the fruit of their years of labor is a highly effective war measure. The opportunity exists today for the American merchants to establish themselves at the expense of Germany in a way that will save years of labor and much money and it ought to be taken advantage of to the fullest extent.



Photos from International Film Service

These British Soldiers Had to Commandeer a Locomotive to Set Them to Safety in Northern Russia

Is It Wise to Unify the Railways Nationally?

A Study of the Aims Which the Public Wishes to Obtain in Any
Re-organization of the Railways of the United States

By Frank W. Noxon

Secretary of the Railway Business Association

RECONSTITUTION of the American railway system after the war is recognized in many quarters as a problem which must be studied forthwith. It is seen that this discussion cannot wait if the new system is to be installed soon enough following the declaration of peace so that railway projects may aid in stabilizing a nation's business suddenly bereft of war supply activities. The Chamber of Commerce of the United States has authorized the convocation of a conference representative of all interests "for consider the broad aspects of the transportation problem and the formulation of a basis for the control and operation of the transportation facilities of the United States after the conclusion of the present government control."

Events since America went into the war have led some who participated in previous discussions of regulatory policies to wipe the slate clean and begin all over again. An advantage of this mental process is that it tends to bring forward aims as distinguished from means. For example, when anyone says that he favors government ownership or government operation, it is profitable to reply: "But government ownership or government operation is not an aim. What are the aims which you think would be promoted by government ownership or government operation?" If the discussion can focus upon the purposes which it is desirable to promote through a railway system and if those taking part in the conversation will make an effort to put aside their pre-conceived adhesion to specific measures, clear thinking and doubtless a spirit of co-operation will be engendered.

John R. Hall, in the Investment Economist Section of *The Railway Age* for April 5, enumerates a considerable list of objects which he deems desirable. Before stating these objects Mr. Hall formulates a measure, and the objects which he proceeds to catalogue are set forth as advantages which would be put within reach by the measure which he proposes. Mr. Hall's measure is "The substitution of a unified national system for a competitive system." The objects which he believes such a unification would accomplish are the elimination of duplication of "executive, transportation, maintenance and traffic organizations, tracks, terminals, cars, motive power, stations, officers, machine and repair shops"; "adjustment of rates on a broad basis of practical business considerations instead of on a competitive theory"; supersession of state laws and regulations by federal; "the linking up of lines not now physically connected"; standardization of types of cars and locomotives and many other supplies, and the stopping of competitive purchasing; abandonment of differential routes except for overflow of traffic and that "many miles of road into new territories could be built on the saving made by eliminating competitive construction."

It will be seen at once how valuable is the examination of these specifications, not as arguments to support a measure, but as proposals from which to extract (1) whether they are desirable, and (2) if so, what measure would most effectively promote them and do the least harm in other directions.

I do not pretend, either personally or as Secretary of the Railway Business Association, to any hard and fast conclusions as the basis of a railroad plan. The purpose of these comments is to suggest a method for use in discussion.

Let us consider Mr. Hall's first object as I have summarized it—"the elimination of duplication." It is necessary to unify on a national scale in order to eliminate for all practical purposes duplication of facilities and organization? It is essential to inquire in what respect such elimination would

fall short if instead of one national corporation we were to have a number of competing transportation units. Competition between railroads in the ordinary sense is competition for business carried between common points. One proposal which has been brought forward with some particularity is that the country should be divided up into a number of districts in each of which all the transportation facilities would be turned into an absolute monopoly. Query: what duplication by the railroad unit in one district of facilities maintained by the railroad unit in another district would be of sufficient moment to constitute a serious defect in such a regional system? On the other hand it is being asked whether such independent regional units do not possess important advantages over a single national unit.

In the first place it is predicted that local state apprehension will defeat the complete centralization of railroad control. When we were advocating in 1916 certain extensions of the federal scope opposition was by no means confined to the South, and when we came forward with the plan of regional sub-commissions, with which the people of a traffic area could deal without going to Washington, a great part of the opposition disappeared, not only in the North but throughout the South. Obviously a regional system which can be put through has advantages over a national system which cannot.

In the second place it is argued that even if Congress were to adopt a national system it would insist, and probably public opinion would compel it to insist, on having a majority of the board, if not all of them, government appointees. A proposal cited by Mr. Hall, but not included in my summary of his objects, is "that the principle of private ownership will be upheld." We must thoughtfully consider whether a board containing members, not to say a majority, appointed otherwise than by stockholders would actually be under stockholders' control. President Wilson in the formative stages of the federal reserve legislation challenged certain bankers "to point to one government board in this or any other civilized country upon which private interests have representation." The question was whether the regulatory body, the Federal Reserve Board, should itself contain members elected by the banks. When it came to forming the Regional Reserve Boards, which administer the rediscount function as trustees for stockholders and depositors, the act provided that six should be chosen by the banks and three appointed by the government. Underlying this system, however, is a multitude of individual banks, whose boards are 100 per cent elected by stockholders and whose control over their own discount standards is absolute. It is evident that one of the difficult problems which we have to consider in formulating a railroad plan is that while excluding the owners from representation on the board which exercises supreme power of regulation over every feature of financing, rates and operation, the railroad unit shall be financed, maintained, expanded and operated by an executive who is appointed by a board of which the owners have unquestioned control.

Passing now to Mr. Hall's object with respect to rates—"adjustments of rates on a broad basis of practical business considerations instead of on a competitive theory." Mr. Hall seems to assume that the only competition affecting transportation is a competition between railways. John F. Wallace and Edward J. Noonan in a paper on terminals call attention to the fact that transportation is the result not only of competition between railroads but of competition between regions. When Mr. Hall speaks of "a broad basis of prac-

tical business considerations" as distinctively practicable under a single national system as compared with a system of independent railroads units, he invites comment from those shippers who have maintained their economic position by negotiation as to rates and railway service—in other words, by business methods—rather than by submitting their case to a tribunal of justice. When I lived in New England it was common for us to say that if New England ever got her "rights" as to railroad rates she would disappear as an industrial factor. New England subsists on preferences. Numerous litigations as to port preferentials and other aspects of regional rate competition have been dealt with by the Interstate Commerce Commission, and I believe that body has on some occasions even gone so far as to indicate that in its judgment it was desirable that there should be a redistribution of the tonnage as among ports. But obviously the logical conclusion of such litigations is a national yard stick, possibly a mileage scale such as was attempted in Minnesota, from which, as with the long-and-short haul clause, some lines of business only escape destruction at certain junctures because the commission exercises its power under the law to grant preferences. Undoubtedly the re-assurance to which I have referred when regional sub-commissions were outlined was based upon the idea that while the last word would rest with the central authority, nevertheless the people of each district would have a government agency living among them, sympathetic with them, intimate with their traffic history and with their present problems, and not only engrossed in solving problems from the district point of view but acting as spokesmen and champions for the district in dealing with the railroads of other districts and in adjustments of inter-regional questions at Washington.

Mr. Hall's proposal of doing away with conflicts between federal and state authorities seems to be covered by what I have already stated.

Next Mr. Hall regards a national system as likely to facilitate "linking up of lines not now physically connected." Some very earnest thought has been given to this question by observers who regard the poverty of certain roads as due to their detachment and lack of access to important termini. One of our problems is to consider whether a national system is necessary in order to give the people of the ill-served areas the benefits of such linking up—benefits of having a railway strengthened and hence made more useful by the consequent increase of income. Apparently the only obstacle to such a process under a system of numerous independent units would be the difficulty of co-operation of one unit with another. Query: if this was not brought about voluntarily, might not federal regulation bring it about?

Mr. Hall doubtless surprised some of his readers by approving a situation in which "Standardization of types of cars and locomotives and many other supplies could be introduced and competitive purchasing stopped." Discussion since the government assumed control of the roads has ranged wide on the question of standardization. There is a vigorous school which agrees with President Johnson of the Baldwin Locomotive Works, who says, "The workman who is responsible for the best workmanship should be entitled to the selection of his own tools, and similarly, the railroad manager who is responsible for his record of efficiency and economy should be permitted the widest discretion in selecting locomotives which he regards as best fitted for the conditions of service upon his line." Differences in conditions of operation in the various regions of the country are adduced as a compelling reason why standardization over the whole country should be attempted if at all only in a limited way and as Mr. Johnson has remarked on the question of mechanical progress, extreme standardization "would paralyze every effort toward the invention and introduction of new inventions." Competitive purchasing, Mr. Hall seems to think, should be stopped. Except in periods—of recent years most

rare—of feverish haste to obtain deliveries at any price, competition in purchases has not been between railroads but between manufacturers. It must be carefully considered whether it is in the public interest either from the point of view of price or from the point of view of mechanical progress to perpetuate war conditions as they now affect industry in general by a centralization of the testing of devices and the purchase of appliances and supplies. Attention has been called to the prospect that a single railway system, with its tendency toward standardization, might become laggard in progress as compared with numerous independent railroad units whose executives were competing with one another in the effort to show a low operating ratio by improvements for economy.

Mr. Hall suggests that "many miles of roads into new territory could be built on the savings made by eliminating competitive construction." Competitive construction as well as construction into new territories has practically ceased. If for no other motive than the reduction in cost of food, opening up of new agricultural regions is an inviting prospect; but what region will welcome with enthusiasm the use of the surplus earned by its railroad to rescue from poverty, under federal edict, railroads of other regions where for one reason or another railroad surplus is a minus quantity? Here we have again the question of competition between regions. The prosperity of one district is of course a factor in the prosperity of every other district. The people of every district have to bring their material in over the railroads of other districts and carry their products to market over the railroads of other districts. Nobody anywhere in the country can wisely be indifferent to railroad stagnation anywhere else. But may it not be expected that the people who have located in regions which turned out to be prosperous and whose own energy, ability and community spirit have developed a commerce upon which their own railways have thriven, will desire a large degree of local control over the future development of their railways and terminals and also full control over the question where the surplus earned by their railways shall be invested, if at all, in other railways? Some people anticipate that if there are to be numerous independent railroad units one of the consequences will be to put on their good behavior the people of districts which have hitherto had a slow transportation growth in order that the financial reports of their railways may disclose such management, such railway policies, such policies of the regional regulatory body as will induce the holders of capital to invest in the railroads of that region.

What has been said with regard to regional autonomy is thought by a great many to apply with equal force to the development of men. One of the highest incentives to zeal on the part of those subordinate to a chief executive is that their promotion may not necessarily wait until he dies or retires but may come by transfer to another corporation; and that when the transfer is accomplished it is not by order of some high command which can disregard the inclinations of the officer involved but that a competing organization offers higher compensation, dignity or other advantages as a commercial inducement.

These observations are made in a spirit of gratitude to Mr. Hall for bringing the subject forward for discussion and in the hope that the general disposition will respond to that which the late Senator Aldrich found when he set forth to discuss currency reform: "The commission," said he, "has not taken up or considered the question as to the proper system to be adopted by the United States and will not take up that question until the case is fully presented to the American people and we can secure their judgment and co-operation in the adoption of a plan." He had, he said, only one request to make of the people of the United States—that they keep their minds open until the case could be fully presented to them.

Railway Age

INVESTMENTS SECTION

WILLIAM E. HOOPER,
Financial Editor.

Centralization Versus Decentralization

IN THE APRIL Investment Economist Section of the *Railway Age* there was a very thoughtful article by John R. Hall, manager of the bond department of Hallgarten & Co., suggesting a centralized single railroad corporation to operate all of the railroads of the United States after the war and the termination of the present temporary arrangement made between the government and the companies which own the railroads. In this issue there are two articles further discussing this subject; one is an analytical and suggestive criticism of Mr. Hall's article by Frank W. Noxon, secretary of the Railway Business Association; and the other a concrete suggestion for a system of regional privately owned and privately operated railroads which government minority representation on each board of directors and government participation in profits. In both these articles a decentralized railroad system rather than a single national system is advocated. The arguments against a single national system are stated so clearly in Mr. Noxon's article that they need no amplification. Just as there are strong arguments for a unified railroad system so there are strong objections to such a system.

Mr. Lisman's suggestion, like Mr. Hall's, is predicated upon the assumption that the driving force of competition can be eliminated to a large extent, and that, as a matter of fact, the whole trend of the times in economic thought is toward co-operation rather than competition. With regional railroads, however, there would still be a form of competition which in the past has had an important effect on the building up of the freight rate structure of the United States, and which up to the time of the taking over of the roads by the Government was keen and active. This is the competition between regions. Under any system of regional railroads, such as Mr. Lisman proposes, there would still be the competition in the New York market between California oranges and Florida oranges; there would still be the competition in the Pacific coast markets between Boston made shoes and St. Louis made shoes; between Michigan made furniture and High Point, N. C., made furniture; and so on over a very large range of commodities. This being so, there would be the incentive for competition by means of special rates on these articles as between different regional railroads.

This brings up the question as to whether, if some scheme of regional railroads is to be worked out, it is desirable or not to foster competition as between different regions. Under private ownership, competition was unquestionably fostered to a wasteful degree through low rates on many classes of commodities. There appears to be a trend of thought in Congress as now constituted toward an elimination of inter-regional competition, a decentralization comparable to a return to an economic doctrine such as that expressed in political terms in the Democratic party's long up-holding of state's rights. A regional system of railroads, such as that suggested by Mr. Lisman, which would adopt a rate structure, discouraging rather than encouraging competition between regions, assigning, for instance, the New York market for oranges to Florida by the adoption of a mileage basis freight rate; the assignment of the California market for shoes to St. Louis through the adoption of a mileage basis freight rate on shoes, etc., would be a logical carrying out of this trend of thought. It would, moreover, be a carrying out of

the policy which has been adopted as a war measure of discouraging unessential transportation of commodities, which policy is in such striking contrast to the universal policy of the railroads before the war in fostering transportation of commodities by every means possible.

In peace times it is not as simple a question as it would appear under present circumstances. In normal times, expansion of industry must still continue to be as it has been in the past—the guiding principal of the development of the United States. That being so, it is a pertinent question as to whether the discouragement rather than the encouragement of transportation will act as a retarding force and, therefore, be intolerable. Co-operation is not only theoretically sound but is entirely practical as long as the aim of all of us in all parts of the country is substantially the same in that all other matters are subordinated to the one common aim of making war; but when there is no longer this superimposed community of interest, will the theories of co-operation still continue to have sufficient binding powers to work out practically for the elimination of competition? We do not think so. The nation at war may be able to and often has been able to adopt the outlook of its opponent toward economic questions or toward ethical questions, as far as that is concerned, for a sufficiently long time to enable it to meet on an equal footing its opponent; but a return to race ideals is pretty sure to follow quite rapidly the cessation of war. German co-operative commercial and business methods may be adopted in meeting present transportation problems, but it is against the whole history of thought in the United States and we believe against the temper of the people.

What Do We Mean by Inflation?

THERE HAS BEEN a great deal of more or less theoretical discussion of inflation but one obstacle in the way of getting any further advanced in the discussion has been the almost universal practice by which each one who discusses inflation gives the word a meaning which, *a priori*, proves the point he wishes to make. Very often this discussion is really an analysis of the relations between what it costs us to live and what we can command for our services. The Century Dictionary defines inflation, as applied to trade, currency, or prices, as "increase beyond the proper or just amount of value"; but this leaves each individual to determine for himself the meaning of proper or just amount. After all, cannot the question of what is just and proper be left aside for future discussion and present day discussion of this subject be confined to an attempt to understand how the rise in prices of labor and materials affects different groups of individuals?

At first it would seem as if there were only individual cases and that any generalization would tend to be theoretical rather than of any practical value, but if the reader will place himself in certain positions as regards money and prices, he will see that each different set of conditions brings up certain definite questions which can be answered in terms general enough to apply to a fairly large number of individual cases.

If a man and his wife and two children were living on \$20 a week in 1914 and the family income is now \$40 a week they would have to live as poorly on \$2,000 a year now as they would have had to live on \$1,000 in 1914, if the so-called cost of living has actually gone up 100 per cent since 1914. Hardly anyone, however, would contend that this family is as badly off now as a family earning only \$20 a week in 1914. Each man, of course, would have to run over in his own mind what his particular expenses would have been for himself, wife and two children on a \$20 a week wage in 1914 and what he can buy for \$40 a week now. One test, however, is fairly safe to apply. On \$20 a week in 1914 would it have been possible to save even \$2 a week? With \$40 a week now would it not be quite possible to save \$4 a week? The answer to this question gives us a clue to the reasons why, notwithstanding all our grumbling about

having to pay at least twice as much for this or for that as we did four years ago, we are much better off, in the common acceptance of the meaning of this phrase, with \$40 a week now than we would have been with \$20 a week in 1914. This reasoning applies to that group of individuals who live in cities and towns and whose wages or salaries averaged from \$1,000 up in 1914. It is not meant to suggest that on an average this group is earning twice as much as in 1914, but the point that we want to make here is that for this group the cost of living has not doubled. Those individuals of this group who are earning double what they earned in 1914 are much better off now than they were then.

Does it cost the farmer and his family twice as much to live? Pretty surely not. Does it cost the doctor, the lawyer or the business man twice as much to live now as in 1914? Making allowance for individual exceptions it is safe to say that it does not.

If it does not cost us, as individuals, twice as much to live, why should the price of so many articles have doubled or more than doubled since 1914? Is there someone, either the producer of the raw material, the manufacturer, the wholesaler or the retailer, who is making an inordinate profit when a piece of cotton goods sells for 50 cents a yard now as compared with 20 to 25 cents in 1914? Is there profiteering going on when a steak costs \$1.40, when this same steak would have cost about 80 cents in 1914? You can apply the question to shoes, hats, groceries, or what you will. You feel the same exasperation that you do about the piece of cotton goods or the steak. The increase in money cost seems beyond the proper or just amount of value.

One theory very widely held by economists is that the present high scale of prices is due almost entirely to the increase in the supply of money and rate at which money circulates. Very often, however, not enough stress is laid on the fact that it is the proportion of money to the sum total of consumable commodities that even under this theory is the governing factor in price inflation. Take the case of Germany. The amount of gold in the country must have remained not far from what it was in 1914. The amount of credit, however, based on this gold, has enormously increased. We may properly say, therefore, that the amount of money and its circulation has very greatly increased. If anyone doubts this or does not see it clearly, he should try to visualize the well-to-do German, who has had his wages increased and has subscribed for loan after loan of German bonds, and who all this time has lived under a government which so managed its fiscal and economic affairs that this man believes himself able to subscribe to more and more bonds. He may, by now, have bought government bonds to an aggregate face value of \$8,000 and is nominally, therefore, not only \$8,000 richer than he was in 1914 but is receiving an income of 5 per cent on this capital which he has accumulated during the four years of war. This has taken place on a huge scale, but in the meantime the actual stock of materials, food, coal, wool, iron and steel, has been greatly decreased. The relation, therefore, between money, using it in the sense to include credit as well as gold, and the supply of commodities has very greatly changed. There is far more money proportionately to the things which can be bought for money than there was at the beginning of the war. The fact that a ham sells for \$25 in Germany is both because there are fewer hams to be bought for any price and because there is more money to buy hams. The German is, without question, worse off than he was at the beginning of the war.

In this country there are more hams, more wheat, more iron and steel produced than in 1914. It is probably true that with any of the commodities mentioned the increase in production has not been by any means as great as the increase in the total amount of money, again using the term to include both credit and gold. But while there is a greater production of nearly all commodities there is also a greater consump-

tion of many. In other words there is undoubtedly great expansion of trade with increased cost of manufacture.

If, therefore, money is worth less measured in commodities and wages are actually as well as normally higher than in 1914 is not this the logical time to save money and invest it in some security which will fall due when money is worth more measured in commodities.

Moreover it is fashionable to save now just as it is fashionable to raise prices weekly.

Relations of Labor and the Government

THE FACT that a disagreement between the management of the Western Union Telegraph Company and an organization of labor men other than Western Union employees, may force the United States Government to take over the operation of the telegraph and telephone lines of the entire United States, emphasizes rather emphatically the interest which the investors, directly and indirectly, in corporation securities have in the proper working out of some better way for the settlement of industrial disputes, than the resort to strikes or lock-outs. In January, 1918, a war labor conference board was selected by Secretary of Labor William B. Wilson, and this board made a report on March 29, and on April 8 the President issued a proclamation creating the War Labor Board "to settle by mediation and conciliation" controversies which might arise between employers and employees. The American Federation of Labor chose the representatives of labor on the new board and the National Industrial Conference Board chose the representatives of the employers. The board thus selected chose ex-President William H. Taft and Frank P. Walsh to head it. The board was given power to summon both parties to a controversy and it was provided that the board's decisions should be unanimous, and failing this the controversy should be submitted to an umpire.

One feature of this provision was a distinct improvement over the usual procedure in like cases. It was provided that 12 umpires be appointed by the President and when a controversy arose one umpire should be selected by lot from the twelve to pass on the case. If this provision is carried out it will eliminate the danger of either side having undue influence in choosing an umpire.

In the Western Union case Mr. Taft and Mr. Walsh made a report to the board upholding the labor union against the Telegraph Company, with which report a majority of the board agreed, but the report was not unanimous. This would appear to be one of the cases where an umpire should have been called upon, but what happened was that the majority report was accepted by the press generally as being the official finding of the board.

The claim of the Western Union is that it has no controversy with its employees. An outside union with no membership so far as is known among the employees of the Western Union has demanded the right to recruit membership among Western Union employees. The company's answer consists of discharging employees who join the labor union. Whatever one may think about the merits of the controversy it must be kept clearly in mind that this is not a complaint on the part of the telegraphers working for the Western Union, but is an attempt on the part of a labor union to convince these employees that they have a grievance against their employers because they are not allowed to join the union. Whether or not the arguments of the union leaders have been convincing to the Western Union operators could only be determined conclusively by the labor union calling upon the men who are not its members to strike. If a strike of any considerable number of operators occurred the labor union would have demonstrated its power. If no strike occurred the Western Union would prove that its contention about its own employees was sound. The labor union's claim that large numbers of Western Union operators have been

discharged recently because they joined the union should be, however, subject to proof and details ought to be made public.

The great danger to investors lies in the possibility of this being made a political question and its merits lost sight of. It is one thing for the President to take over the operation of all the telegraph and telephone lines because the employees of the company and the management cannot come to terms, and quite another to take this momentous step because the labor leaders claim that they could persuade the Western Union's employees to strike.

Motor Car Companies' Securities as Investments

JUST at present the motor car situation in the United States is particularly interesting from an investment point of view because of the changing conditions in the industry, which apparently will make the stocks of some of the companies worth much more than they are now selling at, while these same conditions may make the stocks of other companies worth very much less than they are now selling at. The Government is ordering the curtailment of the manufacture of pleasure cars, but, on the other hand, is placing orders for motor trucks on a large scale. Had the Government continued the same policy as that adopted by our European Allies of placing orders for motor trucks of the standard already being manufactured by the different companies, these orders would have been a source of profit to quite a number of the motor car companies. The desire for standardization which at times appears to amount to a mania has led to the Government deciding, it is understood, to order only "Liberty" motor trucks, which are of a design worked out under Government auspices, and which are profitable to manufacture but a few of the motor car companies.

Before discussing the present situation, however, it is worth while to review briefly the recent history of the motor car industry in the United States. Elsewhere in this issue there are brief reviews of the latest public annual reports of a number of the leading companies.

The development of the art of manufacturing reliable motor cars was slower at first in this country than it was in France and Germany, but from about 1900 on this country began to manufacture low-priced cars in large quantities. The market for these cars proved so large and the estimated profits so attractive that motor car companies were organized and reorganized with higher and higher capitalization, but without sufficient actual money being provided for working capital to meet the demands of the expansion which was going on in the manufacture and sales of cars. Many companies issued a volume of stock in payment of the stock and assets of predecessor companies wholly unjustified by the actual tangible assets which were taken over. This has necessitated the setting up of a bookkeeping asset which the different companies variously call good-will, patents, franchises, trade names, etc. While in all cases the placing of a value on this intangible bookkeeping asset is not in contravention of the facts, it is not conservative, sound bookkeeping for any large manufacturing concern engaged in an industry where patents may so quickly be superseded by new inventions and where merit of the product of a new manufacturer can so easily overcome the good-will or trade name of a long-established company to place a high value on patents and good-will. It is, on its face, far from conservative or sound to capitalize a motor car company—that is, issue stock to so high a par value—as to necessitate setting up a bookkeeping asset and good-will at \$7,000,000 when the actual cost of the manufacturing plant is only two or three million dollars. If, of course, the stock had been sold for cash, there would have been nothing unsound in a comparatively small investment in fixed assets such as manufacturing plant, storage facilities, etc., because then the company would have had a large net working capital.

This low proportion of investment in fixed assets as compared with the investment in what are called inventories, that is materials, supplies, unfinished and finished parts of cars and uncompleted and finished cars, is characteristic of the motor car industry. Take the Packard Company, which is very conservatively capitalized and which carries its good-will, patents, etc., at the nominal amount of \$1. Its investment in manufacturing plant and in branch houses total only \$14,800,000, while its inventories total \$22,600,000, and its total current assets, including these inventories, \$28,700,000. With many other companies the proportion of investment in current assets, as compared with fixed assets, is much greater than with the Packard.

Companies, therefore, which have issued stock in payment of assets and stock of other companies to an extent which necessitated the setting up of a \$5,000,000 or a \$10,000,000 account, classed as an asset under the name good-will, patents, etc., have found it necessary to raise the money to pay for materials needed in a very rapidly expanding business and have had to have recourse to large bank loans. The recent history of quite a number of companies has been largely a record of a continued struggle to provide sufficient working capital and a struggle which has heretofore been successful only because the expansion in business was so rapid as to justify the banks in continuing to make large advances. A period of contraction may hit some of these companies very hard; especially would this be so if there were to be a sudden drop in the price of materials and the cost at which motors cars could be sold. The company with a large inventory, carried at prices representing the cost of materials within the last two years, and with large bank loans, would find itself in a most precarious position if prices of materials dropped to such an extent that inventories would have to be written down in value and not liquidated at their present unit costs.

In England the motor car companies have gone into the manufacture of war supplies or other supplies for the government to the entire exclusion of the business of manufacturing pleasure cars; and it is understood that many of them are finding this new line of work profitable.

There is no immediate prospect of any such drastic change as this in the United States. The manufacture of pleasure cars will be curtailed and the manufacture of trucks for commercial purposes will be subordinated to the needs of the government, but, making full allowance for this curtailment, there will still be a fairly large output of pleasure cars and an output of commercial trucks which will be limited in the case of some companies apparently, not so much by the demand, as by government requirements. The present situation, therefore, would appear to be something like this: Some companies have expanded so rapidly and have piled up bank loans to finance the purchase of material at extremely high prices to such an extent that if contraction in business comes, the discontinuance of dividends at least will take place and some of them may get into serious financial difficulties. This is assuming that the companies do not have the facilities for manufacturing either the standard truck required by the government or the "Liberty" motor for aeroplanes, at a profit. Other companies, not in so expanded a position financially, but which cannot manufacture the standard government truck or the "Liberty" motor profitably on any large scale with their present facilities, will have greatly reduced profits. They may or may not be able to continue preferred dividends. Still other companies will be able to engage in government work at a profit and, while there is an element of doubt as to whether this profit will prove as large as could have been made by the manufacture of pleasure cars and commercial trucks, it will be sufficient to carry the company over the next year or two. For the companies which can bridge the gap between now and the end of the war there would appear to be a very bright fu-

ture. The commercial truck business is just in its adolescence and the potential demands for domestic use are enormous and may become actual almost immediately following the declaration of peace. The tractor for farm use may prove to afford an outlet for the manufacturing capacity of some of the motor car companies.

Notwithstanding the huge destruction of wealth which is going on in Europe, there are a great number of people in this country who are making many times as much money as they have ever made before. The curtailment of the manufacture of pleasure vehicles will tend to increase the use of old cars, but as these become more and more thoroughly worn out, the potential demand for new cars will be continually increased.

The opportunity for the export both of pleasure cars and of motor trucks after the war ought to be very large indeed. Export houses, like Gaston, Williams & Wigmore, had succeeded before the entrance of the United States into the war in establishing a very large demand for American cars abroad, and their efforts and those of other export houses are being conserved and continued so that the prospects are that these export houses will be able to, almost immediately after the end of the war, begin to take orders for American motor cars on a large scale.

If an investor chooses a company, conservatively capitalized, with good-will, patents, etc., carried at a low or nominal figure and with net working capital sufficient to tide over one or two years of earnings and with a sufficient part of this working capital in the form of cash, he may find among the preferred stocks of the motor car companies a few which offer a high yield of return now on his investment, a fair degree of likelihood of the dividend rate being maintained, and most attractive prospects of a future enhancement in earnings, equities and market price.

Packard Motor Car Company

THE Packard Motor Company stock is not listed on the New York Stock Exchange. The common stock is selling, however, in the neighborhood of 125 and is paying dividends at the rate of 8 per cent a year. The preferred stock has regularly paid 7 per cent a year since it was first issued. In 1917 the company had net earnings of \$7,700,000. This was after the payment of manufacturing and sales costs and from this the company charged off for depreciation \$2,300,000, leaving \$5,400,000 available for dividends. Seven per cent on the preferred and 8 per cent on the common call for \$1,470,000, so that the company had a surplus, after dividend payments, of \$3,930,000. From October 31, 1917, to June, 1918, no dividends were declared on the common stock, but in June, 1918, 2 per cent in cash was declared. Whether this is a resumption of the 8 per cent annual rate through the payment of 2 per cent quarterly or not it is not certain.

The Packard Company is one of the few motor car companies that are conservatively capitalized, and this company carries its rights, franchises, good-will, etc., at \$1. The manufacturing plants are carried at \$11,222,000, and the investments in branch houses at \$3,592,000. In addition to the preferred and common stock the company has \$5,000,000 5 per cent notes, due October 16, 1919, outstanding. Accounts payable amounted, as of August 31, 1917, to \$6,144,000, and notes payable to \$3,975,000. The company had \$1,094,000 cash and carried its stock of materials, finished and unfinished cars, etc., at \$22,632,000. Bills and accounts receivable total \$4,986,000. As regards net working capital, therefore, the company is in a fairly good position, although the liquidation of part of its inventories with an increase in the amount of cash on hand would materially strengthen this position.

The Packard, like the Pierce-Arrow, was originally engaged exclusively in the manufacture of high-grade and

high-priced pleasure motor cars. In 1910 the company sold 3,990 cars and maintained about this rate until 1915, when 4,908 "vehicles" were sold. In 1916, 13,277 vehicles were sold, and in 1917 14,505.

In 1914 it was decided to begin the manufacture of a comparatively low-priced car with the hopes of getting quantity production. The Packard twin-six, selling at about \$3,000, was put on the market. This was a very high-grade car for the price charged for it, but the company never had an opportunity to really test out quantity production because of the changed conditions due to the war, and especially the great increase in costs of materials. The Packard is manufacturing trucks and is at present engaged in work for the Government.

Maxwell Motor Company

PRIOR TO September 1, 1917, the Maxwell Motor Company owned motor car manufacturing plants at Dayton, Ohio, Newcastle, Ind., and Detroit, Mich., and in the annual report for the fiscal year ended July 31, 1916, it was said that the company was then in a position to manufacture more than 100,000 cars a year. At that time the company was manufacturing one model of chassis with five body styles. In 1917 it was said that the number of cars sold showed an increase of 39 per cent over the previous year and that sales contracts with distributors had been signed for 32 per cent more automobiles "of all models" than had been contracted for at the same period last year, and mention was also made of contracts for one-ton trucks to be manufactured during the 1918 fiscal year.

In January, 1918, announcement was made that on September 1, 1917, the company had leased for five years all the property and assets of the Chalmers Motor Company of Michigan, at a rental of one-half of the net profits derived from the operation of the leased property. This property consists of a motor car manufacturing plant situated on about 38 acres of land near the Detroit river on the Detroit Terminal Railroad, on the east side of Detroit, and has a capacity of about 30,000 pleasure cars a year and certain additional capacity which could be used for building motor trucks. The Chalmers Company also owns all the capital stock of the Chalmers Motor Company of Canada, which had a plant at Walkerville, Ont. This plant, however, was nearly entirely destroyed by fire in the latter part of 1917. The number of cars manufactured by the Chalmers Company in 1916 was 21,408 and in the period from January 1, 1917, to November 28, 1917, was 11,189 cars.

The Maxwell Motor Company was incorporated in 1913 and the first annual report covered the 12 months to July 31, 1914. Although the company's balance sheet showed real estate, buildings, machinery and equipment valued at \$4,462,000 with the apparently far from conservative valuation of \$26,500,000 for goodwill, models, patents, trademarks and trade names, the company showed good earning power on its \$12,279,000 first preferred cumulative 7 per cent stock from the beginning of operations. In the 1914 fiscal year there were net earnings available for dividends of \$1,500,000, while dividends on the first preferred called for \$860,000. The first dividends, however, were not paid until July 1, 1915. Accumulated dividends were completely paid off in 1916, in large part through the issue of \$1,620,000 additional first preferred stock. Regular quarterly dividends, at the rate of 7 per cent annually, were paid on the first preferred during 1916 and up to April 1, 1918. On this date the quarterly first preferred dividend was paid in dividend certificates bearing interest at 6 per cent, and due April 1, 1920, and again in this month, the quarterly dividends were paid in interest bearing script due July 1, 1920.

Before the lease of the Chalmers plants, the Maxwell

Company was apparently in a fair position, both as regards earnings and working capital. The company had \$1,852,000 cash on hand and sight drafts with bills of lading amounting to \$2,946,000, but of which \$1,071,000 were discounted. The company had no floating debt and \$1,933,000 audited vouchers payable and \$945,000 unaudited vouchers payable. There were no bonds outstanding and no mortgages on the property. Earnings for the year ended July 31, 1917, amounted to \$5,508,000 and the company paid out \$2,862,000 in dividends. This included the regular 7 per cent dividends on the first preferred stock and 6 per cent on the \$10,127,000 second preferred stock and 10 per cent on the \$12,778,000 common stock. The declaration of the common dividend was not particularly conservative, the cash position of the company hardly justifying such action. The Chalmers Company, when it was leased, had only \$393,000 cash, but raised \$3,000,000 additional through the issue of \$3,150,000 first mortgage 5-year notes. In addition to these new notes, the company had bank loans of \$2,637,000, and the lease provided for the extension of these notes to March 1, 1918, and the further extension of the notes by six months periods upon payment of 15 per cent on March 1, 1918, 20 per cent on September 1, 1918, 20 per cent on March 1, 1919, and 20 per cent September 1, 1919. The working capital raised by the Chalmers Company would have been presumably sufficient for the business which was being done in its plants, and even after the 10 per cent payment on the Maxwell common stock, the two companies might presumably have had sufficient working capital, had it not been for the drain during the latter part of 1918 and the first part of 1919, because of the requirements for paying off the Chalmers Company's floating debt to the banks.

At present the Maxwell Company's first preferred stock is selling in the neighborhood of 55, the second preferred in the neighborhood of 20, and the common stock in the neighborhood of 28. Even the first preferred stock would have to be put in the class of wholly speculative investments.

Pierce-Arrow Motor Car Company

IF ONE knew nothing about the mechanical qualities of the motor cars which the Pierce-Arrow Motor Car Company manufactures, a study of the company's annual report would, nevertheless, produce the impression of strength and solidity. On the other hand, the cars themselves are of so high a quality that one feels instinctively that they must be manufactured by a financially strong company. Of course, the company itself has most cleverly and successfully attempted to convey just this impression of quality in its advertising. It has been the only large American company which has without interruption tried for quality rather than quantity production of cars. Its pleasure car sells for from \$4,300 to \$7,200. At one time in the company's recent history plans were seriously considered for going into the manufacture of a low-priced car on a large scale. Instead, however, of doing this, the company began the manufacture of motor trucks. This, as events turned out, was a most fortunate decision.

The present company was incorporated in 1916 and the first annual report is for the calendar year 1917. In that year the gross sales amounted to \$32,566,000, comparing with \$18,687,000 gross sales in 1916. The company, after paying manufacturing costs and charging \$488,000 for depreciation, and after deducting \$1,162,000 for excess profits, war taxes, etc., had a net profit of \$3,599,000. The company has no bonds outstanding and at the end of the year had borrowed from the banks \$4,500,000. There is outstanding \$10,000,000 8 per cent cumulative convertible preferred stock and 250,000 shares of no par value of common stock. The 8 per cent dividends on the preferred were paid and \$2.50 per share was paid during 1917 on the common stock. This

called for \$1,425,000, so that the company carried \$2,416,000 over as a surplus.

Unlike most motor car companies, the Pierce-Arrow does not carry its patents, good-will, etc., at an absurdly high figure. This company carries them at only \$6,351. The plant of the company is located on 43 acres of ground on the Belt Line of the New York Central at Buffalo. In 1915 the company manufactured and sold 4,665 cars, and in 1916 4,623 cars. Presumably, in 1917, the increase in number of cars was roughly proportionate to the increase in gross sales which, it will be remembered, were about \$18,500,000 in 1916, and 32,500,000 in 1917. During the year 1917 a new building of the Pierce-Arrow uniform type of reinforced concrete was built, having 100,000 square feet of floor space, and the company also bought 17 acres of land adjoining its property on the East.

Since the entrance of the United States into the war, the Pierce-Arrow, like other motor car companies, has curtailed the manufacture of pleasure cars and is engaged in manufacturing trucks both for the Government and for commercial purposes.

The preferred stock is selling at about 98, which, at the present rate of dividends, yields slightly over 8 per cent interest on the investment. The common stock, which has no par value, and paid in 1917 \$2.50 per share in dividends, is selling in the neighborhood of \$40 per share, yielding a little over 6 per cent interest. The preferred stock may fairly be said to be a legitimate investment for a man or woman not wholly dependent on their income from investments for a part of their funds. The common stock appears to have speculative possibilities, but could hardly be called an investment stock.

General Motors Corporation

THE GENERAL MOTORS CORPORATION manufactures the Buick, the Cadillac, the Oakland, the Olds cars, General Motors trucks, and Sampson tractors, and has recently acquired the Chevrolet. At present the company's plants are also engaged in a very large amount of government work. The company is today one of the most prosperous of the motor car companies, and its prosperity is founded on a sound and conservative record over a number of years. It is one of the few motor car companies which has not had to finance its rapid growth in business through large bank loans. At present General Motors Company's common stock is selling in the neighborhood of \$120 per \$100 share and is paying dividends at the rate of \$12 per share.

In the five months from August 1, 1917, to December 31, 1917, the corporation and its subsidiary companies had total sales amounting to \$96,296,000, and during these five months the company sold about 87,000 cars. After the payment of manufacturing and sales costs and a liberal provision for federal taxes, the company had available for dividends \$14,385,000 for the five months' period. Preferred dividends at the rate of 6 per cent call for \$492,000, so that the company earned on its outstanding \$76,873,000 common stock \$13,793,000 for the five months, or at the rate of over \$39,000,000 per year, or more than 50 per cent on the common stock.

The General Motors Corporation was formed in October, 1916, and took over the assets and liabilities of the General Motors Company and in August 1, 1917, exchanging five shares of corporation common stock for each share of General Motors Company's common stock and $1\frac{2}{3}$ shares of corporation preferred stock for one share of General Motors Company's stock. In other words, it increased the amount of common stock outstanding by five times by the device of giving to a holder of one share of stock of the old

company five shares of stock in the new company, the General Motors Corporation. This reorganization, of course, brought no new capital into the business but apparently no new capital was needed. On December 31, 1917, the company had \$18,866,000 cash, \$1,225,000 second Liberty Loan bonds, and \$13,586,000 notes and accounts receivable, besides having on hand materials partly finished and finished motor cars costing \$46,559,000. The company has no bonds or funded debts outstanding and only \$10,666,000 accounts payable which represent the current bills for merchandise, etc. This appears to be quite conservative for a company doing the volume of business which General Motors Corporation is doing.

The reasons why the company was able to in effect pay a stock dividend of 400 per cent in 1917 and to still be in a condition to warrant the payment of 12 per cent annual dividends on this greatly increased amount of stock are to be found in the very conservative financial policy pursued from 1910 to 1916, and, of course, in the success which has been met with in the profitable manufacture of motor cars. In the ten months ended July 31, 1911, the company's net profits amounted to \$3,316,000, and of this amount only \$506,000 was paid out in dividends; in 1912, \$3,896,000 was earned and only \$1,040,000 paid out in dividends; in 1913, \$7,459,000 was earned and \$1,049,000 paid in dividends; in 1914, \$7,250,000 was earned and \$1,049,000 paid out in dividends; in 1915, \$14,458,000 was earned and the same amount paid out in dividends as in 1914. During these four years and ten months, therefore, the company earned, after paying expenses of manufacture and of sales and after paying interest on its outstanding bonds and making liberal allowances for depreciation, \$36,379,000, while it paid out in dividends only \$4,693,000. The fiscal year, ended July 31, 1916, was prosperous beyond any expectation; \$28,790,000 being earned after the payment of expenses and interest. The regular 7 per cent dividends were paid on the preferred stock, calling for \$1,049,000; and, for the first time, dividends were declared on the common stock, the first being a dividend of \$50 per share, followed by a dividend of \$10 per share in February, 1916, and \$5 per share in May, 1916. During the four years and ten months prior to the extraordinary year, 1916, the profits which were put back into the company were used to pay off entirely the \$14,000,000 6 per cent, five-year notes which were the only funded debt of the company outstanding in 1911; to increase the investment in real estate, plant, and equipment from \$17,633,000 to \$22,753,000; and to increase the cash on hand from a little over \$4,000,000 to over \$14,500,000.

The company's balance sheet shows under assets \$11,698,000 good will. To offset this, however, the company shows a surplus of \$11,508,000, so that the outstanding stock represents tangible assets.

The Studebaker Corporation

FIFTY YEARS AGO, the Studebaker brothers were manufacturers of wagons and harness. In 1868, it was decided to incorporate the business, and, by the late nineties, Studebaker Brothers Manufacturing Company was the largest producer of horse-drawn vehicles in the world. Up to the time—1908—that the company took over an automobile manufacturing company, it had manufactured and sold more than 1,000,000 buggies, carriages and wagons. As early as 1902, Studebaker Brothers had begun the manufacture of "horseless carriages"; the first type being electric and later gasoline cars were built.

In 1908 a company which was organizing to build inexpensive light gasoline automobiles, the Everett-Metzger-Flanders Co. of Detroit, was approached, and a working agreement made with it; and in 1910 the new company, the Studebaker Corporation, was formed, taking over the busi-

ness of Studebaker brothers and of the automobile manufacturing company. From 1910 to 1916, inclusive, the growth of the manufacture of automobiles by this new corporation was very rapid. In 1916, 65,685 cars were sold, and the company had a profit available for dividends of \$8,611,000. In January, 1917, the common stock of the Studebaker Corporation was selling at above par and was paying 10 per cent dividends. Prior to 1915 the business of the Studebaker Corporation had been confined to the manufacture and sale of pleasure automobiles, on the one hand, and wagons, carriages and harness, on the other. In 1915, a considerable volume of war orders were executed, and the total sales, which amounted to \$56,500,000, included \$13,550,000 war orders. In 1916, however, the company had finished nearly all of this war order business, and of its \$61,990,000 total sales, only \$2,790,000 was war orders, and only about \$50,000 profit was made on these war orders, so that practically all of the \$8,560,000 profit available for dividends, mentioned above, was from regular business.

In 1917 there came a severe slump in the sale of pleasure cars, and the Studebaker Corporation was especially hard hit because it had been making a four-cylinder, seven passenger car, selling at about \$1,600. The demand for cars selling under \$900 remained fairly good, but the demand for the more expensive car which the Studebaker Corporation was selling fell off sharply.

After our entrance into the war, the Studebaker plants were placed at the disposal of the government, and at present about half of the plant capacity is being used in the filling of government orders.

In 1917, total net sales amounted to \$50,148,000. After paying all the costs of manufacture and of sales, and after charging off \$415,000 for depreciation, and paying interest on bonds and taxes, there was \$3,500,000 profit. The company paid the regular 7 per cent dividends on the preferred stock, and, in the first half of the year, paid 5 per cent on the common stock, since the prospects that time were thought to justify a continuance of a yearly rate of 10 per cent. In the second half of the year, however, conditions had so changed that only 2 per cent was paid on the common stock, which would indicate a yearly rate of 4 per cent. Dividends called for \$2,867,000, so that there was about \$600,000 to be carried to profit and loss.

The sum and substance of the 1917 year, therefore, is disappointment. Common dividends were reduced from 10 per cent to 4 per cent; the price of the common stock declined from above par to about 34 and is now selling about 45. If one hundred shares of the stock had been bought in January, 1917, it would have cost about \$11,000, and the yearly interest return would have been \$1,000. A hundred shares of stock now would cost \$4,500, and the interest return would be \$400 a year, or, to put it another way, the \$11,000 invested in January, which would have brought \$1,000 a year income, invested now would bring about \$980; so that actually the stock is valued by the market at a little higher price now, when measured in terms of dividend return, than it was in January, 1917.

The reason for this is that, apparently, the company has gotten itself, despite the disappointments of 1917, into a somewhat more sound financial position.

On December 31, 1917, the company had notes payable, that is—had borrowed from its banks—\$7,400,000, and in addition, owed for materials, etc., \$2,092,000. At the same time there was \$2,529,000 cash in the company's treasury, and customers and dealers owed it \$9,325,000, and it had materials for building automobiles, wagons, etc., valued at \$21,322,000. This is comparatively a strong position as regards current assets and current liabilities. The value of its real estate, buildings and machinery, after allowing for depreciation, is fixed at \$15,477,000. It carries as an asset also its trade name, good will, patent rights, etc., at a

valuation of \$19,807,000. There is outstanding \$10,965,000, 7 per cent cumulative preferred stock, and \$30,000,000 common stock. There is also total surplus and reserves of \$17,855,000. It will be noticed that this bookkeeping liability of surplus and reserves, in large part, offsets the bookkeeping asset of trade name, good will, etc.

If the company continues to pay only 4 per cent on its common stock, dividend requirements, including the 7 per cent on the preferred, will amount to \$1,968,000 only. Present indications are that the company will have for 1918 a substantial sum over this amount which can be used to pay back some of its bank loans.

The company is now planning to manufacture and sell 3,000 pleasure cars a month. It has three new models; one a four-cylinder, 112 in. wheel base, five-passenger car, selling at \$895; one a six-cylinder, 119 in. wheel base, five passenger car, selling at \$1,295; and one a six-cylinder, 126 in. wheel base, seven passenger car, selling at \$1,695.

The crucial point about the stock value of the Studebaker Corporation now would appear to be the question as to profit which they are making on the government work which is occupying one-half of their plant capacity. Until something is known about this a purchase of stock would be a speculation not based on the necessary knowledge.

The Chandler Motor Car Company

THE STOCK of the Chandler Motor Car Company, selling at present at about \$83 per \$100 share, and paying quarterly dividends of \$3 a share, or at the rate of 12 per cent annually, would yield an interest return of about 14½ per cent. The company had at the end of 1917 almost no floating debt, was in a fair cash position, and had completed a prosperous year.

The present company was incorporated in 1915, taking over the business of a company of the same name. The automobile manufacturing plant is situated on a little more than eight acres of land, owned outright, on East 131st street, Cleveland, Ohio. In 1917 it is estimated that about 15,000 cars were manufactured, comparing with 13,000 cars in 1916 and 8,000 cars in 1915. In 1917 gross profits, after the payment of materials' cost and manufacturing cost, amounted to \$3,248,000. Selling expenses and an allowance for depreciation amounted to \$895,000, leaving \$2,382,000. From this must be paid the federal income and excess profits and war taxes. In its annual report the company makes no estimate of what these taxes will amount to. There was paid out in dividends \$910,000 which represented 12 per cent on the \$7,000,000 outstanding stock and 1 per cent extra as a Red Cross dividend. This would leave \$1,472,000 surplus after payments which would appear to be amply sufficient to draw on for war and excess profits taxes and to leave a margin to be added to the bookkeeping account surplus. In February it was reported that the output of pleasure cars would be curtailed to about 10,000, and later in the same month it was reported that the company had received an order to build army tractors, the orders aggregating from \$10,000,000 to \$14,000,000. Plans were said to be under way for building an addition to the equipment plant to take care of the Government business.

At the end of 1917 the company had \$699,000 cash and \$279,000 Liberty Bonds, with \$210,000 dividends payable January 10. The only other current liabilities were a few thousand dollars accrued taxes. The company carries its land and buildings at a valuation of \$510,000 and its factory equipment and tools at \$140,000 after an allowance had been deducted for depreciation. Inventories, which means materials, supplies, unfinished cars, etc., were valued at \$3,019,000, representing the cost price. The company carries its

good-will at a value of \$5,000,000. Eliminating this good-will item and subtracting current liabilities, we have an assets' value for the \$7,000,000 stock of \$4,751,000. This is about a million dollars lower than the valuation placed on the stock by the market price of 83. In other words, the price of 83 represents an adjustment between what the earning power of the stock would justify as a price and what the assets' value of the company's plants, inventories, etc., would justify as a price.

Willys-Overland

THE GROWTH of business of the Willys-Overland Company, which manufactures the Overland automobiles, the Willys-Knight engines, and Federal motor trucks, has been very rapid in the last few years. In the calendar year 1917 about 140,000 cars were sold, and this would have been a much larger figure had it not been for the inability of the company to obtain sufficient transportation, and also to get the tools necessary to manufacture two new models of cars. In 1916 the company sold over 142,000 cars, and in 1915 over 95,000 cars.

The rapidity of the growth of this business has necessitated a rapid extension of credit, so that at the end of 1917 the company's balance sheets show a rather large amount of current liabilities, although these are offset by current assets, which include over \$36,500,000 materials, supplies and finished and unfinished cars. The company had \$11,849,000 notes payable and \$7,538,000 accounts payable with cash on hand of \$11,405,000. In 1915 the company had outstanding \$4,484,000 of 7 per cent cumulative preferred stock and \$21,000,000 of common stock. Against this it had tangible fixed assets of \$17,903,000, including real estate buildings, machinery, equipment, etc. It also carried as an asset the sum of \$14,060,000 as the bookkeeping value of its good-will, patents, trade marks, etc.

In that year the company earned a net income, available for dividends, of \$10,871,000. This was after paying manufacturing expenses, selling expenses and making allowance for depreciation and losses. From this the company set aside \$1,000,000 as a reserve for contingencies. By the end of 1916 the outstanding stock had been increased to a total of \$57,392,000, of which \$3,474,000 was cumulative preferred stock, \$14,533,000 7 per cent cumulative convertible preferred stock, and \$39,385,000 common stock. Bank loans had increased from \$10,200,000 at the beginning of 1916 to \$11,849,000 at the end of the year. At the end of 1917 there were bank loans of \$16,120,000 and advances from the Government on a contract for Government work of \$2,500,000, making a total, including amounts owed "sundry persons," of \$20,438,000. Cash on hand amounted to \$9,594,000, and materials and supplies and finished and unfinished cars were carried at a valuation of \$40,590,000.

In 1917 the company earned \$10,193,000 after paying manufacturing and sales costs and providing for federal taxes. From this there was charged off \$2,921,000 for depreciation, tool replacements and the value of parts of discontinued models. Interest charges amounted to \$1,151,000, leaving \$6,122,000 available for dividends. The 7 per cent on the preferred stock call for \$1,138,000, and there was \$4,885,000 paid in dividends in cash on the common stock, and, in addition, there was a dividend of \$1,966,000 declared payable on the preferred stock.

During the year the company acquired the Curtiss Aeroplane & Motor Corporation through the purchase of \$2,400,000 7 per cent cumulative preferred stock, \$6,000,000 common stock, and \$1,600,000 10-year 6 per cent notes of the Curtiss Corporation.

Fifth National Foreign Trade Convention

Abstract of Four Papers Dealing With Different Phases of the Development of Foreign Trade

THE FIFTH NATIONAL Foreign Trade Convention was held at Cincinnati in the later part of April, 1918. The convention was called to consider both the part of foreign trade in winning the war and the problems to be solved after the war. The following are abstracts of four important papers read at the convention:

Financial Efficiency in Foreign Trade

By Charles A. Hinsch,

President American Bankers' Association.

If we are to successfully compete for a share of the world's trade, we must co-operate and co-ordinate our efforts.

In a recent address Judge Gary, chairman of the board of directors of the United States Steel Corporation, stated that Germany was stronger than ever, and that so far the fruits of victory belong to the central powers. Also that Germany has mobilized and co-ordinated every last atom of her resources of brain and material for winning the war and the Prussians have perfected a centralized, comprehensive, powerful business organization which considering its size and ramifications, has never before been approached. He urged American business men to prepare for unprecedented competition for world business after the war. International as well as national co-operation may be imperative in the commercial struggle that will follow the declaration of peace.

MERCHANT MARINE

America, if given an equal chance with the people of other nations, will furnish business to comfortably support a merchant marine second to none. We are in the midst of a shipbuilding program which, if carried forward to a logical conclusion, will provide this nation with a tremendous fleet of ships, which will be of great benefit for and during the period of the war, in carrying supplies of all kinds to our boys at the front and to our allies, but unless our laws are changed, what is to become of this splendid fleet at the termination of the war? The LaFollette bill, known as the Seaman's act, should be eliminated from our statute books and a government subsidy in some form should be provided which will place the shipping of this country on a basis which will enable it to compete successfully with the shipping of other nations. Never again should we be placed in the embarrassing position in which we found ourselves at the beginning of the world war, when ships flying the flags of other countries were commandeered by those nations to carry supplies needed by them for the successful prosecution of the war, thus leaving us completely stranded and at the mercy of other nations for the transportation of our products to all parts of the world.

ECONOMIC COMMISSION

There is no time like the present to take an inventory of our needs and to proceed at once to place ourselves in an impregnable position so that we can hope to compete successfully with other nations when peace shall be re-established. We have not done much yet in this regard. In fact, we have paid less attention to it than any other belligerent powers, including Germany.

England, France and Germany have appointed commissions having for their purpose the careful consideration of the economic problems that will follow immediately after the close of the war. We hope to emerge from this conflict better prepared to enter the struggle for commercial supremacy than we have ever been during our national existence. We shall have learned lessons of efficiency and co-operation

that should be potent factors in placing our people in a commanding position to win our full share of the world's commerce. It is to be hoped, therefore, that an economic commission will be provided by Congress at an early date that will give due consideration to this all-important subject.

Great Britain and France have had economic conferences which have made some study of the business possibilities after the war, particularly with a view to meeting prospective competition from Germany.

The horror of German policies and the hatred of everything German is sinking more and more deeply into the minds and hearts of the people of the world. Germany has been digging her commercial grave and she is diligently enlarging it at every opportunity.

FINANCIAL EFFICIENCY

Our job is to consider what we should do, and when the war ends, to determine what we can do and then do it. The problems in this respect are not new to the men who gather at the meetings of the Foreign Trade Council. But preparation for meeting them may go on, and in this meeting we may consider the points connected with the methods of assisting American manufacturers to finance their foreign trade. These may be divided into export and import business and then into temporary financing and the providing of capital requirements.

The capital requirements involve the providing of capital to various industries by investors and this, of course, involves the underwriting and selling of securities in this country. The principal purposes for which capital must be supplied are government loans, railroads, public utilities, mines and industries. There is also large opportunity in many countries for the making of loans on lands and from such investments there would be a return in increased business for this country.

Providing capital, as outlined above, is not the function of a commercial bank. Business of this kind must be developed through investment concerns which have active and well developed sales organizations. Little progress will be made in inducing American investors to buy securities of this character until the investing public is educated to the advantage of making such investments. Commercial banks can, of course, co-operate to the extent of bringing the attention of properly equipped investment houses to the opportunities that arise and supplying information of the kind that will be needed in some instances.

The distinctly commercial business involves the financing of merchandise for import or export and can readily be handled by the commercial banks already in operation. Exports will be handled either: (1) Through letter of credit issued at the request of the foreign purchaser. (2) By draft drawn at sight or time by the exporter on the foreign purchaser. These bills are handled by commercial banks. (a) For collection. (b) By purchase with recourse to the drawer. (c) By outright purchase without recourse. (d) By an advance of from 50 to 90 per cent of the face value of such drafts.

In some instances arrangements may be made for the shipment of the merchandise to a bank in a foreign country, such merchandise to be delivered to the purchaser in installments either for cash or in exchange for a note or acceptance.

The same methods will be followed as to imports into this country and they may be financed in the same way as exports.

BRANCH BANKS IN FOREIGN LANDS

The banks of this country have been expanding into foreign fields and are better equipped generally for the handling of foreign business. In view of the fact that three years ago foreign branches were maintained only by one or two private banking houses, great progress has been made. This progress has resulted from the privilege of establishing branches conferred by the Federal Reserve act. Individual concerns of large resources have acted on their own initiative and by themselves. One institution has been organized especially for foreign banking and another has been organized by numerous banks joining together as stockholders.

In a general way the business sought by these institutions has been commercial, although some have given attention to development enterprises and the investment of capital. The enormous demand on the financial resources of the country has made impossible the sending of capital abroad except as the result of government action and for purposes closely related to success in war. We may, however, hope that there will be more attention directed to this department of foreign banking later. We are expending great sums of money for war purposes, but we are also becoming the debtor of many other nations. The obligation of this government to pay large sums for maturing obligations and for interest due will continue long after the war but we may not forget that certain drains on the national resources have been stopped. Before this great war started, Great Britain so far as the statistics showed, had annually a large adverse trade balance. But Great Britain also had flowing toward London what was called an "invisible import item" consisting of funds earned by her thousands of freight ships, of returns from millions of investments in foreign lands and from the operations of her insurance and banking concerns abroad.

UNITED STATES A CREDITOR NATION

The United States has got out of debt to the world since August, 1914, and the world has got into the debt of the United States. Instead of sending hundreds of millions abroad each year to pay for capital advanced to us, we will receive hundreds of millions as the result of our advances of capital to our allies during the war. Despite the increasing war debt, this country should be at least in a better position than any other to make capital advances to other nations when the war ends.

MAINTAINING THE PARITY OF THE AMERICAN DOLLAR

In the meantime, as the result of war operations and the care with which we are nursing our gold stocks, we are meeting adverse balances in neutral countries and the exchanges are running heavily against us. England seems to have guarded her exchange position better than we have and better than any other nation. Not yet has the pound sterling fallen into disuse as the result of the war although the dollar has established itself to some extent.

This situation is most annoying in connection with the building up of our foreign trade and measures should be adopted as soon as possible that will stabilize and maintain the parity of the American dollar throughout the world. This is a subject that should receive our careful thought and attention and it is to be hoped that a discussion of the subject will evolve some constructive plan that will solve the exchange problem. In a recent address Senator Owen made the following statement:

"With a trade balance in our favor of over \$3,000,000,000 for 1917, and with the American dollar backed by the largest amount of gold in the world, and backed by the most active industrial life in the world, the American dollar is at a discount in the neutral countries of Europe of over 20 per cent, and even in South American countries is at a discount as high as 20 per cent. The secretary of state a few days ago, before the committee on appropriations of the House

of Representatives, found it necessary to point out in his testimony the astonishing condition that the American dollar was at a discount practically all over the world when all the world is indebted to America."

Section 25, Paragraph 156 of the Federal Reserve act provides that the Federal Reserve Board shall have power to establish branches in foreign countries or dependencies or insular possessions of the United States for the furtherance of the foreign commerce of the United States. It might be well to consider the desirability of appointing a committee to confer and co-operate with the Federal Reserve Board, having in view the adoption of a policy which will establish and maintain the parity of the American dollar in the markets of the world.

FEDERAL CHARTER FOR FOREIGN TRADE BANKS

The Federal Reserve Act provides for the establishment of branches in foreign countries by member banks having a capital of not less than \$1,000,000, with the approval of the Federal Reserve Board and by amendment, the Federal Reserve Act also permits member banks to take stock in banks organized to promote foreign trade.

In conclusion, I think we should suggest to the National Foreign Trade Council the adoption of resolutions urging the introduction and passage of—

- (1) Legislation that will place our shipping on an equal basis with that of other countries;
- (2) The appointment of an economic commission, that we may prepare now for meeting conditions that will confront this country at the termination of the war;
- (3) Appointment of a committee to confer and co-operate with the Federal Reserve Board in the adoption of a policy which will stabilize and maintain the parity of the American dollar in the markets of the world;
- (4) Approval of the Glass bill providing federal charters for banks engaged in foreign trade;
- (5) The appointment of a special committee to co-operate with the United States section of the International High Commission.

American Investment Abroad and

Essential Raw Material

By Percival Farquhar

President Brazil Railways Company, New York.

Fortunately nature has richly endowed us in the vast extent of our country, with its fertile soil, immense and varied mineral resources, especially quantity, quality and distribution of coal and iron, that we need to look abroad for the lesser part of our raw materials, including foods, than is the case with most other nations. Nevertheless, this part is essential to our industries and its aggregate value, about \$1,500,000,000 in 1917, will grow in volume as years go on.

To safeguard our national industries American interests should own:

Quebracho forests and tanning extract plants in Argentina and Paraguay—An American company has recently acquired a large extent of these quebracho forests and is erecting a tanning extract plant which will be in operation about August of this year;

Nitrate of soda deposits and oficinas in Chili—The development properties are almost exclusively owned and operated by English companies whose large earnings might make it difficult to acquire any of them on a reasonable basis, but the Government of Chili still owns a considerable extent of undeveloped nitrate beds which might be acquired;

Balsa wood forests in Central America to replace corks for refrigeration of warehouses, cars, steamers, etc. It is much lighter than cork and when treated is durable and withstands water—American interests now own some of these forests and have commenced bringing this wood to the United States;

Sisal properties in Yucatan. Perhaps the cheapest and easiest substitute for Indian jute would be twine and thread made from kraft paper treated so as to make it unaffected by moisture, for which the further development of this industry in Germany would be helpful to us;

Rubber properties in the Amazon valley and in the Orient. The latter has the advantage of the cheapest labor in the world and the cheap cost of living which goes with it. There is land still available in the Straits settlement, in Sumatra and in the Philippines. The Amazon valley has the advantage of proximity and of an immense extent of virgin rubber forests in their original habitat of a soil and climate perfectly adapted to rubber, but it does not enjoy the advantage of cheap labor and cheap cost of living. The production in the Amazon valley of its own food products, for which it is well fitted, tends to reduce the price of labor—American interests could acquire immense tracts in the Amazon valley at nominal prices, containing large rubber forests which could be supplemented by plantings between the wild rubber trees to facilitate the gathering of the rubber;

Iron ore deposits in Cuba, Colombia, Venezuela and Brazil—American interests own some of these and could easily acquire more on reasonable terms. They are generally situated conveniently near seaports for export, except in the case of Brazilian ore, where the vastness of the deposits of especially high grade ore low in phosphorus makes it worth while to take measures to treat in a large way the problem involved in transportation 300 to 400 miles to the seaport. This was about to be done before the war by strong English interests owning large ore fields there;

Manganese deposits in Brazil and Central America—American interests are developing some of these and are likely to increase this development as the supply of Russian manganese now cut off through the closing of the Dardanelles may be so at other periods in the future, and Indian manganese first stopped by export regulations of the British government and later by lack of shipping is subject of future interruption of the same sort;

Vegetable oils, coconut and soya beans are largely responsible for recent increases in oil imports. The countries bordering on the Caribbean and Brazil are eminently adapted to the cultivation of coconut plantations, one of the most profitable of crops as also of castor beans giving the oil most suitable for use in aeroplanes;

Tin ore in Bolivia with smelters in the United States or there—The ownership of the largest deposits of tin ore are divided between the British and Bolivians. Bolivia is rich in tin and it should be practicable for American interests to obtain ownership of a sufficient part of this supply, which should be sent to smelters here and not, as previously, to Europe, from which practically our entire supply now comes, as it smelts the tin of Bolivia as well as that of the Straits settlement and Cornwall;

Sugar and molasses in Cuba and Hawaii—in which American interests have large holdings;

Cattle and meat supply in Central America, Colombia and Venezuela, Brazil and countries tributary to the River Plate—now largely cared for through American packing houses while others are under construction and in contemplation. The competition of other nations in this field, though existing, is relatively small;

Cocoa in Ecuador, Central America and Brazil—America is the largest user of cocoa and it would be easy for it to have an ownership in these very profitable plantations. They might be conducted to advantage in connection with rubber exploitation in the Amazon Valley, where it grows wild and it is particularly adapted to cocoa;

Bananas and other tropical fruits in Central America, Panama, Colombia and the West Indies—American interests are pioneers in this and have well in hand the plantations, railways, ports and steamers and all of the instru-

mentalities required in their production and delivery to the market.

For the safe and advantageous operation of these properties the ownership must be in many cases supplemented by the control of railways connecting them with the ports of export, and of steamship lines to the United States. For the profitable operation of the latter after the war not only is a radical revision of our present navigation laws required but also the addition to outgoing freight of American coal and supplies to railways and other properties in the countries for which they are destined, and experience shows that this will only be the case if these properties are under American control. It is the heavy tonnage of coal, approximately 50 per cent of the outgoing cargo of British steamers taken at times suiting their cargo space which in its direct and indirect effects, such as fuel for the steamers themselves, is one of the large factors in Great Britain's predominance in the ocean carrying trade.

Many of the raw materials and foods imported pay export duties to the countries of origin and in a larger proportion of cases the companies producing them pay excess profits and income taxes to other countries in which they are organized. In addition to this the cost and regularity of their delivery to us is affected by the length and condition of ocean transportation and by special regulations often pertaining to their export from the country of supply, as in the case of manganese from India, rubber from the Strait Settlements, tin, wool, etc.

Ownership of the sources of supply would give freedom from excess profits and income taxes of countries other than those where the supply is situated which must be paid in any case as well as the advantage in any industry attendant upon such ownership. The countries in which ownership is sought will be preferably those with whom our relations are the least likely to be disturbed by war or other causes, and where the lines of communication are the shortest. This, other things being equal, points to the countries of our own hemisphere, with whom our relations are likely to become increasingly intimate under development of the spirit of the Monroe Doctrine.

The war demonstrates the necessity of having the whole industrial organization of the country safely within its own control from the raw materials to the finished product at its destination. Any link that is lacking in the complete chain may place in jeopardy the economic life of the nation and to make ourselves secure against it requires a close correlation between government and business.

To determine what should be done by the government we have to agree upon a point of view for its action, which would seem to be to the best interest of the whole country, considered as a great corporation, with the entire American people as its stockholders. From this point of view the importance of co-ordination of American effort and the wastefulness of needless American competition with Americans is apparent, although contrary to the theories of political economy taught in our schools and colleges and to the theory of untrammelled competition underlying our anti-trust laws and other uneconomic legislation. But one of the fortunate legacies of this terrible war is likely to be the replacing of this theory by the saner one of well planned co-ordination, so that our national effort may be the sum total of our individual efforts.

There is no contravention of democracy that our government should take a leading part now and after the war in planning and directing this co-ordination, for democracy concerns the method of selection and replacement of those who govern us and does not necessarily detract from their power or authority. Were it otherwise, democracies would be condemned inherently to be less efficient in the interests of the people who constitute them, which we would not like to believe.

Organization of a District Export Selling Company Under the Webb Bill

By George H. Charls,
American Rolling Mill Co.

It is the purpose of this paper to deal with the organization of a district export selling company under the Webb bill. It seems obvious that a simple plan, conservatively drawn, on a non-pretentious scale, will be the easiest to inaugurate. Before comprehensive plans may be followed, a great amount of educational work must be accomplished. It is evident that this preliminary work must be done if America, as a whole, is to benefit as it should in the new freedom this bill offers exporting companies.

Proceeding on the assumption that "what is everybody's business is nobody's business," and that the executives engaged in export business, who have vision, are too busy to carry on this vital educational work, the reason and paramount need for district organization under competent management is apparent. Individualism is an American characteristic. It will require continuity of educational effort and encouragement before unity of action and purpose can gain maximum efficiency. It will also require time to foster the spirit of Americans for America. "In unity there is strength." Not the success of the individual company, but the success of all American business, must be the goal.

This is not an altruistic doctrine; it is sternly practical. Too often our selfish ambitions deprive us of the vision and the opportunity to attain the very thing we most desire. In this case, the fact is so pertinent that we must organize in order to duly appreciate the importance of co-operative foreign selling. The first step in organizing a district export selling company, in accordance with the principles of the Webb-Pomerene bill, would be for five or ten of the leading exporters in the district to meet informally and discuss the idea, determine the extent of the district geographically, and outline plans for organization and operation.

A prospectus should be formulated upon following lines:

The geographical extent of a district will naturally vary with the proximity of the cities within the district to the central, or hub city.

The Ohio-Miami Valley District should comprise:

Cincinnati and suburbs, Portsmouth, Ironton, Chillicothe, Washington Court House, Wilmington, Dayton, Piqua, Troy, Springfield, Middletown, and Hamilton, Ohio; Richmond, Lawrenceburg and Aurora, Ind.; Ashland, Newport and Covington, Ky.

The plan of operation should call for the organization of a district export selling company (hereafter called "company" for the sake of brevity), including all the export concerns in the district, under the leadership of a competent, experienced export executive, with headquarters at some central point in the district.

The purposes of such company should be:

1. To obtain a competent business manager, and to provide offices for him and his assistants in the central or hub city of the district.

2. (a) To consult with the boards of education, the universities, colleges, Y. M. C. A.s, schools and business colleges, so that they may see the wisdom of introducing practical export trade studies in their respective institutions, which would encourage the youth to look forward to, and train for, positions in foreign fields; to assist in placing these youths in positions, and to find applicants for exporters.

(b) To promulgate the teaching of languages most practical in the fields of American foreign trade enterprise. To organize classes for the study of the best business methods in foreign trade, which classes shall be open to the members of the Company and their employees.

3. To compile a complete list of the various products exported by the district members.

4. To obtain the names and addresses of American representatives in foreign fields.

5. To compile a list of all foreign countries in which district members are directly or indirectly represented.

6. To compile a list of all foreign houses at present representing the district members.

7. To receive from each member, weekly, such reports as may be interesting, practical and advantageous to all members.

8. To act as a clearing-house on credits, financial and shipping rates and conditions, and such other information as could be practically given by one member to another.

9. To obtain from each member permission to consult their foreign direct representatives regarding such general information respecting the foreign field in which they work, without overstepping the premises of private business. Or, at least, persuade each member to do so directly, when requested.

10. To receive all reports from the bureau of foreign and domestic commerce, and from all other available sources.

11. To list the arrival of foreign buyers, visiting the United States, and endeavor to bring them into the district.

12. To compile all data and information released by district managers, and otherwise obtained, into a bulletin to be mailed weekly to all members.

13. To provide quarterly meetings for all members in the district, monthly and weekly meetings for members in larger centers, for the interchange of ideas and the suggestion of ways and means to make the organization more effective.

14. It shall at all times be the object of the company to promote the proper spirit of co-operative work, to exert a constant influence for harmony, friendship, better understanding, trust and confidence between all members, to the end that they may co-operate in their selling, to the greatest possible extent.

15. To form individual departments to handle the sale of the products of various members in foreign fields; these departments to be divided geographically, or according to kindred lines, and to be available to such members as desire to take advantage of the opportunity. Such departments to be under the direct charge of an expert sales manager who would be responsible only to the district manager.

The individual manufacturers should at all times quote the company their lowest export prices, allowing the company a commission, and agree to set aside a definite yearly amount of their product for export sale. They should further agree to extend such credit as the company should recommend. The company would pay the manufacturer as they received payment from the foreign buyer. They should further agree to provide for such additional sales and missionary expense as such department would entail. This sum to be agreed upon in advance of their affiliating themselves with such department. The capital stock of the company should be sufficiently large to include every exporter in the district among its stockholders. Each member shall subscribe for a definite amount of stock to be paid for in five annual installments. The total of each annual payment of all members shall be sufficient to guarantee funds for the payment of the district manager's salary, expenses, offices in the central city and at seaboard, assistants and advertising. Each member shall be limited to a stated number of shares.

It is estimated that the Ohio-Miami Valley district possesses a minimum of 500 concerns engaged in export business. If each member would agree to subscribe for stock to an extent which would make its payments \$500 per annum, for five years, the district would have a fund of \$250,000 per year to carry on this important work. This would give a capital stock of a million and a quarter paid up, in five years. One has only to keep in mind that the cost to each individual member is only what such member would have to pay a good office-boy, in order to appreciate the feasibility

of the plan, and the probability of every member in the district heartily endorsing and supporting the project. In addition to this sum of money, the company would benefit to the extent of the commissions paid by the individual members.

To further increase this working capital, all concerns dealing directly with the company should subscribe to its capital stock, and many concerns not now engaged in export business would naturally desire to become affiliated with the company. Before, or at the end of five years, the company would increase its capital stock, if necessary. All profits accruing in the first five years to be held for working capital. The duration of the corporation shall be permanent.

A board of directors consisting of ten or more members (as the number may warrant) shall be elected annually by the members. The board of directors, however, shall act in an advisory capacity only, to the district manager, who shall have full charge of the management of company affairs.

The corporation having been launched, the first vitally important step would be the choice of a competent manager.

He must be a leader, a high-grade, broadly-experienced executive, well versed in export business. He must be the guiding spirit from the very inception, with a wonderful amount of tact and discretion. He should choose his own competent assistants, and should have a free hand in carrying out the objects of the association. The more time he has spent in foreign fields, the more valuable he will be to the organization.

The district manager should obtain an experienced man to travel as representative of a single group in a foreign country or countries. This man should not carry more than four or five lines. His particular business would be scouting, or missionary work—selling when possible. The group he represents would stand all salary and expenses, quoting lowest export prices at all times, furnishing sufficient advertising matter, catalogs, etc., without charge, and allowing as liberal a commission as possible, also ample credit.

The group manufacturers would deal only with the district manager, and the salesman sent out would report direct to the manager. This would afford an inexpensive method for members to obtain first-hand information regarding the possibilities of selling their product in various foreign fields, and making sales at a minimum expense.

A second move would be to merge non-competitive manufacturers in the district who were doing business through foreign houses in some single country, say Brazil. The district manager, through the information obtained in a confidential way, could readily ascertain in what country existed the greatest duplication of effort, and excessive cost-to-sell on the part of ten to twenty members in his district. After carefully studying these conditions, he should evolve a practical plan for unifying all efforts, then call these manufacturers into a conference and effect a merger of selling interests. The plan would undoubtedly appeal to the majority, and the rest would come in when they perceived how well the plan would work. This idea could be carried so far as to have these manufacturers rent their own warehouse in the principal city of such foreign country, and arrange to do business direct with the final consumer.

While such district office and warehouse would be under the direct supervision of the district manager, the companies interested could send their own technical salesmen to work with the manager in charge. This procedure is followed by many American manufacturers in a slightly different way, in that their own technical experts now work with foreign houses selling their goods. This plan would call for lowest export prices and commission to the company, as well as a consignment of stock, if necessary, and proper advertising matter. It would also require of the members the extension of such credit as would be necessary to compete with foreign buyers.

The possibilities of a district export selling company are really beyond comprehension. Some of the advantages gained thereby may be enumerated as follows:

The provision of an up-to-date foreign sales organization, constructively managed, at the lowest possible expense to the individual members.

The company will obtain, quickly and efficiently, a comprehensive list of foreign buyers, their particular needs and requirements.

Definite, accurate information regarding not only their financial standing, but also their credit limitations, based upon their methods of doing business, and the character of their clients.

Greater ability to secure ocean rates and space, at lowest quotations.

Greater efficiency in invoicing and accounting. The company would establish relations with the large importing and exporting companies in all foreign countries, solicit their inquiries, make quotations on all their requirements, distribute the orders among the various members of the district, assemble all orders together into one shipment, and make one billing on the entire amount.

Possibilities of carrying American stocks in foreign countries in American warehouses, under the management of trustworthy American managers, instead of relying upon foreign houses to sell American goods, which houses may be controlled by foreign competitors.

Avoid competing with each other in foreign markets.

Gain the advantage of a joint advertising campaign, catalogs, etc.

Meet prices and deliveries of foreign competitors at all times, through co-operation.

Broaden the scope of all companies in all markets of the world.

Standardization of products to meet the need and desires of foreign buyers in different foreign countries.

And, most important, the educational and co-operative work will arouse Americans to the value and vital need for co-operative export trade quicker and better than any other method.

Such district companies will also form a nucleus for the larger and more pretentious national selling companies.

The suggestions in this plan are limited, but the potential results which even a plan of this kind offers, should encourage many districts in the United States to start at once similar companies on broader and more comprehensive lines.

He who truly loves America and places patriotism above selfishness and personal gratification, will visualize this suggestion not only as a good business move, but a great patriotic duty.

The Part of Coal in Helping to Win the War

By J. H. Wheelwright,
President, Consolidation Coal Co.

It is a common saying that this, that or the other raw material or manufactured article will "win the war." We all have seen this statement advertised many times. The Food Administration says "Food Will Win the War." The sugar refiners put up posters and car cards saying "Sugar Will Win the War." The United States Shipping Board and even the National Foreign Trade Council have said that ships will win the war, and I am inclined to agree with them, with but one amendment—coal and ships will win the war. We certainly need the ships to transport to the fighting districts the men and their supplies. Without the ships they cannot get there. But without the coal the ships cannot make their voyages, and so, after all, it is coal that is going to help in winning the war.

Perhaps there are some oil men who may be inclined to

controvert me on this point, but whatever may be the possibilities for the development of oil-burning steamships the fact is that they have not yet reached the stage where we can depend safely on oil for ocean transport power. Our reliance today is upon coal, and that is my point.

And in a double sense it is foreign trade in coal that is furnishing such powerful war winning assistance just now. For the service rendered by this humble product of American mines and industry is by no means confined to filling the bunkers and supplying the steam for our transports and the other steamers that are carrying the huge bulk of military supplies, food and other articles to our allies and to the neutrals of Europe and the remainder of the world. We have even exported coal to Europe and thereby secured supplies which otherwise would not have been available. And we have sent coal to South America and secured in return materials of the highest value in the production of munitions and other war supplies.

As an article of direct commerce, therefore, export coal is rendering an important war winning service. In the bunkers of troop ships, other transports, liners and traders to our allies it is rendering another distinct, but important, war winning service. And in the bunkers of neutral ships, not subject to the degree of control impressed upon American vessels, American coal is producing a responsiveness on the part of the ship owners to the requests of this government which has distinctly a war winning value.

Thus in various ways and with varying influence export coal is doing its share of America's part in the great war. If I were to stand here an hour I could not enumerate the domestic ways in which coal is helping in war work. Without suggestion they will occur to you in ever lengthening catalogue.

When the war is successfully concluded there will be opened up to America to my mind, a wonderful opportunity to further expand her exportations of coal. The splendid progress made in the early stages of the war in introducing American coal in foreign markets and the further extension and strengthening of its position in markets that had been more or less established—now at a lull for reasons with which we are familiar—will give us an opportunity of pushing our coal that is now beginning to be known in the markets of the world and it will not be looked upon as so much in the past by foreign buyers, as an experiment and often costly to them, but a commodity recognized as possessing proven qualities particularly adapted to their requirements.

Many of the unfavorable conditions with which the American coal exporter had to contend will be removed or greatly remedied, a few of which may be enumerated, as for instance:

First—Lack of knowledge of the quality and character of our coals by foreign buyers.

Second—Lack of vessels under the American flag to transport our product.

Third—Unfavorable maritime laws making it impossible to construct or operate vessels in competition with vessels under foreign flags.

Fourth—Adverse credit balance conditions and exchange facilities.

Great strides have been made in solving the first by the large amount of coal exported early in the war, at a time when conditions made only American coal available to foreign consumers and its quality, character and preparation fully and satisfactorily met their requirements when intelligently applied. This latter feature should be jealously watched and most painstaking and earnest care taken in ascertaining from the buyer for just what purpose the coal is to be used, as a mistake in the application of coal of the quality required is so costly as to make a customer reluctant to again give it a trial and this feature alone had given American coal an undeserved bad name in many communities.

The second is being rapidly solved by the construction and acquisition by both our government and individual capital of a large fleet of vessels.

The third will doubtless be solved as the crying necessity for an adequate merchant marine has been so forcibly demonstrated and the cessation of hostilities will find such

a great investment of government and private capital in vessel tonnage as to certainly insure such a correction or revision of the previous laws as to place our vessels where they can fairly compete with those under other flags.

The fourth has already been solved by the readjustment of international credits that has gradually taken place during the progress of the war, and the banking facilities abroad that have been established by our large banking institutions by placing branch offices in the important centers of all foreign countries. This would appear to have placed us on an equality with our competitors in the very important item of credit and exchange.

Thus with some of the obstacles removed and with the entering wedge already made, we must be prompt to take advantage of and make the most of the pioneer work already done, the moment conditions seem to make the opportunity present itself. Immediately after the termination of the war, I believe there will be a tremendous world wide demand for coal, as most countries, including our own, have practically no stocks available, so that there is no question but what foreign trade is going to be limited to the ability of the mines to produce and provide transportation facilities, and the controlling factor will be labor.

It looks as though we would have a ready export market for all the coal we can ship during the period of reconstruction, as the producing countries of Europe will feel the effects of depleted man power, and in many sections it will take a long time to restore to anything approaching normal production the properties that have been devastated by the war.

By the time the war is successfully concluded this country should be in a position she has never been in before—she will have American vessels to carry coal and other exports to foreign countries and bring back such of their products as we import, placing us on a more favorable basis in so far as marine rates are concerned, and in addition we will have gained knowledge, such as our experience will have taught us in the handling of the huge export tonnage we have moved since the war has been on, and with adequate international banking facilities to handle.

Indeed the question in my mind is whether we will have at that time the production of coal sufficient to enable us to supply the demands made upon us by foreign countries, which would be unfortunate, for as I have said before, it appears to me to be of the utmost importance that we be prepared and prompt to supply any demand arising, as, unless American coals are supplied immediately and foreign nations are allowed to go back to their old sources of supply, it would be difficult to displace them and much of the ground would have to be gone over again.

The mines of America have the capacity to meet such an emergency, and it seems the vessel tonnage will be available, therefore the question seems to resolve itself into our getting the coal loaded on cars and transported to tide—a matter of transportation and labor. The inadequacy of railroads to handle the tonnage of coal which can be produced in this country has been strikingly demonstrated during the past year, and not only the government but the people at large now realize a situation which has been known and proclaimed by the coal industry for years. We have faith in our government, however, that when a condition has been so fully demonstrated, effort will be made to remedy it, and already we find concentrated effort being set forth to improve railroad facilities of the country, with a view to unification of systems and terminals as well as many new methods to handle such commodities as coal, with a view to improving the situation that has so long existed. In all probability, at the end of the war, there will be a letting up in home demand and many men who have left the coal mining industry for work in munition and kindred employment, will sooner or later be seeking their old vocation of coal mining.

EDITORIAL

Railway Age

EDITORIAL

So much has been said and written about the necessity for fuel economy and how coal can be saved on the locomotives

Standing in the Way of Fuel Economy

that it is to be feared the expression may have lost some of its force. Not a few railroad officers and employees have got to be big enough radically to change their view-points if the best re-

sults are to be obtained. Illustrating this, one fuel expert asked the following question: "What results would be obtained if the colonel of a regiment were, in an apologetic way, to say to his men that the enemy with whom they were to engage in battle was very much better equipped in every way and that, while the enemy would probably win the fight, it would, of course, be necessary to battle against them." The fight would be lost before it was begun because his men would have lost the one important qualification for really winning the fight—their morale. Too many men are defeated before they tackle a proposition because of their attitude of mind. What chance is there on many roads, for instance, of running one locomotive through over two or three divisions, simply stopping to clean the fires and change crews at division points; and yet it has been demonstrated where this has been given a fair trial that it not only results in marked fuel economy but makes it possible to secure a much larger service from each locomotive, thus reducing the number of locomotives required for handling a given amount of traffic. This is only one of a number of things that will never be made to yield results until those in charge are willing to tackle the proposition with an open mind and not kill the project before it is started. No matter how good a device or method may be it needs a friendly interest to make it a success. Indifference has damned many a good cause.

If anyone is in doubt as to why there is difficulty in securing and keeping an ample number of capable foremen in

Why Are Good Foremen Hard to Keep?

railroad shops and roundhouses, the reason is very clearly indicated in Appendix IV of the Railroad Wage Commission report, in which are shown the

average monthly earnings of railroad workers for 1915, 1916 and 1917 by occupational classes. In 1915 the average monthly earnings of general foremen throughout the United States was \$127.77. This increased to \$131.13 in 1916 and for 1917 had gone up to \$137.73. The average monthly earnings of gang and other foremen were \$97.24, \$102.68 and \$112.76, respectively, during these three years. Machinists averaged \$85.87 per month in 1915, \$100.42 in 1916, and \$116.35 in 1917; while boilermakers averaged \$89.69 in 1915, \$102.46 in 1916, and \$118.85 in 1917. The disparity between the earnings of the foremen and the men in the ranks, while clearly indicated by these figures, is really much wider than they show, as they are averages which are considerably exceeded on a piece work basis by the brighter and more skilled men, and by mechanics in roundhouses, where overtime is prevalent. Furthermore, under the sliding scale of percentage increases in pay recommended by the Wage Commission and put into effect by General Order No. 27 of the director general of railroads, an already bad situation is made worse, because the base rate of the mechanic in most cases is less than that

of the foreman, although, due to overtime or extra piece work earnings, his actual earnings are greater. The mechanic is thus entitled to an award higher not only in percentage, but in actual amount, than are the lower grades of foremen. Under such conditions, what inducement is there for the mechanic of exceptional skill or ability to give up comfortable working conditions and assume the heavy load of responsibility and steady grind of long hours which fall to the lot of the foreman?

The iron and steel mills of this country are greatly in need of scrap iron, the demand for this material far exceeding

Scrap Iron at a Premium

the supply. Railroads have always been one of the largest sources of supply for scrap iron and steel. The prices now being paid for such materials are sufficiently high to warrant special efforts in the collection of scrap; but, aside from this, the railroads should do their best to make up the deficiency for patriotic reasons. It is said that if all of the iron and steel scrap in the country was marketed, there would be no shortage of steel, but this can only be accomplished by very great effort. The railroads cannot only be of great help in collecting and marketing their own scrap but they can do much by urging others with whom they come in contact to do the same and by helping to promote and encourage "Sell Your Scrap" campaigns in the different communities which they serve.

The assumption of control of the railways by the government has brought about a number of interesting situations,

Federal Control and Valuation Work

not the least confusing of which is the position in which the valuation engineer and his staff find themselves. Until this year the valuation department has maintained the dual function of furnishing the government with such information and maps as it required and of gathering such data as may be necessary to support the claims of the roads in those points in which agreement has not been reached with the federal forces. Immediately on the taking over of the operation of the roads the suggestion was made in certain quarters that the valuation forces of the railways should be consolidated with those of the government and the findings of the latter forces made binding on the roads inasmuch as the government, through its guarantee of railway earnings, might be considered as paying the expenses of both forces. However, this position ignores the fact that the government has not purchased but only leased the properties of the roads for the period of the war and that the equity of owners in the properties remains unchanged. Sounder judgment has prevailed and the work has proceeded without material change from existing practices up to the present time. With the reorganization of the staffs of the roads to bring them more directly into the employ of the government railway men engaged in valuation work are now confronted with a joint responsibility to their present employer (the government) and to their former employers and the owners of their properties (the corporations). The director of the division of valuation, who is an employee of

the Interstate Commerce Commission and is also a member of the official family of the director general of railroads, has recently issued a circular stating that whatever expenses may be necessarily incurred by the carrier in making the valuation may be charged to operating expenses, but that expenses incurred to test the accuracy of the valuation or to contest it before the commission or the courts must be borne by the corporation. These instructions are necessarily more or less general in character and leave considerable opportunity for the exercise of discretion.

The problem of the government is to arrive at a fair valuation. It is, therefore, encouraging to note the increasing desire on its part to arrive at an agreement with the carriers regarding as many figures of quantities and unit prices as possible, in this way reducing to the minimum the number of points to be contested later. To this end the engineering estimates of the division of valuation are being submitted informally to the roads for criticism and checking in some cases, in this way affording an opportunity for the detection and elimination of errors and inaccuracies before the tentative valuations are completed and submitted to the Interstate Commerce Commission. Obviously such a procedure is very much to be desired by all concerned, and under it much of the data which the roads are securing to substantiate their claims can be and are being submitted to the division of valuation for such use as may be made of them in verifying the valuations. For this reason it is to be expected that the recent order of the director of the division of valuation relative to the distribution of expenses for the collection of these data between the operating and the corporate accounts will be interpreted liberally since the information is being placed at the disposal of the Commission and is being used by it in arriving at the correct figures.

Is Railway Credit a Non-Essential?

IF PRESIDENT WILSON or Director General McAdoo had personally written the tentative draft of the proposed contract between the government and the railroad companies whose properties have been taken under federal control, a question might pertinently be asked whether they had their fingers crossed when, during the early days of federal control, they referred so repeatedly to the necessity for stabilizing railway credit. As they have not done so and have necessarily delegated the work to others, it is perhaps proper to ask whether their representatives, in their zeal to make a good bargain for the government, have become obsessed with the idea that during the months that have elapsed between the taking of the property and the making of the bargain for compensation, railway credit has become relegated to the class of non-essentials, and may be substituted by the credit of the government.

In a statement accompanying the proclamation of December 26 under which the railroads were taken over the President said: "Investors in railway securities may rest assured that their rights and interests will be as scrupulously looked after by the government as they could be by the directors of the several railway systems."

In his message to Congress on January 4 recommending legislation to provide for compensation, he said that "One of the strong arguments for assuming control of the railways at the present time is the financial argument," that "the values of railway securities should be justly and fairly protected," and that "the owners and creditors of the railways, the holders of their stocks and bonds, should receive from the government an unqualified guarantee . . . that the several roads will receive under federal management such compensation as is equitable and just alike to their owners and to the general public." He added that "it is of the utmost consequence to the government itself that all great

financial operations should be stabilized and co-ordinated with the financial operations of the government." Referring to the vast total of railway securities in the hands of small investors, banks, insurance companies, etc., he said, "the unquestioned solidity of that structure must be maintained."

Director General McAdoo has also made similar statements regarding the disastrous consequences to the financial structure of the country "unless unquestioned assurance could be given by the government of an adequate protection to the holders of railroad securities."

Since these things were said several things have happened. Instead of guaranteeing the railways, as the President had recommended, the average net railway operating income of the three years ending June 30, 1917, the railroad control act authorized as a basis "not exceeding a sum equivalent as nearly as may be" to that amount. Since then, at the hands of the government's representatives who have been negotiating with the railways regarding the contract, even the sum which is calculated from this indefinite expression is made subject to further deductions, the amount of which may not be anticipated at the time the contract is signed.

Instead of the "unqualified guarantee" to which the President said they were entitled, the tentative draft which was discussed at the meetings of railway executives and security owners held in New York last week does indeed contain a blank space in Section 7 for the amount of money said to be guaranteed as annual compensation, but immediately following is a list of deductions which may be made for so-called "excess maintenance," additions and betterments not justly chargeable to the United States, and other things. While there is a provision that the power to deduct for additions and betterments shall not be so exercised as to prevent the company from supporting its corporate organization, keeping up sinking funds, paying regular interest on its debts or on loans issued during federal control and approved by the director general, there is no provision that the other deductions shall not be great enough to make it impossible to keep up such payments. As to dividends there is an expression of policy that the power of deduction for additions and betterments shall not be so used as unnecessarily to prevent regular payment, but this is a long way from the "unqualified guarantee" of whatever may be held to be fair compensation. Moreover there is no protection of any kind for leased line rentals, failure to pay which might disrupt a system. It is understood that one of the arguments of the administration's representatives has been that, if confidence in the good faith of the government is not sufficient to maintain railway credit under these conditions, the credit of the government may be called upon to raise any sums necessary. It is apparent, however, that such an assumption is at considerable variance with the idea of maintaining private credit for the purpose of preventing undue strain on that of the government.

One of the provisions in the proposed contract which bears heavily on the patriotism of the railway owners is that which requires a complete release from all claim for compensation for all loss and damage to business and traffic. Director General McAdoo, in his testimony before the Senate committee, referred to the condition which might be found after the war by saying that "great numbers of important railroads might find themselves largely deprived of established traffic and seriously hampered in getting it back, and this will be highly detrimental to the security holders of all such railroads as well as to the public interest." He was using this possibility as an argument against turning the railroads back at once at the end of the war. During the 21 months' period of readjustment now provided for it is possible that some of the damage might be repaired. If the possible loss should prove to be small, the release provision would be of small consequence, but the government, under the tentative form of contract, requires the railroad companies to take all the chances.

Government Operation and Railroad Accidents

WHEN THE RAILWAYS were under private management it was the practice of certain classes of journals, when serious railway accidents occurred, to attribute them entirely to derelictions on the part of the financial and operating managements. The Hearst newspapers, because of accidents, published column after column of denunciations of the railway managements in blackface type, with a profusion of capital letters. Such virtuous and omniscient publications as the Christian Science Monitor and the New Republic joined in the refrain as loudly as they were able. Private management being held to blame, the conclusion usually reached was that the only remedy was government ownership and operation. Government management, under which the railways would be operated for the benefit of the public, and not for the profit of Wall street, would, it was said, put a stop to all these horrible catastrophes. When the *Railway Age* and other publications, which took the pains to investigate the causes of accidents, tried to present those causes and to show why government management would not necessarily remove them, they were denounced as the prejudiced organs of the railway companies and the financial powers.

We have finally got government operation. We have had it for over six months. Surprising as it may be to some people, incidents still occur. They continue to occur as certainly as Mr. Justice Brandeis' famous "million dollars a day" refuses to be saved. In fact, under government operation we are having some of the worst accidents in the history of American railways. Among those which have occurred since government control was adopted are the following:

On January 14 Houston & Texas Central passenger train No. 17 was derailed at Hammond, Tex., owing to a switch being loosened by a brake beam falling from a freight train. Seventeen persons were killed and 12 injured.

On January 31 a freight train on the Northern Pacific collided with a passenger train on the Great Northern at a crossing at Sedro Woolley, Wash. Five persons were killed and 18 injured.

On February 25 there was a rear collision between the passenger trains on the Southern Railway at Frost, S. C. Twelve persons were killed and 30 injured.

On June 22 an empty equipment train ran into the rear of a circus train on the Michigan Central at Ivanhoe, Ind. Twenty-eight persons were killed and 120 injured.

On July 9 two passenger trains collided on the Nashville, Chattanooga & St. Louis at Belle Mead Park, Tenn. The number of persons killed is estimated at about 80 and the number injured at about the same.

Needless to say, if this terrible series of accidents had occurred when the railways were under private management, the companies and their officers would have been denounced throughout the country, and the classes of journals above mentioned would have used them as an unanswerable argument that the managements were entirely inefficient and that the government must take charge. We should have heard frequent repetitions of the time-honored recommendation that, in order to make the railways safe, the presidents and boards of directors should be required to ride upon the cow-catchers.

If the occurrence of accidents formerly afforded a fair argument against the continuance of private management it has now become, by the same token, a fair argument against the continuance of government operation. It may be alleged that these accidents are attributable to the condition of the properties when the companies turned them over to the government. With one possible exception, however, all of them were due, not to failures of the railway plants, but

to failures of employees to do their duty at critical moments.

Shall we, therefore, attribute this series of accidents to government operation? To do so probably would be as unjust as many of the brutal diatribes against railway companies and railway managers, which have been published in the past, not only in malicious and irresponsible newspapers, but even in reports of state railroad commissions and of the Interstate Commerce Commission. Accidents, even bad accidents, or even series of bad accidents, are by no means infallible proof of bad management. All the conditions under which they occur must be considered. They are far more likely to occur on a railway having a large number of inexperienced or comparatively inexperienced employees than on the same railway when it has few such employees, and all railways at present have numerous inexperienced employees. They are far more likely to occur on a railway which is handling a heavy traffic than on the same road when it is handling a light traffic, and practically all the railways are now handling the heaviest traffic, both passenger and freight, in their history. It is easily conceivable, therefore, that the recent accidents would have occurred if the government had never taken over the railways. There are, however, three points, among others, which they suggest.

First, the fact that the railways are now being operated by the government is no good reason for trying to cover up the facts regarding accidents. When the railways were under private management the press and public officials properly demanded that all the facts about accidents should be made public. Now, however, there is being manifested a tendency to attempt to cover up the facts. The investigation of the collision on the Michigan Central at Ivanhoe, Ind., was conducted jointly by representatives of the Indiana Public Service Commission and the Interstate Commerce Commission. To the shame of Indiana and the government of the United States, it was turned into a star chamber proceeding, and representatives of the *Railway Age* and other publications were denied admission. No sufficient explanation or defense has been or ever can be given of this action.

Second, the government is going to find that in order to keep accidents at the practical minimum it will be just as necessary to maintain discipline among employees under government operation as it was under private operation. The maintenance of discipline requires that operating officers shall, according to their ranks, possess and exercise authority to reward and punish employees according to their deserts. It is just as necessary that officers of railways shall possess and exercise such authority as it is that officers of armies shall. If government operation is to any considerable extent responsible for the bad accident record which is now being made this is because its adoption has caused certain changes in the attitudes and relations of the operating officers and employees to each other which tend to undermine rather than to improve discipline. Developments which have occurred on the railways, especially since the "basic eight-hour day" fiasco in August, 1916, naturally have caused certain classes of employees to believe that they have more numerous and powerful friends in Washington than their superior officers. The officers charged with the duty of administering discipline have the same impression. In these circumstances, discipline is likely to be more difficult to maintain than heretofore, and without discipline there will be more accidents.

Third, contrary to the confident predictions of advocates of government management, government operation is not yet preventing or showing any perceptible tendency to reduce accidents. Astonishing as it may seem, the newspapers which have devoted so much blackface type to denouncing the railway companies are not devoting any blackface type to calling attention to this fact; but a fact it is, nevertheless. The miracle which for years we have been assured would be worked refuses thus far to be worked. Criticism of the Railroad Administration for this would be unreasonable—

as unreasonable as much of the criticism of the railway companies and their officers which was published when the railways were under private management.

The Automatic Stop

THE SPRINGFIELD (MASS.) REPUBLICAN in its issue of July 5 says, "The *Railway Age*, discussing the wreck of the circus train on the Michigan Central, demands the general adoption of the automatic stop and intimates that the national railroad administration should go ahead and install these appliances at once, not waiting for the ideal device to be developed. . . . But while railroads have often been criticized for not making the expenditures essential for safe operation few papers would have suggested government enforcement of the sweeping reform the *Railway Age* now demands . . . for it is asking the government to undertake a radical and expensive improvement in the interests of safety which the railroads have refused to undertake."

The interpretation which the Springfield Republican has placed upon the editorial, "What Lessons Do Collisions Teach?" which appeared in the *Railway Age* of June 28, differs widely from that which we intended should be put on it. Evidently, our discussion was not clear. Since the collision on the Michigan Central another wreck has occurred in which nearly 100 persons were killed and about the same number injured, this, however, being in territory not operated under the block system. This catastrophe renders it necessary to refer to the subject of automatic train stops again and this time we shall try to so state our views on this subject that they cannot be misunderstood.

The tracks, equipment and operating rules of most of our railroads are good, and the operation of the trains is surrounded with numerous physical safeguards, including, on many lines, the automatic block signal system; but even on roads which are physically in the highest state of development the toll of life continues to be taken because of failures of the human element. It would appear that the preventive of catastrophes due to collisions such as those on the Michigan Central and the Nashville, Chattanooga & St. Louis would be the installation of some form of automatic train stop as an adjunct to the automatic block signal system, but it still remains to be determined whether the automatic train stop actually would serve the purpose. A number of automatic stops have been developed and tested on sections of track, but have these devices been widely enough and long enough tested in actual service to determine finally the manner in which they would act under the severe and varied conditions of operation on railways in all parts of the country? The theoretical operation of an automatic stop as developed in the laboratory, or even its operation on a single section of track, does not show conclusively how it will act in road service generally and under all weather conditions. It has taken years of development to bring the automatic signal to its present position and its development has been mainly due to lessons learned from installations in actual road service.

While the development of the automatic stop, in general, has not reached a stage at present which would justify advocating its universal installation, we believe the time has come when a wider application is warranted in order to determine by the test of wide experience whether existing stops meet the requirements and whether, if they do not, they or others can be so developed that they will do so. Experience may show that automatic stops cannot be so developed as to meet all conditions imposed by road service, but until we have had more experience with them in actual service the question where they should be brought into wide or universal use will remain unsettled.

Letters to the Editor

Tank Engines

PRINCESS BAY, S. I.

TO THE EDITOR:

Can anyone tell me why American railways don't make more use of "tank" engines.

Traveling over the country, one is constantly confronted with the sight of yard and switch engines, "one car" local and branch line trains, suburban services and other short runs, in every case the locomotive being burdened with about forty tons of perfectly useless tender.

On the suburban road on which I live, every locomotive draws along a 3,000-gal. tank of water and about five to six tons of coal, for a run of 14 miles in all. Every time I see it, I try to figure out how many wasted ton-miles this represents in a year.

This is one of the things they do better in Europe and particularly in England, where tank engines are used on all local runs up to 30 miles and sometimes even further. The engine is identical with the big tender engine except that it carries sufficient coal for the run in a short bunker, with water in side or saddle tanks.

Another advantage is that the weight being all on the locomotive wheels, there is better adhesion, these tank locomotives having truly marvelous powers of "getaway" even with a heavy load.

AUSTEN BOLAM.

The Ivanhoe Collision

AUBURN, ILL.

TO THE EDITOR:

I have read with much interest the article covering the wreck on the Michigan Central, where over 70 persons were burned to death or otherwise slaughtered, which appeared in the *Railway Age* of June 28. Truly, it is time that something should be done to set our minds clear on the question, Whither are we drifting? Your editorial should be deeply considered by all of "the powers that be."

One gets the impression that you are too easy with the railroads and the government and too hard on the engineer. You very deferentially invite the Administration to look into the subject of automatic appliances, and you suggest to the railroads that they have a duty to experiment with inventions; but you would try the poor engineer for manslaughter—which might mean life imprisonment! I would not suggest that you should imprison the railway officers; that would not even up matters. I do not suggest anything. I only give you my impressions. You say that if the engineers were punished for committing these terrible mistakes they would be more careful. But are they not punished already? Every now and then one loses his life by not looking at a semaphore, and the fact is published in the newspapers. Death is punishment, surely. What more severe penalty could be devised? Death (or imprisonment) at the hands of the courts could not be more certain. It might, perhaps, be less certain, because of the labor unions, who are quick to defend and excuse a member of the union who falls into the clutches of the law.

Sleeping at their post is a weakness that sometimes afflicts very good men. President Wilson has just pardoned two soldiers who were condemned to death for this offense. Engineers known to me admit they have trouble in keeping awake at times. Is not your other remedy, mechanical safeguards, better than swinging the club of the law? See how futile Mr. Roosevelt's "big stick" has become!

S. BLANCHARD.



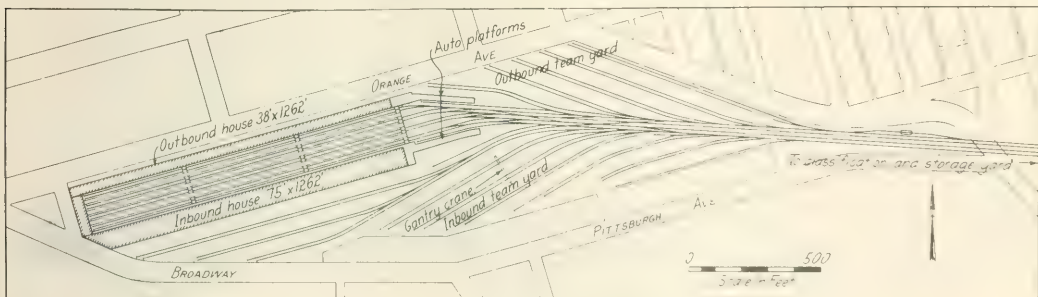
The Head House and a Portion of the Outbound House

New York Central Opens Cleveland Freight Terminal

Four-Million-Dollar Investment Has Put Large Local L.C.L. Station in Strategic Location

AT A COST of more than \$4,000,000 the New York Central is now completing new local freight facilities in Cleveland which are unusual for their size and the new features introduced in their construction and operation. The plant involves separate inbound and outbound houses 1,262 ft. long, house tracks accommodating 235 cars, team yards with an ultimate possible capacity for 559 cars, classification and storage yards holding 1,000 cars, and a double-track branch line $3\frac{1}{2}$ miles long connecting with the New York Central belt line around the city. The yards also provide the facilities for receiving and making

located on the low level along the lake front and Cuyahoga river, while the main business section of the city is located on an upper level approximately 100 ft. above Lake Erie; also an inbound and outbound house at Mason street on the top of the hill on the lake front. The streets connecting the two levels involve grades of 7 per cent or more, and the necessity of trucking up these grades acts in addition to the 20 cents per ton extra cost as a serious retardant to the operation of these low-level houses. As a consequence, all the railways have aspired to secure the advantages of a location on the upper level, and 12 years ago the Pennsyl-



Layout of the Freight House and Team Yard

up road trains. The location of the plant at the upper level of the city near the center of the business section reduces trucking charges about 20 cents per ton and this material saving to shippers furnishes the warrant for the expenditure.

When opened for service the new plant will replace the old local freight facilities which were inadequate and incapable of expansion to meet the present day needs. The facilities to be abandoned include inbound and outbound pier freight houses near the Union station, an inbound house at Front street, and an outbound house at Central Way, all

vania built the first station on this level. This was an immediate success and resulted in a remarkable increase in the volume of business handled. Following the construction of the Pennsylvania's upper level facilities, several similar projects were planned, some of which are now under construction. Of these, the New York Central plant is the largest and most important.

The preliminary studies from which the design and size of this station were determined were exhaustive, including investigations into the growth of Cleveland for several years

past and the relation of the growth in population to the volume of business handled. Studies were also made at New York Central freight houses in various cities along the line, with a view to determining the most economical length of house, the net floor area required per ton of freight handled per day, and the relation of driveway access to economical operating.

Design Based on Extensive Study

From these studies it was developed that the population of Cleveland has for many years increased at the rate of 4 per cent compounded annually, and that the corresponding increase of freight handled was about 7 per cent. Based on Anallogon's experience it was estimated that the increase in the volume of business to be expected within the next two years resulting from the new location would amount approximately to 120,000 tons. With all this data in hand a profile was platted from which was estimated approximately the capacity which will be required in any future year.

The decision as to the length of the house to be adopted was based on the possibilities of the site and studies made at other New York Central inbound freight stations. In these studies the problem of trucking in the house, especially of inbound freight, was given particular attention, and 1,250 ft. for house length was determined upon as the approximate limit consistent with economical operation.

These studies made at other houses developed the fact that 135 sq. ft. net floor area or 150 sq. ft. gross floor area is required for each ton of freight handled per day, and that the driveway is a limiting factor in the tonnage handled per day per door. Consequently in the new layout the question of improved driveways was given particular attention and while the investigation showed but 13.5 tons of freight handled per day per door in some of the older plants, 15 tons was assumed for the new facilities. With these figures in hand, it was only necessary to assume a door spacing, which in this case was called 10 ft. center to center, and to determine on the number of floors to be served, to arrive at the house width. In this plant, with three floors in the freight house proper and assuming 150 sq. ft. gross floor area per ton of freight handled per day, and 15 tons as the capacity of a door, the width indicated was 75 ft; and this

indicated that the average monthly tonnage handled is about 88.6 per cent of the maximum monthly tonnage. With this correction made the chart showing the growth of the city and the amount of the yearly increase in the volume of business handled could be used to determine how long these facilities could be expected to fulfill the requirements, and in this instance 1930 is the year indicated when the maximum capacity of the plant will be reached.

General Layout

The new plant is located conveniently to the business section of the city. The buildings are arranged in the form



Interior of the Inbound House

of a U, the two houses being parallel to each other and connected at the west end by a 50-ft. platform over which the head house is erected. The 156-ft. space between the buildings is occupied by tracks and platforms. The site was thickly settled and crossed by many streets and alleys. Within the bounds of the terminal property these streets have been vacated by the city and in return therefor, the railroad was required to widen and extend certain streets in the vicinity, and to construct a new street, 80 ft. wide



Exterior of the Head House and the Inbound House

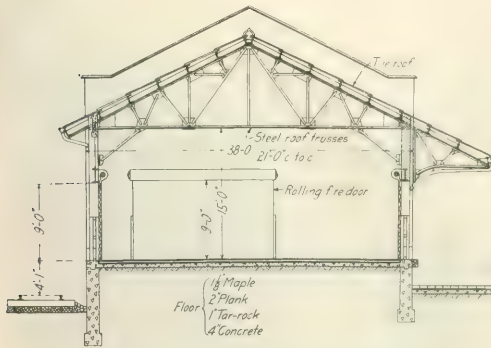
width was not changed when the number of door spaces was reduced in changing the panel spacing from 20 ft. to 21 ft.

Still assuming 150 sq. ft. gross floor area required for each ton of freight handled per day, with three floors and a width of house of 75 ft. the capacity per day was determined to be 1.5 tons per linear foot of house. This, multiplied by the length of 1,250 ft., results in 1,875 tons as the full daily capacity of the house. This capacity, however, is subject to correction, as it is based on figures giving full capacity, and the studies made at the Cleveland houses in-

called Mayflower road; while Orange avenue, an 80-ft. street adjoining the plant on the north, (the outbound house having a frontage of 1,262 ft. on this street) was made 100 ft. wide by setting the house back 20 ft. from the property line. The head house with three floors occupied by offices has a frontage of 197 ft. on East Fifteenth street, and 125 ft. on Broadway. A driveway 50 ft. wide leading from Broadway has been provided adjoining the inbound house. In the driveways and the new street paving, Medina stone or Durax block has been used.

The outbound freight house is 1,262 ft. in length and

the width was fixed at 38 ft. This is ample for the little storage room needed, and provides plenty of space for working, and aisles for trucking. The house is one story high above the track level except for 296 ft. on the west end, where the office building over the connecting platform was carried around over this house. A basement 485 ft. long



Cross Section of the Outbound House

is provided under the west end of this building. The basement space is utilized for coal storage, boiler, pump, fan and general storage rooms and toilet, locker and lunch facilities for house employees.

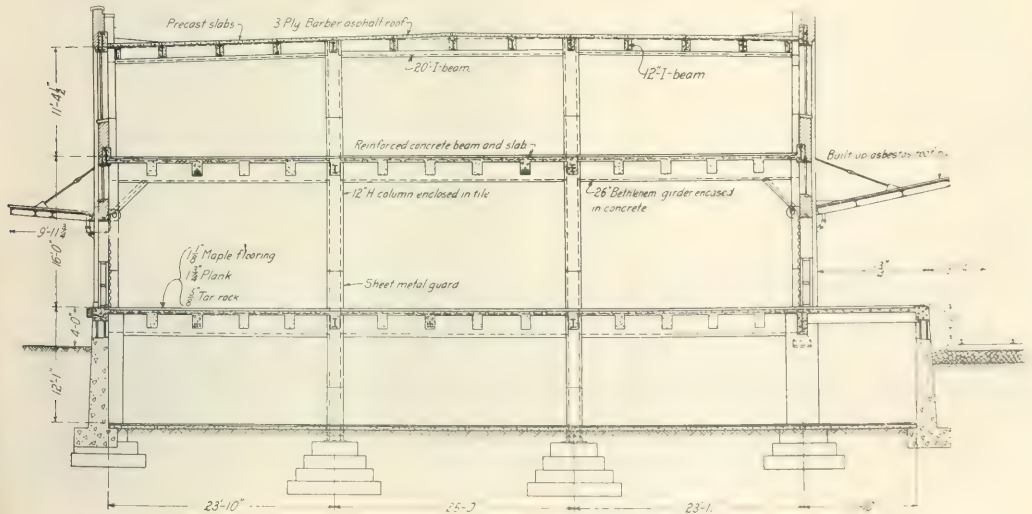
The inbound house is 75 ft. wide and two stories high above the track level with a basement under the entire build-

The 156-ft. space between the two buildings is occupied by a 12-ft. platform adjoining the inbound house, and three island platforms 16 ft. 6 in. wide, separated by four pairs of tracks, spaced 12 ft. center to center. No platform is provided adjoining the outbound house. The centers of near tracks clear the face of the outbound house 6 ft. and the edge of the platform, 5 ft. 9 in. In addition to the 50-ft. platform at the west end, the two houses and the platforms are connected at the east end and at two intermediate points by wooden bridges, 16-ft. wide. These are double leaf bascule bridges, operated by hand at present. Eventually it is proposed to operate them by power.

The bridges divide the house tracks into one 10-car section, and two 9-car sections, making a total capacity of 224 cars for the tracks between the houses, 168 cars of which will be available for outbound setup. Additional track capacity for 11 cars is also provided in the tracks adjoining the automobile loading and receiving platforms, which are located east of and adjoining the houses. Both of these platforms are 300 ft. long.

Structural Details

The buildings are of steel and reinforced concrete construction with vitrified paving brick used for both exterior and interior walls except in the three-story section, where white porcelain brick and terra-cotta trim was used. The longitudinal panel spacing in both houses is 21 ft. to conform to a 42-ft. car length and the doors on the track side of the inbound house are 9 ft. by 9 ft., provided in alternate panels opposite car doors. On the track side of the outbound house where no platform is provided the doors are 9 ft. high by 19 ft. long. Along the driveway all doors are 9 ft. by 9 ft. and the fire doors in the houses are 9 ft. high



Cross Section of the Inbound House

ing and its adjoining platform. The basement space under the building is utilized for freight handling. Storage pipe lines and incidental facilities are carried under the platform.

A basement is provided under the platform and head house, connecting the two houses at the west end. Space is provided in this basement for special freight, a repair shop and garage for tractors, a fireproof vault for the cashier's office, a cooper shop, toilet facilities for men and women employees of the cashier's office and the "jail."

and 12 ft. wide as a rule. Kinnear steel rolling doors were used throughout.

Provision is made in the platforms and doors on the track side to hold the 3/8-in. steel gang planks in place. This is accomplished by providing slots formed of angles to receive heel lugs on the gang planks. The slots are placed 18-in. from the face and the platforms and door-way edges are beveled to 1 in. below the slot, to reduce the amount of arching. The gang planks are 3 ft. 6 in. by 3 ft. 4 in. with

a 3-in. arch provided to make them suit any height of car.

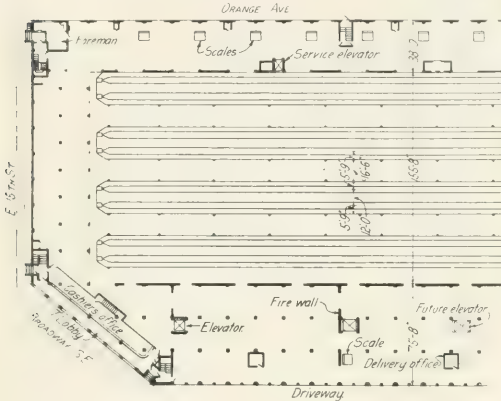
The finished floor of the first story of both houses and of the platforms is of $1\frac{1}{8}$ -in. matched maple laid diagonally on 2-in. planks and treated with carbolineum. The concrete sub-floor in the one-story part of the outbound house is supported on the filling between the foundation walls. Where a basement is provided the sub-floor is of the slab and beam type.

The inbound house is three panels wide and has a flat roof covered with pre-cast concrete slab tile. This type of roof was used over the office portion as well. In the outbound house advantage was taken of the 38-ft. width to

replaced with reinforcement when the occasion demands. The roof is carried on light beams which are bolted so that they can be removed and used higher up.

Modern Operating Appliances

The plant is designed to be operated either by hand or by machines, or by both. For mechanical operation, six electric tractors of the three-wheel-type and 400 four-wheel trailer trucks working in trains will be provided. These



Plan of the West End of the Terminal Building

keep the room clear of posts, the roof trusses spanning between the walls. The roof covering is cement tile.

The driveways for a 10-ft. width immediately adjacent to both houses and the platform adjoining the inbound house are covered with suspended canopies and the timber works of the island platforms are supported on steel side posts



Interior of the Outbound House Showing Ordinary Two-Wheeled Hand Trucks Used as Trailers

tractor trains will be used chiefly for outbound freight where at present it has been planned to operate the trains in a westerly direction in the house and easterly on the platforms.

Because of the size of this plant the usual plan of unit office installation has not been followed. The general office will be on the second floor, with sub-offices located at convenient points throughout the plant. The cashier's office is conveniently located on the first floor at the west end of the building. A private branch telephone will give automatic intercommunicating service between this office and nearly 100 stations in the offices, houses, platforms and



The Yard End of the Terminal, Showing the Method of Handling Freight With a Storage Battery Locomotive and Trailers. The Trucking Bridge Over Tracks No. 6 and 7 Is Elevated.

spaced 42 ft. center to center, and longitudinal trusses. These roofs are covered with a built-up asbestos roofing.

In the construction of the inbound house provision has been made for future floors. The footings have been built large enough to support the additional load and the additional strength of the exterior columns has been secured by surrounding them with reinforced concrete. The interior columns have not been reinforced in the present work, but have been incased in tile which can be removed easily and

yards, and connection to the city telephone service. A pneumatic tube installation for the transmission of bills between offices replaces the usual messenger service.

One 10-ton, five 6-ton and one 5-ton electric elevators are installed in the inbound house and push-button automatic elevator service in the office portion of the outbound house. The 10-ton elevator located at the east end of the house is 9 ft. by 22 ft. providing ample room for handling automobile trucks. For the protection of perishable freight held

for shipment or delivery a cold room is provided on the first floor in the inbound house. The temperature in this room is regulated by an 8-ton refrigerating plant, above which is an ice storage room containing ice used primarily for icing cars.

Twenty-four 6-ft. by 8-ft. automatic dial platform scales are provided in the outbound house and six in the inbound house. The indirect system of lighting is used in the offices, and the direct system in the houses. Plug connections for



Map of the New Terminal Spur

extension lights to be used inside cars are provided at each door and on the platforms.

The fire protection is very complete, including automatic sprinklers in the offices and ultimately in the inbound house, hydrants and standpipes on the platforms and in all the houses, numerous chemical engines, a fire alarm system and city fire alarm boxes. A 150,000-gal. concrete reservoir is provided at the east end of the inbound house to supply water to a 150-h.p. electric fire pump, also a 100,000-gal.

veloped with the aid of rapid-transit facilities. For much of the distance the new line is four-track construction, one-half of which is occupied by the tracks of the Cleveland & Youngstown Railroad.

Beginning at the connection with the belt line the line extends in a westerly direction crossing several streets and two railways. At all crossings the grades have been separated, and with the exception of Kinsman road and East Fifty-fifth street, the new line crosses over the streets. The two railways are also crossed overhead.

The new line was constructed chiefly on fills and involved some very heavy work. The heaviest work was confined to two long fills 75 ft. and 60 ft. high on the double-track portion of the line, and a 35-ft. to 66-ft. fill under the classification yard, which contains 1,250,000 cu. yds. of material which is chiefly waste slag from mills at Sharon, Ohio, and Youngstown. This filling material was brought in by train and much of it dumped through a dumping trestle into bins, from which it was dropped into dump cars, ready for placing in the embankment.

The bridges are all designed for Coopers E-60 loading and girders were used where the length allowed. The bridge over the Pennsylvania tracks is a truss span. Reinforced concrete arches were provided at several points. The concrete work also included more than a mile of box-section reinforced concrete sewer built under the yards.

Auxiliary Facilities

Two yards have been provided in the layout, the lower yard for storage and classification, and the upper containing the team tracks and house tracks. The lower yard comprises an inbound and an outbound yard each having a capacity for 500 cars and arranged for gravity switching. The inbound freight is classified in the section of the lower yard between Kinsman road and East Fifty-fifth street, and



The Concrete Bridge Over Hilton Ave.

tank on a 105-ft. tower is to be added when the sprinklers are installed in the inbound house.

Long Spur Connection Required

As may be seen in the map of the city the terminal occupies a site remote from the New York Central tracks. To reach it a new double track line $3\frac{1}{2}$ miles long was built from a connection with the New York Central belt line near Buckeye road. The line was built in connection with the Cleveland & Youngstown Railroad, a line constructed to furnish transportation facilities to Shaker Heights, a desirable residential section of Cleveland, which is being de-

veloped with the aid of rapid-transit facilities. For much of the distance the new line is four-track construction, one-half of which is occupied by the tracks of the Cleveland & Youngstown Railroad. The upper yard occupies a site about one-half mile long and 600 ft. wide and contains approximately 35 acres. This yard contains 27 team tracks with a capacity for 550 cars, and the tracks serving the terminal buildings with a capacity for 235 cars. In spite of the heavy construction on the line, a grade of 2 per cent was necessary up from the outbound yard, and a 1.27 per cent grade up from the inbound yard. The terminal yard is approximately level.

The main units of the team yards are the outbound yard facing on Orange avenue with a capacity for 162 cars, and the inbound yard with an ultimate possible capacity for 397

cars, facing on Broadway. An office, 20 ft. by 30 ft., built of brick and containing toilet and other facilities for the working force will be provided for each of these large units.

The team tracks have an average capacity for 20 cars, permitting of easy switching. While the value of property was considered, and care was taken not to be extravagant with space in the design of these yards, operation was considered first, and driveways were made unusually wide, those in the outbound yard being made 40 ft. wide, while the inbound yard will have 37 ft. driveway. These widths permit the longest automobile trucks to back up to a car without blocking the drive. A gantry crane with a 25-ton main hoist and a 5-ton auxiliary hoist will be provided in the inbound team yard. This will span one driveway with cantilever arms reaching out over adjoining driveways thus serving four tracks and three driveways.

The design of the terminal yard was made with a view to rapid switching and the track arrangements permit several engines to work at the houses and in the team yards at one time without interfering with each other. This makes for economical and rapid operation of the house.

Work on this project was begun in 1913, and in June, 1917, the building construction was started. The greater part of both houses are now in operation, with temporary office facilities and it is believed that the houses will be completed and the plant, except the inbound team yard and part of the lower yard, in full operation by August 1, 1918.

This terminal was designed by Samuel Rockwell, consulting engineer of the New York Central at Cleveland, who has been in full charge of the construction. The Watson Engineering Company, Cleveland, has had charge of the structural, architectural and mechanical design and supervision of the buildings during construction. The Walsh Construction Company, Davenport, Iowa, was the general contractor for the railroad construction and the principal contractor on the building work.

Railway Notes from China

PEKING.

THE MINISTER OF COMMUNICATIONS has reported to the creations of the government railways in 1917. This is Cabinet a profit of \$13,500,000 (silver) from the operation of over \$6,500,000 compared with 1916, and an increase of nearly \$4,000,000 compared with 1915. This profit is the sum remaining after payment of operating expenses, interest, and other financial charges. However, it is not clear from the report that this estimate has included anything for the transportation of troops and other military supplies, which probably amounted to three or four million dollars at the half-rates usually assessed upon this class of traffic. On the other hand nothing has been deducted to allow for the depreciated value of bank notes in which a considerable portion of the revenue was collected.

By the end of 1917 two important new lines were so far constructed as to be carrying public traffic. The most important of the two was the line from Wuchang—on the south bank of the Yang Ste river, opposite Hankow—to Changsha. This line extends about 260 miles and is a section of the much desired Canton Hankow line. It is being financed by the Four Nation Group of banks of which the American representatives are J. P. Morgan & Co., Kuhn, Loeb & Co., the First National Bank, and the National City Bank. Chinese private capital has been slowly building northward from a connection with a government line running out of Canton. The gap between this new section and the Chinese section is now reduced to about 250 miles.

The other line is one of 55 miles running from Ssipingkai to Chenchiatun. Ssipingkai is on the South Manchurian railway about 100 miles north of Mukden. When exchange

rates and the market for materials become more favorable this line is to be extended as far west as Jehol. This line was financed by the Yokohama Specie Bank, the Chinese government giving the usual guarantees and a mortgage upon the line. It is operated as a branch of the South Manchurian Railway, which is under Japanese control.

Japanese engineers are reported to be making a reconnaissance survey of a line from a junction with the Shantung railway at Tsinanfu westward to a connection with the Taokow Chinghua line which crosses the Peking Hankow line. From entirely different sources comes a report that prior to his late resumption of office, the Chinese Premier had arranged with a "certain power" for a loan of \$20,000,000 to be had in connection with "a railway near Shantung." Such a line would be a very valuable feeder to the Shantung Railway—something of which it appears to be in need. It would also be a splendid instrument in the service of the present Japanese policy of peaceful penetration, extending as it would a trunk line from the magnificent harbor of Tsing Tau, taken from the Germans by the Japanese, to the heart of North China. At the same time, civil administrative courts are being set up by the Japanese at various points in Shantung, and Japanese interests have secured a partnership with the Siems Carey Railway & Canal Company for the rehabilitation of the Grand Canal which traverses the same province.

* * *

An interesting change in the terms of loans to the Chinese government is offered in the contract with the Fu Chung Corporation for two locomotives and 50 new coal cars for use on the Taokow Chinghua Railway. Hitherto a mortgage upon some definite property or revenue has been given as security, but in this case the mere guaranty of the Ministry of Communications has been accepted as sufficient.

* * *

A new departure by way of stimulating esprit de corps upon Chinese railways was inaugurated on April 5, by the Peking-Hankow line. That date being Arbor Day and a holiday, the formal ceremonies were merged with a picnic excursion. A special train carried a large part of the office force from Peking to a station in the western hills, where the railway proposes to start a tree plantation. Each person present, including the managing director, planted one or more trees in rows previously indicated, after which the day was spent in games and rambles to historic points in this ancient royal playground. To Americans such an event seems commonplace. But in China previous to the confiscation of the Manchu lands there were no places in which to hold picnics, and recreation was almost invariably sought in tea houses and theatres. The managing director of the Peking-Hankow line, Dr. C. C. Wang, holds degrees from the University of Illinois and from Yale.

* * *

The recent collapse of a bridge under a soldier train upon the Peking-Hankow line near Hwayuan brings up the subject of rebuilding very sharply. A similar collapse occurred last year upon the same line. These bridges were originally designed for light traffic, for it was not known at the time this line was built how rapidly traffic could be developed upon Chinese railways. The typical locomotive during the first years of operation was very similar to the old American Eight-wheeler. Now super-heated Consolidations are being used and the maintenance of the bridges is perhaps not of the best; hence slow orders must be observed. But soldier trains as a rule do not observe slow orders. In 1920 the original expected life of the great Yellow River bridge will expire. Materials will no doubt be sought abroad. Recently when tenders were invited for certain bridge materials, the bids from Chinese firms, now under Japanese control, were so high as to make it obvious that the business was not wanted.

Doings of the United States Railroad Administration

Railroad Property Insured by Government; Vigorous Criticism of Proposed Compensation Contract

WASHINGTON, D. C.

DIRECTOR GENERAL McADOO, who held a conference with the regional directors and federal managers of the central western and northwestern regions and C. R. Gray and Edward Chambers, of his Washington staff, at San Francisco the early part of the week, is returning east by way of Seattle. R. S. Lovett, director of the division of capital expenditures, left Washington on Tuesday to meet him at Seattle for conference regarding capital expenditures necessary to obtain a greater unification of the railroad facilities in the far west, in such ways as by connecting competing lines for use as double tracks, etc.

Compensation Contract

That the negotiations regarding the railroad compensation contract between the representatives of the Railroad Administration, the railroad executives and the National Association of Owners of Railroad Securities have by no means reached a conclusion was indicated following meetings of the Railway Executives' Advisory Committee and committees representing the security owners' organization held in New York last week, July 11 and 12.

After receiving a report from the law committee of which Alfred P. Thom is chairman, regarding the progress of the negotiations, the executives' committee gave out a statement saying that it felt that the government's proposed draft of the standard clauses for the contract, dated July 5, was "in the main acceptable," but that there were some points which the committee desires to discuss further with the government's representatives.

At a meeting of a sub-executive committee and a special committee of the security owners' association held afterward, however, a resolution was adopted expressing the judgment of the committees that the tentative draft was "unacceptable" in several important particulars, and that the committees proceed by further negotiations and by appeal to the director general with the effort to secure modifications. It was also resolved that in making such efforts the committees co-operate with the Railway Executives' Advisory Committee.

Features of the contract which in the present form are unsatisfactory to the security holders were outlined in the following communication addressed to T. DeWitt Cuyler, chairman of the Railway Executives' Advisory Committee, by S. Davies Warfield, president of the association and chairman of the committees:

"Referring to the tentative draft of contract recently submitted by the representatives of the government for the federal control and operation of the railroads during the period of the war, in the negotiations of which your law committee and the committees representing the owners of railroad securities have taken part, while it presents important modifications in the compensation clauses of the contract there still remains the necessity for requesting a further modification of the terms of this provision. Other provisions of this contract, however, are retained in the same objectionable form which the committees representing both your committee and the association of security owners have contended should be corrected and which are still in extremely unsatisfactory shape and do not protect the credit of the railroads nor the owners of their securities to the extent which we have the right to ask and to expect.

"It has been generally assumed that in some way the tentative draft of contract provides a *guaranty* of the payment of interest and regular dividends heretofore paid on

the securities of the railroads. The security holder has also assumed that as to the principal of his investment he would be at least as safe as before; since it has been believed that the government under the contract will only use the railroad's transportation system, and that at the end of the period would return in each case a going transportation system not less solvent or less capable of private operation than when it was received by the government. We do not need to point out to you that this will not be the result under the tentative form of contract which is now submitted.

"While we should now appeal to the representatives of the government who have appeared in these negotiations, they may feel that further modification of this contract that we may deem essential to the protection of the railroads and the holders of their securities must be obtained through Director General of Railroads McAdoo. We have apparently arrived at the point which it was contemplated might result and which you provided for in your announcement at the last meeting of your full committee held June 5, 1918, that should this time come you would name several members of your committee and ask us to appoint several members of our committee to lay directly before Mr. McAdoo what we now feel to be the essentials.

"We ask that before any definite action is taken in respect to this tentative draft of contract by your full committee that an opportunity be afforded to bring to the attention of the director general and those in high authority the dangers we contend will be met in the execution of the draft of contract now to be considered by your full committee and which the representatives of the government in its submission have printed thereon: 'Tentative Draft.'

"Congress expected that this contract would be made by the President or else his nominee, the director general, who is also the secretary of the treasury, and who doubtless would be glad to have the views of those who represent so vast an ownership in the securities of the railroads, before the contract is finally agreed to. The security holders have a right to expect that this contract shall be finally negotiated with him before any final action shall be taken upon it by the directors or the executives of the railroad corporations."

The objections pointed out in the letter and in which the security owners feel there is a failure to protect their interests are summarized, in a statement issued by the association, as follows:

1. It requires the carrier, in advance of any knowledge of the changes which are to be made in the operation of its property, to release the government from all claim for compensation for the abandonment of all or a part of its system of transportation; the severance of its connections and the destruction of its business, although nothing in the act of Congress contemplated that any such unreasonable demand should be made.

The contract requires that the company, in order to secure the standard return which is given it by the act of Congress by way of rental for the use, possession and control of its physical properties during federal control, and for nothing else, shall at this time accept that standard return (in the words of the contract):

"in full adjustment, settlement, satisfaction and discharge of any and all claims and rights at law or in equity which it now has or hereafter can have—under the constitution and laws of the United States—for any and all loss and

damage to its business or traffic by reason of its diversion or otherwise which has been or may be caused by said taking or by said possession, use, control and operation."

It thus strips the company at the outset of every vestige of right to complain of the destruction of its good-will and business without compensation. It is a blind blanket warrant to the government that permits it, in the process of unifying the railway systems of the country, to abandon the operation of any portion of a transportation system, sever and cancel its contract agreements and connections, divert, disrupt and destroy the business that has taken generations and millions to upbuild, and to hand back the physical property, which is the mere empty shell of what was surrendered to the government, stripped of everything that was of value.

In advance of the knowledge of the extent to which the property is thus to be dismembered under this unthinkable blank power of attorney, the company is now required to approve all that may be done and to keep and save the government harmless against the destructive consequences. If the trustees holding the securities of these roads were to acquiesce therein without protest, they would be rightly held by the courts to a rigid accountability.

Nowhere in the legislation is there any justification or excuse for such an extraordinary exaction.

There is another point of view which renders it imperative that this release shall be stricken from the contract as bearing on its effect on possible government ownership. If the companies now agree that the abandonment of operations, the diversion of traffic, and the destruction of good-will may be perpetrated free from any claim for damages, they will not hereafter be able to contend for these intangibles as elements of value when the time comes, if it does come, for government ownership.

2. Under the contract as it now stands the director general in his uncontrolled discretion may make capital expenditures for war purposes and for road extensions, as well as for additions and betterments, terminals and equipment; may charge the carrier with the cost thereof and the current enormous prices of material and labor; may take this action without consulting the board of directors of the carrier, and without regarding its means of paying therefor; may force the carrier to give up all claims for any "loss" occasioned it as respects such thereof as are made in connection with maintenance, unless the claim is litigated within sixty days after notice of the completion of the work, although it is likely that whether or not a loss will be incurred cannot be known at that time, and although such betterments and additions made at the same time as maintenance constitute perhaps the greater proportion of a railroad's expenditures for this purpose; and may prevent the carrier from claiming any loss because of the abnormal cost which may be incurred by the director general in the making of such betterments and improvements, and subject to all these restrictions gives to the carrier only the problematical benefits of a suit against the government before the Interstate Commerce Commission or in the court of claims before the road can get back the money which was taken from it without its consent or offset the indebtedness which was forced upon it without its approval, to pay for additions and improvements which it did not want.

3. It contains no assurance that interest as heretofore paid will continue to be paid, since in addition to other deductions and expenses which will have to be paid out of the standard return before the companies can pay interest there must be deducted by the government from the compensation the so-called "excess maintenance," which, in the discretion of the director general, may be placed on the property of the carriers, there being in the contract a provision by which the railroad may be excessively maintained (over and above its own standard), and the cost of such

excessive maintenance be deducted from the compensation, even though such course should result in defaults in interest.

While the like provision relating to additions and betterments has been so far modified that the standard return cannot be absorbed for the cost of additions and betterments until after sinking fund payments, corporate expenses, and fixed charges have been deducted, no such concession is made with respect to "excess maintenance." The result of this is that the standard return which is supposed to be fixed in the contract in so many dollars and cents, and on which the company was expected to be able to definitely rely as its rental value for the use of its property and out of which it could pay its taxes, fixed charges, dividends and the expenses of maintaining its corporate organization, becomes in many cases worthless and meaningless. No one can foretell what the director general may hereafter regard as proper maintenance, nor when this unknown factor will be determined. Meantime the companies cannot know whether or what part of the standard return belongs to them or to the government.

Some roads cannot afford and could not be operated under the standard of maintenance applicable to others. If a road has been poorly maintained, that condition is reflected in its higher operating costs and lower net operating revenue, which means that the government pays rental by way of standard return for the test period just so much less, and should not be allowed to put upon the property by way of maintenance at the expense of the lessor a greater sum than that on which the net operating increase that is the measure of the rental was based.

4. Interstate Commerce Commission Powers, Sec. 5, Sub-section *h*, provides that all disputed questions of upkeep shall be referred to the commission, whose decision should be final except on questions of law. This might place the issue of the financial life or death of the company in the hands of the commission without the right of review. Other provisions of the contract deal in like manner with controversies that may arise.

No want of confidence in the commission is indicated in asking that its conclusions shall at least be subject to the review of a judicial tribunal on questions of fact as well as of law. The United States Circuit Courts of Appeals are suggested as the proper appellate tribunal and the committees are quite willing that its determination shall be final.

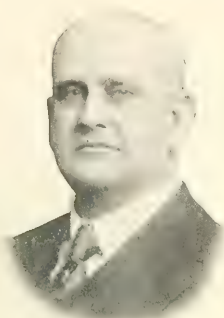
5. It contains no assurance that payments of regular dividends heretofore paid will be continued, for, in addition to the expenses and deductions mentioned above with regard to interest, there may also be deducted ahead of dividends all amounts necessary to reimburse the United States for additions and betterments, in uncontrolled amount, which the government officials may place upon the property of the company (other than road extensions and additions and betterments made solely for war purposes). It is true that the contract declares that it will be the policy of the government to permit the payment of regular dividends heretofore paid, if this can be done, and the additions and betterments paid for without resort to the compensation of the carrier, but this is a mere declaration of policy not binding upon the government and is not expected to be followed where a road cannot furnish full security promptly to reimburse the government for the cost of the additions and betterments forced upon it by the director general.

6. It contains no restriction on the amount of additions and betterments (whether for war purposes or road extensions or otherwise) chargeable against the road's funds and corporate property. The amounts so to be expended and charged are left entirely to the uncontrolled discretion of the director general. Expenditures for war purposes and for road extensions may not be subtracted from the compensation, but they are nevertheless to be charged against the other funds of the carrier, or the carrier loaded with in-

Federal Managers and General Managers



E. E. Calvin
Federal Manager, Union Pacific



J. L. Lancaster
Federal Manager, Texas & Pacific



W. C. Bied
Federal Manager, Chicago & Alton



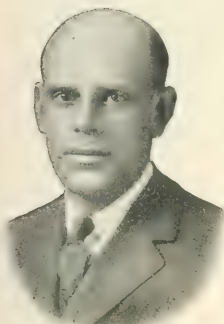
E. L. Brown
Federal General Manager, Denver &
Rio Grande



W. H. Bremner
Federal General Manager, Minneapolis
& St. Louis



W. L. Park
Federal General Manager, Chicago
Great Western



H. C. May
Federal General Manager, Chicago,
Indianapolis & Louisville



W. R. Scott
Federal Manager, Southern Pacific
Lines West of El Paso and Ogden
and South of Ashland, Ore.;
also the Western Pacific



W. B. Storey
Federal Manager, Atchison, Topeka &
Santa Fe

debtedness to the United States to pay for the same. The only recourse of the carrier to offset the imposition of these charges for additions and betterments, which it may not want and cannot afford and may be of no benefit to it, is to "claim" a "loss" in litigation against the government where it has the burden of proving the negative proposition that these undesired matters are of no benefit to it.

7. It departs from the provisions of the act and does not assure the reasonable rate of interest contemplated by the act to be fixed by the director general on the costs of additions, betterments and extensions which may be made by or charged to the carrier, but, on the contrary, contains language intended to permit the reduction of such reasonable rate of interest as determined by the value of money, by certain other factors, being certain economic theories, the effect of which would be to cause the carrier to receive no rate of return on part of the amounts invested or, when averaged, a less average rate of interest on the cash used than the carrier will have to pay in borrowing the very funds from the government or from other sources. If this power is so exercised, the carrier will be subject to a continually increasing loss, as the amount of such capital expenditures accumulate, which will go further to reduce each year the net amount available out of the standard return for the payment of its expenses and charges.

These seven sections include the main points, but the letter sets forth other objections to the contract and requests that the objections be taken up with the director general before any decision is reached with respect to the contract.

It is understood that one of the chief points which the railway executives desire to have discussed further is the matter of rentals for leased roads, which they believe should have the same protection which the government has already conceded as to interest on bonds in the provision that the power to deduct the cost of additions and betterments shall not be exercised to prevent the payment of sums required to support the corporate organization, for sinking funds, for interest which has been regularly paid by the company and for interest on loans issued during federal control approved by the director general. Several other important points will also be taken up with the director general if possible.

While the statement issued by the security owners' committee represents a more belligerent attitude than that expressed by the executives, it is understood that some of the points on which further discussion was desired by the executives are included in the objections named by the Warfield committees.

The government has been represented throughout most of the period of the negotiations by Nathan Matthews, special counsel, and several members of the Interstate Commerce Commission, but more recently Walker D. Hines, assistant to the director general; John Barton Payne, general counsel, and R. S. Lovett, director of the division of capital expenditures, have taken a more active part. Both the executives and the security owners apparently have hopes of further concessions at the hands of Mr. McAdoo, on the theory that he has repeatedly expressed his interest in stabilizing railway credit, whereas they consider that the degree of control over the amount paid to the companies as compensation which the representatives of the administration have insisted upon, and the extent to which the so-called standard return could be whittled down by the exercise of the powers conferred upon the government in the tentative draft, would have an entirely contrary effect. The representatives of the government in the negotiations have apparently taken the position that the credit of the railways is of less concern than it otherwise would be for the reason that if the railway companies are unable to finance their requirements the government would have to furnish its own credit, whereas the railways naturally prefer to have their credit maintained sufficiently to obviate the necessity of taking

loans from the government and to have it less dependent upon the policy of the administration.

The draft of the contract referred to in the statements issued after the meeting was that of July 5, which was outlined in last week's issue. A later draft was printed on July 10 with some further changes, and it is likely that there will be several others.

The Railroad Administration on July 10 issued a statement by Director General McAdoo saying that there was no basis for reports that the Pennsylvania and Baltimore & Ohio had deferred their regular dividends because the contract had not been signed. The statement quoted statements issued by the two boards at their latest meetings that dividend action had been postponed because the board would not adjourn over the summer months. The statement added: "The Railroad Administration upon showing of reasonable necessity is making advances to railroads on account of just compensation until the contract can be agreed upon and executed. It is my desire and plan to do every reasonable and just thing for railroad security holders pending the execution of the contracts."

Short Lines Apportioned to Regions

The Railroad Administration on July 10 issued circulars distributing among the seven regions 125 of the short line railroads which were retained under federal control at the time a large number of the short line roads were relinquished. These roads in most cases were included in the supplemental list of railroads to which the wage increase order was made applicable, which was published in last week's issue. It also included three roads, the Birmingham & North Western, the Kansas City, Mexico & Orient, and the Mineral Range, which had not been included in the earlier list, indicating that they have since been taken over.

In addition to the railroads named in Circular No. 28, the following railroads are included in the Allegheny Region: Buffalo & Susquehanna; Cherry Tree & Dixonville; Cumberland & Pennsylvania; Huntingdon & Broad Top Mountain; Long Island; Monongahela; Philadelphia Belt Line; Pittsburg, Chartiers & Youghiogeny; Staten Island Rapid Transit; Union Railroad (Pennsylvania), and Washington Terminal.

In addition to the railroads named in Circular No. 30, the following railroad is included in the Pocahontas Region: Ashland Coal & Iron.

In addition to the railroads named in Circular No. 33, the following railroads are included in the Northwestern Region: Baltimore & Ohio Chicago Terminal; Belt Railway of Chicago; Butte, Anaconda & Pacific; Calumet Western; Camas Prairie; Chicago Heights Terminal Transfer; Chicago Junction; Chicago, Milwaukee & Gary; Chicago River & Indiana; Chicago Union Station; Chicago & Western Indiana; Copper Range; Des Moines Union; Des Moines Western; Duluth & Iron Range; Duluth, Missabe & Northern; Duluth, South Shore & Atlantic; Elgin, Joliet & Eastern; Englewood Connecting; Escanaba & Lake Superior; Ft. Dodge, Des Moines & Southern; Green Bay & Western; Indiana Harbor Belt; Iowa Transfer; Lake Superior Terminal & Transfer; Mineral Range; Minneapolis Belt Line; Minneapolis & Eastern; Minnesota Transfer; Ontonagon; Oregon Electric; Pacific Coast; Port Townsend & Puget Sound; St. Charles Air Line; St. Paul Bridge & Terminal; St. Paul Union Depot Co.; Sioux City Terminal; South Chicago & Southern; Stock Yards Terminal of St. Paul; Union Stock Yards Co. of Omaha; Waterloo, Cedar Falls & Northern, and Waupaca-Green Bay.

In addition to the railroads named in Circular No. 34, the following railroads are included in the Central Western Region: Arizona Eastern; Atchison & Eastern Bridge Company; Atchison Union Depot & Railroad Co.; Colorado Springs & Cripple Creek District; Denver Union Terminal;

Evansville & Indianapolis; Kansas City Connecting; Keokuk Union Depot Company; Leavenworth Depot & Railroad Co.; Ogden Union Railroad & Depot Company; Pan Handle & Santa Fe; Peoria & Pekin Union; Pueblo Union Depot & Railroad Co.; Riverside, Rialto & Pacific; Salt Lake City Union Depot & Railroad Co.; Toledo, Peoria & Western, and Wichita Union Terminal. The following railway is transferred from the Southwestern Region to the Central Western Region: Wabash (Lines west of the Mississippi river).

In addition to the railroads named in Circular No. 35, the following railroads are included in the Southwestern Region: Abilene & Southern; Alton & Southern; East St. Louis National Stock Yards Co.; East St. Louis & Suburban; Fort Worth Belt; Fort Worth Union Passenger Station Co.; Galveston, Houston & Henderson; Houston Belt & Terminal; Houston & Brazos Valley; Illinois Terminal; Joplin Union Depot Company; Kansas City, Mexico & Orient; Litchfield & Madison; Missouri & Illinois Bridge & Belt; Oklahoma Belt; St. Joseph Belt; St. Joseph Union Depot Co.; St. Louis & Belleville Electric; St. Louis Merchants Bridge Terminal; St. Louis National Stock Yard Company; St. Louis & O'Fallon; St. Louis, Troy & Eastern; San Antonio, Uvalde & Gulf; Southern Illinois & Missouri Bridge Co.; Terminal Railroad Association of St. Louis; Texas Midland; Trans-Mississippi Terminal; Union Terminal Co. of Dallas; Vicksburg, Shreveport & Pacific; West Tulsa Belt and Wiggins Ferry Company. The following railway is transferred from the Central Western Region to the Southwestern Region: Chicago, Rock Island & Pacific (Tucumcari, N. M., to El Reno, Okla.; south of Herington, Kansas, to Chickasha, Okla., including branches).

The following railroads are added to the Eastern Region: Akron & Barberton Belt; Akron Union Passenger Depot Co.; Boston Terminal Co.; Brooklyn Eastern District Terminal; Buffalo Creek; Central Union Depot of Cincinnati; Dayton & Union; Dayton Union; Detroit, Bay City & Western; Detroit Terminal; Indianapolis Union; Jay Street Terminal (New York); Kentucky & Indiana Terminal; New York Dock Company; Toledo Terminal; Troy Union, and Zanesville Terminal.

The following railroads are added to the Southern Region: Alabama & Vicksburg; Birmingham & Northwestern; Memphis Union Station; Mississippi Central; New Orleans Great Northern, and Winston-Salem Southbound. The following railway is transferred from the Southwestern to the Southern Region: St. Louis-San Francisco (between Memphis and Birmingham).

President Vetoes Short Line Resolution

President Wilson returned to the Senate on July 11 the joint resolution extending the time within which the President may relinquish any railroad from federal control, which he vetoed because of the amendment to prevent the relinquishment of a road unless its competitors and connections were also released. In his veto message the President said:

"I do so because I very respectfully but very earnestly dissent from the policy which it embodies. Under its terms the government would be obliged to assume the control and administration of all short-line railroads without discrimination. I respectfully submit that this is not in the public interest. There are terminal short lines at many centers of freight shipment and some seventeen hundred short lines which were built and are controlled by manufacturing, mining, lumbering and other companies and which are operated merely for the convenience of those companies, which would be included under the language of this resolution, very few of which, it seems to me, if any, ought to be taken over and administered by the government.

"The remaining short roads are feeders to the main trunk

lines, and more than mere feeders most of them, for they have in most instances played a very important part in building up the industries of the communities through which they run and have become essential to the prosperity of hundreds of towns and neighborhoods all over the Union. I quite agree that practically all of these should be retained and that they should not only be retained, but that they should be accorded a fair division of joint rates—a fairer division than some of them have been accorded hitherto—an equitable allotment of cars and motive power, and fair routing arrangements. Some of them constitute connecting links between two or more trunk-line systems. Those which play this part in the system of railways ought to be accorded as full a share in through shipments as is consistent with the general interests of the shipper and the public.

"This is the policy which the Railroad Administration will pursue towards these roads. They will not be put at an unfair or ruinous disadvantage. The government owes a recognized obligation to the communities which they serve, but it is not in my judgment wise to oblige the government to deal in the same way with all of them regardless of the very great variety of circumstances which affect their facilities and their administration. I beg that the Congress will leave the government free to enter into arrangements with them which will in each case be to the interest alike of the road dealt with and of the local public."

Rates to Be Changed Without Authority of the Interstate Commerce Commission

Railroads under federal control are not to ask the Interstate Commerce Commission for permission to file tariffs changing rates, fares, charges, etc., applying wholly to carriers under federal control, as provided by the amendment to the fifteenth section of the commerce law adopted last summer, but are to obtain their authority from the Division of Traffic of the Railroad Administration, according to a circular of instructions, Circular No. 1-A, issued by Edward Chambers, director of the division, to traffic committees, railroad and water lines and tariff publishing agents. The circular is dated July 1, but was not issued until several days later. These instructions not only obviate the necessity of securing authority from the commission to increase a rate but do away with the necessity of the 30 days' notice required by Section 6 of the act, leaving the amount of notice to be determined by the traffic division, and the practice in the case of several changes made in rates ordered advanced by General Order No. 28 has been to allow one day's notice. Many withdrawals of applications filed with the commission under the fifteenth section have already been made. Shippers are protesting against these instructions on the ground that it had been expected that the President's power to initiate rates would be exercised only in case of a general advance but not in ordinary cases. The commission still has jurisdiction over joint rates with carriers not under federal control and the power to review rates after they are in effect, while the state commissions still have the field of the short lines not under federal control.

The instructions to obtain authority from Mr. Chambers' division are contained in sections 3 and 4 of the circular, which is as follows:

SECTION 1

(a) Your attention is directed to Section 20 of General Order No. 28 as amended reading as follows:

"SECTION 20—The rates, fares and charges to be increased under this order are those existing on May 25, 1918, including changes theretofore published but not then effective and not under suspension, except where the Interstate Commerce Commission prior to May 25, 1918, authorized or prescribed rates, fares and charges which shall have been published after May 25, 1918, and previous to June 15, 1918,

the increases herein prescribed shall apply thereto. Such authorized or prescribed rates, fares and charges not so published shall be subsequently revised when published by applying the increases prescribed herein."

(b) When changes are published as authorized by Section 20, the schedule containing such changes shall show as authority therefor (on title page if all changes in the schedule are made under authority of Section 20, otherwise in connection with such portions of the schedule as are published under authority of Section 20), the following:

"Published for the Director General of Railroads under authority of Section 20, General Order No. 28 of the Director General, United States Railroad Administration, dated May 25, 1918, and amended June 12, 1918."

And shall also show reference to any authority or order as required by the Interstate Commerce Commission and shall be made effective upon such notice of filing as may be provided in such authority or order.

SECTION 2

(a) Changes in rates, fares, charges, regulations and practices may be made under the standing rules and authorizations contained in the Interstate Commerce Commission's Tariff Circular 18-A and orders (or reissues thereof) as shown below, without further authority:

Rule 10 (i) and Fifteenth Section } Changes in station lists and in lists of
Order No. 250... } restricted and prohibited commodities.

Rule 10 (j) and Fifteenth Section } Changes in dimensions and capacities of
Order No. 200... } cars, etc.

Rule 56..... } Reduction of joint rates or fares to equal
 } sum of intermediate rates or fares.

Rule 77..... } Establishment of commodity rates from
 } and to intermediate points not to ex-
 } ceed those in effect from or to more
 } distant points.

Special Permission } Establishment of new through routes
No. 44844..... } and terminal deliveries.

(b) When changes are published as authorized in this section the schedule containing such changes shall show as authority therefor (on title page if all changes in the schedule are made under authority of this section, otherwise in connection with such portions of the schedule as are published under authority of this section), the following:

"Published for the Director General of Railroads under authority of Section 2 of Circular No. 1-A of the Director, Division of Traffic, United States Railroad Administration, dated July 1, 1918."

And shall show also reference to any rule or authority as required by the Interstate Commerce Commission and shall be made effective upon such notice of filing as may be provided in such rule or authority.

SECTION 3

(a) Except as provided in Sections 1 and 2 of this circular, no changes shall be made in any freight, passenger or baggage rates, fares, charges, classifications, regulations or practices of the carriers under federal control, including those applying jointly with carriers not under federal control, published in schedules filed with the Interstate Commerce Commission or with State Commissions, except as shall have been authorized by me in an appropriate "Freight Rate Authority," or "Passenger Fare Authority."

(b) When changes are published under authority of such "Freight Rate Authority" or "Passenger Fare Authority" the schedule containing said changes shall show as authority therefor (on the title page if all changes in the schedule are

made under the same authority, otherwise in connection with such portions of the schedule as are made under each authority), the following:

"Published for the Director General of Railroads and filed on..... days' notice with the Interstate Commerce Commission under *Freight Rate Authority No. of the Director, Division of Traffic, United States Railroad Administration, dated....., 19...."

SECTION 4

(a) As no authority other than as required by this circular is necessary to change rates, fares, charges, classifications, regulations or practices applying wholly on carriers under federal control, no application should be made to the Interstate Commerce Commission or to any state commission for authority to advance or modify rates, fares, charges, classifications, regulations or practices applying wholly on such carriers, nor for authority to publish changes therein on short notice, and any such applications made heretofore should be withdrawn. Applications covering rates, fares, charges, classifications, regulations or practices applying jointly to carriers under federal control and those not under such control should not be withdrawn.

(b) After the necessary "Freight Rate Authority" or "Passenger Fare Authority" as required in paragraph (a) of Section 3 of this circular has been secured, applications should be made as required by law or by the rules of the Interstate Commerce Commission or state commissions for authority to advance, modify or publish on short notice changes in rates, fares, charges, classifications, regulations or practices applying jointly to carriers under federal control and those not under such control, and the schedules containing such joint rates, fares, charges, etc., shall show reference to the authority granted by the commission as well as to the "Freight Rate Authority" or "Passenger Fare Authority."

SECTION 5

All schedules hereafter published and filed with the Interstate Commerce Commission containing rates, fares, charges, classifications, regulations or practices of the carriers under federal control, including those applying jointly with carriers not under federal control, shall show clearly that they are the schedules of the United States Railroad Administration by having printed on the title page thereof in large type the words:

"UNITED STATES RAILROAD ADMINISTRATION,
W. G. McAdoo, Director General of Railroads."

SECTION 6

Until further advised all proposed changes in rates, fares, charges, etc., as named in paragraph a of Section 3 of this circular shall be referred to the proper Freight or Passenger Traffic Committee for the Eastern, Southern or Western Territory (through or by the appropriate District Freight Traffic Committee, if on freight traffic) and passed by it to me for "Freight Rate Authority" or "Passenger Fare Authority" where such is desired.

The Interstate Commerce Commission has announced that it will hear arguments on July 24 on the question as to whether the justness and reasonableness of rates, fares, charges, classifications, regulations and practices initiated by the director general under the authority of the federal control act must be determined upon original complaints and new proceedings or whether such issues may be properly raised by amendment to pending complaints wherein the rates, fares, etc., superseded by those initiated by the director general are assailed. This question has been raised by the filing of several petitions in which complainants ask leave

*Use "Passenger Fare Authority" on schedules covering passenger traffic.

to amend their complaints to include the director general as a party defendant and to include allegations concerning rates initiated through the director general.

BONDS FOR TRANSPORTATION CHARGES

The Division of Public Service & Accounting has issued in P. S. & A. Circular No. 16 instructions as to bonds to be required in connection with the extension of credit for transportation charges, as prescribed in paragraph 2 of General Order No. 25, in part as follows:

It should be carefully noted that the giving of a bond will only be permitted or required in certain cases. It is not open to the shipper or consignee to obtain credit by the mere giving of a bond; the cash rule, as explained in P. S. & A. Circular No. 9, must be observed unless the circumstances of each case are such that this cannot properly be done. All bonds given for credit accommodations shall be taken in the name of W. G. McAdoo, Director General of Railroads,(Name of railroad).

Bonds covering the extension of credit will be of two classes, i. e.:

To cover patrons transacting business at one or more points with one carrier: In such cases, applications for credit accommodations shall be filed with an agent of the carrier from which the credit is desired. If, in the judgment of the treasurer, credit should be granted, he shall prepare a bond to cover the maximum credit desired and proceed to have it executed. When executed, he shall authorize the agent or agents at the stations at which the accommodation is desired to extend credit to the extent of the amount applicable to each station. Treasurers shall be the custodians of such bonds.

To cover patrons transacting business at one point with two or more carriers: In such cases applications for credit may be filed with an agent of either of such carriers. He shall proceed to obtain the joint recommendations of the agent of each carrier interested, after which the application with such recommendations shall be transmitted to the treasurer of the carrier with which the application was originally filed. Such treasurer shall thereupon act as provided in paragraph (1) hereof, and if the accommodation be granted or declined, he shall immediately notify the treasurer of each interested carrier of such action. If the accommodation be granted, treasurers of each individual carrier interested shall, upon receipt of notice thereof, authorize their respective agents to extend the credit.

Failure to pay for transportation service within the prescribed credit period shall, as prescribed in General Order No. 25, automatically cancel the accommodation.

In the event of default in payment of transportation charges within the credit period, and unless settlement is promptly made thereafter, the treasurer having jurisdiction shall take immediate steps to realize upon the bonds applicable.

Premiums on all bonds taken under the provisions of General Order No. 25, and all expenses incident thereto, shall be borne by the applicant to whom the accommodation is granted.

It is realized that the instructions contained in this circular do not cover the many contingencies that may arise in connection with these credit matters, and agents and treasurers are therefore expected and are hereby directed to take whatever steps in their judgment may be necessary to properly and adequately protect the interests of the director general and to prevent money losses.

Progress Reports on Capital Expenditures

Judge R. S. Lovett, director, division of capital expenditures, is about to employ two or more engineers experienced in railroad improvement work for the purpose of giving quick and direct information of the commencement and progress

of the more important work authorized by him. These engineers will have no titles and no authority to give or change instructions or even to offer suggestions; their duty will be only to ascertain the facts and report them to him, and any suggestions that they may think advisable to make will be made only to him. They will be instructed to send to the regional director simultaneously a copy of every report they make. They will bear credentials in the form of a letter signed by Judge Lovett.

The engineers will be given memoranda of the more important projects on each line, giving preferred attention to those relatively more urgent, and their instructions will be to go to the headquarters of the line and get such information as may be there available from the engineering or other office having supervision of the work, as to the progress of the work, and then follow up by trips over the line to the scene of the work. This will in no wise affect or relieve the roads of the supervision of the work or of making such reports or recommendations from time to time in regard thereto as may be advisable, but the plan is intended only to supplement, solely for the information of the division, the measures the roads take; and it is hoped that the copies sent to the roads of the reports to Judge Lovett may prove useful to the roads in many cases.

Federal and general managers have been requested to instruct all concerned to afford to these engineers representing the division of capital expenditures, every facility for securing the information and data that they may desire and to enable them to inspect the improvement work in progress on the railroads under their jurisdiction.

Passenger Trains on Time

Daily reports are sent to Director General McAdoo's office by the regional directors as to the regularity of the passenger trains arriving at the principal terminals throughout the country. For a long time these reports have shown marked improvement over the conditions prevailing earlier in the year and recently almost all of the principal trains have been reported regularly on time from day to day. Where trains are late a report is given as to the reason for the delay.

Insurance Section Organized

The Railroad Administration has announced the organization of a new section, under the supervision of the director of finance and purchases, to be known as the Section of Insurance and Fire Protection. As heretofore announced, it will be the general policy of the Railroad Administration to do away with the fire insurance policies heretofore carried, and to have the government itself stand directly responsible to the railroads for fire losses of property in government possession. This section will therefore deal primarily with the prevention of fires through rigid and intelligent inspection, and by insisting upon the observance of rules and regulations intended to prevent the unnecessary destruction of property by fire.

The Insurance Section will have the benefit of the assistance of an advisory committee of men experienced and skilled in the business of fire insurance whose names will hereafter be announced. Charles N. Rambo, of Philadelphia, superintendent and secretary of the Mutual Fire, Marine & Inland Insurance Company, has been selected as manager of the section, and will resign from his present position. Mr. Rambo brings to his work 20 years of experience in the insurance business, and for the past 15 years has devoted his energies to the Mutual Fire, Marine & Inland Insurance Company, which was organized by and in the interest of the railroad companies for the purpose of mutual insurance and of reducing fire insurance costs and premiums.

The Insurance Section will provide a force of skilled inspectors in each region whose duty it will be to see that the rules and regulations intended to reduce fire losses are rig-

idly observed. The insurance inspectors now employed by the various railroads will be utilized as far as desirable. This section will also have general charge of the adjustment of fire losses.

Property Protection Section Active Against Freight Thieves

The Section for the Protection of Railroad Property, which was organized by the Railroad Administration in the Division of Law on March 26 to enforce the laws against theft from cars, stations, sidings and wharves and to take all necessary measures in co-operation with carriers to prevent loss from this cause, has already in the three months of its existence displayed such great activity in its campaign against pilferage that the Department of Justice is complaining that its district attorneys are being overloaded with work.

The organization of the section is under the direction of Philip J. Doherty as manager and includes an assistant manager, five attorneys and five inspectors. In addition, the chief special agents of the railroad companies have been organized for co-operative work with the section and most active assistance has been rendered by the railroad organizations by every means within their power. Indictments have already been obtained against more than 250 individuals in the United States courts alone and approximately as many more in the state courts. One of the attorneys for the section prepared cases and drafted indictments returned by the grand jury at Toledo against 89 individuals. The section has taken advantage of the fact that all property being transported by the railroads is now in the custody of the United States and that a very large proportion of it consists of supplies of various kinds necessary directly or indirectly for the prosecution of the war to make greater use of the machinery of the federal government organization than has been possible in the past. As a result of the work already a number of important roads have reported an improvement as great as 50 per cent.

At the direction of Mr. Doherty, R. S. Mitchell, chief special agent of the Missouri Pacific, organized all the special agents of the railroad carriers entering St. Louis for co-operative effort, and the result has been the return of more than 50 indictments by the grand jury in the United States court there and the recovery of property to a large value, including \$50,000 worth of rubber tires in one seizure. This organization also extended its operations to East St. Louis—one of the worst spots for car tampering in the country. A large number of prosecutions have begun in the southern district of Illinois as the result of the crusade instituted. The result of these efforts at St. Louis is a marked improvement in conditions at those points.

Similar organizations of special agents for co-operative work were instituted at Omaha, Kansas City, Nashville, New Orleans, Cincinnati, Buffalo, Boston, Norfolk and Chicago.

Mississippi and Warrior River Transportation to Be Developed

The much discussed question of developing a system of transportation on the inland waterways provided by the Mississippi and Black Warrior rivers has been settled by Director General McAdoo through the appointment of M. J. Sanders of New Orleans as federal manager of the Mississippi and Warrior waterways. The director general has received full reports on this subject from the Committee on Inland Waterways, from the Western and Southern regional directors and from Director Prouty and Interstate Commerce Commissioner Meyer, all of whom have investigated the matter at his request.

Mr. Sanders will have general direction of the development of the necessary facilities and the construction of re-

quisite barges, tugs, etc., that will be used on the Mississippi river south of St. Louis and on the Black Warrior river route between the Birmingham district in North Alabama and Mobile and New Orleans; the latter city being reached via the Black Warrior river, Mobile Bay, the Gulf of Mexico and Lakes Borgne or Pontchartrain with their connecting canals. Mr. Sanders has been manager of the Leyland Steamship Lines for the ports of New Orleans, Mobile and Pensacola for the last 30 years and has had extensive business connections with all the railroads serving the Gulf ports as well as with the existing river transportation service. In March last he became a member of the Inland Waterways Committee, appointed by the director general to "make a prompt investigation and report as soon as practicable a definite plan describing the extent and the manner in which additional use may be made of the internal waterways for the economical and expeditious movement of traffic of the country, so as to relieve or supplement the railways under existing war conditions."

Mr. Sanders strongly believes that the time has come when the enormous expenditures of the government in the development and improvement of the Mississippi and the Black Warrior rivers should be made to yield some return through the application of progressive methods, modernized facilities, equitable freight rates, and fair differentials, and that the pressure upon the railway facilities of the nation will be sensibly reduced by the adoption of such a policy. He will have the opportunity in the position to which he has been appointed to make a thorough-going test of the possibilities of these waterways under favorable conditions.

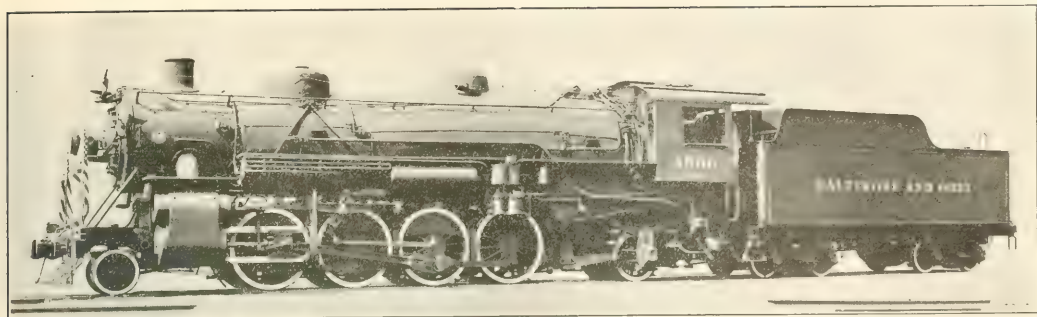
Delaware & Raritan Canal Taken Over

In General Order No. 33 Director General McAdoo announced that G. A. Tomlinson, general manager of the New York Canal Section of the Railroad Administration, is appointed Federal Manager of New York and New Jersey canals, and as such will perform the functions heretofore performed by him as general manager of New York Canal Section and in addition will operate for the director general upon the Delaware & Raritan canal and connecting waters such equipment as the Railroad Administration now has in its possession and control engaged in such operation and such additional equipment as may be assigned for that purpose. He is authorized to enforce and collect such toll charges as are or may hereafter be established for the use of the Delaware & Raritan canal by boats operated by others and empowered to enter into contracts, either in his own name as federal manager or in the name of the director general of railroads, for the purchase of supplies needed in operation and for the transportation of property upon the canal and other waters.

Unclaimed Freight to Be Sold

General Order No. 34 provides that carriers subject to federal control shall sell at public auction to the highest bidder, without advertisement, carload and less than carload non-perishable freight that has been refused or is unclaimed by consignee and has been on hand for a period of 60 days.

The consignee, as described in the waybilling, shall be given due notice by mail of the proposed sale. Perishable freight shall be sold whenever in the judgment of the agent or other representative of the carrier it is necessary to do so, such reasonable effort being made to notify the consignee as described in the waybilling as the circumstances will permit. The place of sale of both non-perishable and perishable freight shall be determined by the carrier. The net proceeds, if any, after deducting freight and other legitimate expenses, will be paid over to the owner on proof of ownership.



First Standard Locomotive to Be Completed for the Railroad Administration

First of the U. S. Standard Locomotives Completed

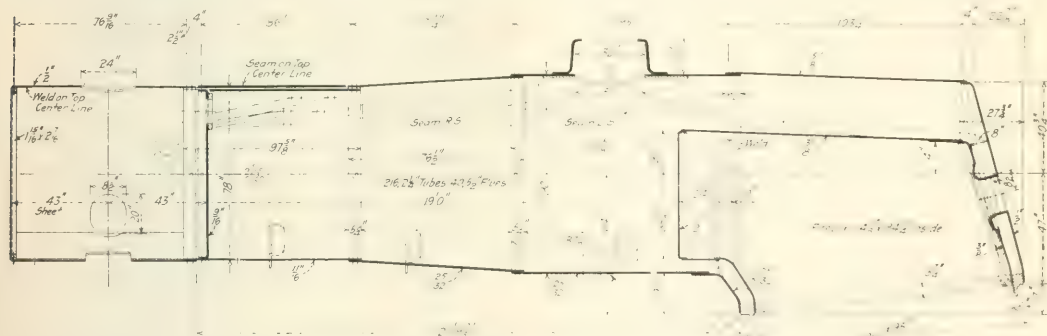
Light Mikado Type Built by the Baldwin Locomotive Works;
Now in Service on the Baltimore & Ohio

THE FIRST LOCOMOTIVE of the Railroad Administration's order of standard locomotives placed with the builders on April 30, was completed on July 1, by the Baldwin Locomotive Works. This locomotive is of the light Mikado type, the specifications for which call for 55,000-lb. driving axle loads, and has been placed in service on the Baltimore & Ohio.

The orders for standard locomotives first placed by the Railroad Administration totaled 1,025. Later orders for 390 locomotives brought the total up to 1,415, of which 575 are light Mikados. This is by far the largest number of any

The longitudinal seams of the conical and front courses are at the right and on the top center line of the boiler, respectively. These seams are all welded at the ends.

On the basis of Cole's ratios, the boiler capacity rating is practically 96 per cent of the cylinder requirements in respect to the heating surfaces, and slightly over 100 per cent in respect to the grate area. The tubes are $2\frac{1}{4}$ in. in diameter and 19 ft. long over the tube sheet, the ratio of the diameter to the length of tubes being about one to 100. The firebox includes a combustion chamber 24 in. long and is fitted with a Security arch. The boiler includes a 40-unit



Boiler of the Railroad Administration Standard Light Mikado Type Locomotive

type ordered; the next largest group is the heavy Mikado type, of which 157 are to be built.

The design of the light Mikado type locomotive is straightforward throughout, with nothing of an unusual nature either in the general design or the details of construction. The locomotive has a total weight of 290,800 lb., of which 221,500 lb. are on the drivers, and it exerts a starting tractive effort of 54,600 lb.

The boiler is of the conical wagon top type, 78 in. in diameter over the first course and increasing to 90 in. in outside diameter at the dome course. The longitudinal seam of the dome course is on the left hand side of the center line, and the reinforcing pad on the inside of the shell under the dome is extended to form the inside welt strip of this seam.

Schmidt top-header superheater with $5\frac{1}{2}$ -in. superheater flues, and is fired by a Duplex stoker. It is fitted with a Shoemaker fire-door.

The ash pan has three center hoppers with swinging drop bottoms. The opening under the mud ring is $5\frac{1}{2}$ in. wide. The grates are operated by a Franklin grate shaker.

The frames are of cast steel, 6 in. wide, with a single integral front rail. The top rail is $6\frac{3}{8}$ in. deep over the pedestal and is $5\frac{3}{8}$ in. deep at the smallest section. The depth of the lower rails at the smallest section is 4 in. The taper of the pedestal jaws and binder lugs is one in twelve. The front rail under the cylinders is $9\frac{7}{8}$ in. deep and the section is reduced to $3\frac{1}{2}$ in. wide by 10 in. deep where the front deck plate is attached. The trailer frames are cast in

one piece with the trailer fulcrum pin bracket, the equalizer brackets and the rear deck plate. This casting is attached to the main frames with fourteen $1\frac{1}{4}$ -in. bolts on each side. The pedestal binders are of the usual type, each held in place by four $1\frac{1}{2}$ -in. bolts.

Vertical cast steel frame cross-ties are applied to the front legs of the forward driving-wheel pedestals and to the rear legs of the second and third pedestals. The forward brace includes an extension at the bottom, which is bolted to the lower frame rails just behind the cylinders. This carries the pivot for the front engine truck and the driving brake lever fulcrums. The top rails are further secured by cast-steel deck braces, which extend across the frames between the first and second, and the third and fourth pairs of driving wheels.

The cylinders and valve chambers are fitted with gun-iron bushings. The pistons are steel of single plate dished section. The piston valves are of the built-up type, with a cast-iron body, fitted with gun-iron bull rings and packing rings and cast-steel followers. King type packing is used

across the tank. This great length materially facilitates spotting of the locomotive at water plugs.

The tender is carried on four-wheel trucks with cast-steel side frames and bolsters fitted with elliptic springs. The wheels are rolled steel, 33 ins. in diameter and are mounted on axles having 6-in. by 11-in. journals.

The specialties include Everlasting blow-off valves, 2-in. Consolidated safety valves, Ashcroft gages, $1\frac{1}{4}$ -in. Barco blower valve fitting, Nathan non-lifting injectors, Franklin ball joints and Radial buffer and Unit safety bar between the engine and tender.

The principal data and dimensions follow:

General Data	
Gage	4 ft. 8½ in.
Service	Freight
Fuel	Bit. coal
Tractive effort	54,600 lb.
Weight in working order	290,800 lb.
Weight on drivers	221,500 lb.
Weight on leading truck	69,000 lb.
Weight on trailing truck	49,100 lb.
Weight of engine and tender in working order, approx.	462,800 lb.
Wheel base, driving	16 ft. 9 in.
Wheel base, total	36 ft. 1 in.
Wheel base, engine and tender	71 ft. 4½ in.

Ratios	
Weight on drivers ÷ tractive effort	4.0
Total weight ÷ tractive effort	5.3
Tractive effort × diam. drivers ÷ equivalent heating surface*	730.9
Equivalent heating surface ÷ grate area	70.6
Firebox heating surface ÷ equivalent heating surface* per cent.	6.1
Weight on drivers ÷ equivalent heating surface	47.0
Total weight ÷ equivalent heating surface	61.8
Volume both cylinders	18.4 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	255.3
Grate area ÷ vol. cylinders	3.6

Cylinders	
Kind	Simple
Diameter and stroke	26 in. by 30 in.

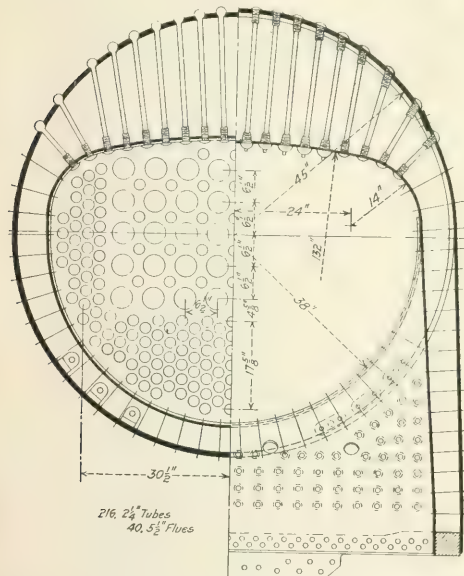
Valves	
Kind	Piston
Diameter	14 in.
Greatest travel	.7 in.
Steam lap	1½ in.
Exhaust clearance	.0 in.
Lead	3/16 in.

Wheels	
Driving, diameter over tires	.63 in.
Driving, thickness of tires	.3½ in.
Driving journals, main, diameter and length	11 in. by 13 in.
Driving journals, others, diameter and length	10 in. by 13 in.
Engine truck wheels, diameter	.33 in.
Engine truck, journals	.6 in. by 12 in.
Trailing truck wheels, diameter	.43 in.
Trailing truck, journals	.9 in. by 14 in.

Boiler	
Style	Conical wagon-top
Working pressure	200 lb. per sq. in.
Outside diameter of first ring	.78 in.
Firebox, length and width	114½ in. by 84½ in.
Firebox plates, thickness	Tube, ½ in. crown, sides and back, ¾ in.
Firebox, water space	Front, 6 in.; sides and back, 3 in.
Tubes, number and outside diameter	216—2¼ in.
Flues, number and outside diameter	40—5½ in.
Tubes and flues, length	19 ft.
Heating surface, tubes and flues	3,497 sq. ft.
Heating surface, firebox, including arch tubes	286 sq. ft.
Heating surface, total	3,783 sq. ft.
Superheater heating surface	882 sq. ft.
Equivalent heating surface*	4,706 sq. ft.
Grate area	66.7 sq. ft.

Tender	
Tank	Water bottom
Frame	Cast steel
Weight, approximate	172,000 lb.
Wheels, diameter	33 in.
Journals, diameter and length	.6 in. by 13 in.
Water capacity	10,000 gal.
Coal capacity	16 tons

*Equivalent heating surface = total evaporative heating surface — 1.5 times the superheating surface.



Sections Through the Firebox and Combustion Chamber

in the piston rod and valve stem glands. The crossheads have cast-steel bodies, to which are bolted Hunt-Spiller gun-iron wearing shoes. Steam distribution is controlled by the Walschaert valve gear, to which is fitted a Ragonnet power reverse gear.

Cast-steel driving boxes, fitted with Elvin grease cellars, are used throughout, all having journal bearings 13 in. in length. The journals on the main axle are 11 in. in diameter, while the others are 10 in. in diameter. The driving wheels are fitted with brass hub liners.

The leading truck is of the Economy constant resistance type and the Hodges trailing truck is used.

The tender has a Commonwealth steel frame. The frame casting includes the front drawbar pocket and the rear draft sills, as well as the truck center plates. The tank is of the usual type of construction, the corners being formed by $2\frac{1}{2}$ -in. by $2\frac{1}{2}$ -in. angles. The bottom and top plates are $5/16$ in. in thickness, while the sides and ends are $1/4$ in. thick. The tank manhole is 18 in. wide by 8 ft. in length

PLAN AIR MAIL FOR SPAIN.—Establishment of an airplane service between Madrid, Barcelona and the Balearic Islands is proposed by a newly formed company which has made application for official authorization to the Ministry of Public Works. The company proposes to first start a mail service and eventually carry passengers. One trip from Madrid to the islands would consume four hours. The company proposes also to establish other airplane routes between Madrid and points in the north of Spain. It asks no subsidy, but merely wants landing places and the right to put stamps on the mail carried.

The Nashville Collision

THE NUMBER OF PERSONS killed and injured in the disastrous butting collision near Harding, Tenn., seven miles west of Nashville, on July 9, (reported in the *Railway Age* of July 12, page 79) was 180 or more; 88 passengers and 4 employees killed or fatally injured; and 86 or more passengers and two employees injured.

The wreck took fire at once and two coaches of the eastbound train, No. 1, were burnt up. Six coaches altogether were demolished. Some of the cars were crowded, with passengers standing in the aisles, which fact partly explains the great number of deaths. Not until about two hours after the occurrence of the collision were all of the injured persons rescued from the wreck.

The train at fault, westbound passenger No. 4, was in charge of Conductor Eubanks and Engineman Kennedy. The conductor was slightly injured while the engineman and fireman were killed. The completeness of the wreck of the locomotives and of six cars indicates that both trains came to the point of collision at full speed.

General Manager W. P. Bruce issued a statement on July 10, in which he said:

"Westbound train No. 4 left Nashville at 7:05 a. m. and passed Shops Junction (about $2\frac{1}{2}$ miles) at 7:15 a. m. Eastbound train No. 1 which was the ruling train was running about thirty minutes late. The accident was caused by the train crew of No. 4 overlooking train No. 1, a train of superior right, when it (No. 4) left the Shops Junction without ascertaining whether train No. 1 had arrived there, and without orders to go beyond the Shops as against No. 1.

"When No. 4 and No. 1 are on time they meet on the double track between Nashville and the Shops tower. No. 1 was not late enough to justify the despatcher in moving No. 4 to Harding, seven miles from the union station. It was the intention of the despatcher to let No. 4 remain at Shops Junction for No. 1; and, in order that the crew on No. 4 might identify No. 1, the crew of No. 4 was advised by the despatcher of the number of the engine drawing No. 1.

"I understand that Engineer Kennedy and Conductor Eubanks of No. 4 were regarded as the best and most reliable men in the service of the road, and therefore I am unable to account for their overlooking No. 1."

According to the Nashville Banner, the men in charge of train No. 4 had an order to meet No. 7 (a passenger train following No. 1), at Harding station; and on this same order was the identification number of the engine on No. 1, placed there to prevent any error in identifying the train. There are interlocked signals at Shops Junction but they give no right to the road except over the junction switch.

The Banner calls attention to the fact that under the railroad administration act the entire earnings of a railroad are paid over to the United States government so that the financial burden of the wreck falls upon the United States. All legal actions resulting from the wreck will be brought against the Nashville, Chattanooga & St. Louis, though the payment on any recoveries must be made by the government.

The locomotives, while badly damaged, are not beyond repair. There will be heavy bills for loss of baggage and express, but the mail carried on the trains was damaged only by water and steam from the boilers of the overturned engines.

W. L. Mapother, federal manager of the road, issued a statement saying that "regardless of individual responsibility, the legal liability of the United States Railroad Administration for injury to, and death of passengers, and of the employees not responsible for the collision, is fixed by the laws of the State of Tennessee and the acts of congress. It is the purpose of the administration to settle all these claims as promptly as possible without litigation. No question of legal liability requiring a decision of courts can arise. The

sole question is to arrive at an equitable amount. All persons having just claims are, therefore, invited to confer with the law department at Nashville to the end that all matters in controversy may be compromised and settled as promptly as circumstances may permit."

At the inquiry held on July 12, at Nashville, conducted by representatives of the Interstate Commerce Commission, G. R. Loyall, assistant to the regional director of Southern Railways, and officers of the road, further facts were given by the train despatcher, the trainmen of No. 4 and T. J. Riggles, a conductor who, evidently, runs No. 4 on alternate days.

J. P. Eubanks, conductor of No. 4 on the day of the disaster, 56 years old and conductor on this train for the past two years, said that he received an order, Form 19, directing him to meet train No. 7 at Harding, and giving the number of the engine on train No. 1. Both Eubanks and Engineman Kennedy read the order. The conductor read it to the porter and delivered the order to the flagman. He then began taking up tickets and depended upon the engineman, the flagman, the fireman and the porter to see that they met No. 1 before passing off the double track. While collecting tickets he noticed that some train was met before reaching the Shops but did not identify it. It was his common practice to rely on the members of his crew to identify No. 1. He had remarked to Kennedy "No. 1 must be running late this morning." The porter has run with Eubanks for the past year. The flagman, C. St. Clair, was on his first trip with Eubanks. The flagman should have been on the rear end of the train while passing through the yards, but the conductor could not testify whether or not he actually was there. Eubanks knew that the movements of yard engines between the terminal and the end of double track were frequent.

C. D. Phillips, despatcher, testified that meeting orders were frequently given to train No. 4 at Nashville, and that giving the number of an engine, as was done in this case in relation to train No. 1, was customary. The operator at the Shops had informed the despatcher as soon as it was seen that No. 4 was passing.

Flagman St. Clair of No. 4 has been in the service only since June 15, 1918. He did not know that No. 4 and No. 1 were scheduled to meet on the double track between Nashville and the Shops. He said that the conductor had not delivered the train order to him until they had passed a half mile beyond the Shops. He did not know where No. 4 was to meet No. 1. Asked if he heard the whistle sounded at the Shops signal tower, or had heard locomotive whistles signaling to his train, he replied in the negative. When he was called to serve on train No. 4, he was surprised, as he considered himself "practically a green man."

W. G. Templeton, superintendent, described his practice in employing trainmen. St. Clair, a freight man, was assigned to No. 4 after the extra passenger list was exhausted. There has been such scarcity of trainmen that it has been often necessary to delay departure of trains until extra men could be called.

Conductor Riggles said that when running on No. 4 he had customarily received orders giving the meeting place with No. 7 and also giving the identification number of the engine of No. 1. According to his testimony, as reported in the Nashville Banner, his practice, as to taking fares and depending on the other trainmen to identify No. 1, appears to have been the same as that of Conductor Eubanks. Riggles, on the day before the collision, had waited for No. 1 at the Shops about 15 minutes.

The testimony of different trainmen seems to indicate that at the moment of collision the westbound train was running at 40 miles an hour or faster, and the eastbound at 55 or 60 miles an hour. None of the witnesses had felt the application of the brakes before the impact.

Orders of Regional Directors*

REPORTS ON SALARIES ASKED.—It is desired that all salaries of \$3,000 or over, in the organization of the district director, the federal managers and the respective railroads, shall be submitted to the regional director for approval before being regarded as final.

Regional directors have asked the roads for statements showing separately, salaries \$3,000 to \$5,000 per annum and \$5,000 and over per annum, with information as to the duties of each office. The circulars state that the director general wishes to eliminate all unnecessary positions on the various railroads. Each of them in the past has maintained an organization for its purposes larger than is necessary under unified control. Particular reference is made to the traffic and accounting departments. The functions to be performed by traffic departments under federal control are far more restricted than under private management, and there will rarely be any justification for paying traffic officers the large salaries which were frequently properly paid under private management. While it is not desired to take any unnecessary, harsh or drastic action, the salaries paid members of traffic departments should be commensurate with the substantially restricted duties which it will be necessary for the traffic men to perform under federal control.

In the revision of any particular department, such as operating, purchases, traffic, accounting or law, should any case arise where the roads are not entirely clear as to what action should be taken, the matter should be submitted to the regional director for decision. It is not desired that definite action be taken in accordance with the recommendations for proposed force and salaries until after the regional directors have had opportunity to review the whole matter.

The Southern regional director has directed the railroads in his territory to arrange so that in future his office will be furnished by wire with a brief report of serious passenger train accidents involving casualties.

Loss of Food Through Death of Live Stock in Transit.—Circular letter No. 306, issued by the southern regional director, calls attention to statistics compiled by the Food Administration showing that comparing the three months, December, 1916, to February, 1917, with the three months, December, 1917, to February, 1918, the ratio of dead and crippled to total received at 17 principal stock yards shows an increase in the case of cattle of 22.6 per cent, in the case of hogs of 49 per cent, and in the case of sheep of 71 per cent. Attention is called to the various causes and the necessity for the greatest possible reform.

Rental of Locomotives.—To avoid disputes as to payment of rental for United States locomotives when transferred from one railroad to another, the following rule will govern: "All mechanical delay at the point of delivery, i. e., the necessary delay in making the locomotive ready for service, will be charged to the delivering road. All delay at such points after the locomotive is made ready for service will be charged to the receiving road."

The Practice of Assigning Cars for Railroad Fuel Loading at All Bituminous Coal Mines Served Must Be Abolished.—The United States Fuel Administration is advised of these instructions, which are now uniform in the entire country, and through its district representatives in the coal producing districts affected, will see that carriers who obtain fuel from such districts secure an adequate current supply of substantially like quality of coal as has heretofore been furnished, unless vital war necessities make this impossible. In the latter event the Fuel Administration will handle with the Railroad Administration in Washington and the Purchasing Committee there will deal with the individual railroads on

the subject as may be necessary. Should this order result in depleting the essential coal supply on any road, the regional director and the Car Service Section at Washington should immediately be advised by wire. Coal producing roads cancelling assigned car orders in accordance with above instructions should at once wire foreign lines obtaining fuel from mines on their road so that such foreign lines will be conversant with the change in the method of car distribution.

Hogs in Carload Lots.—In circular letter No. 319 issued by the Southern regional director, the railroads are asked to have printed and as promptly as possible brought to the attention of those interested in the handling of live stock a placard to be posted in prominent places at all freight depots where shipments of hogs are made in carload lots, giving suggestions as to the proper methods of loading live stock to prevent loss and damage, and also a circular letter to be mailed to all shippers of live stock or handed to individual shippers at the time order is placed for cars, explaining that the gigantic loss of dead and crippled animals in shipping is largely due to over-loading and improper loading; and giving instructions as to proper methods.

Eight-Hour Day for Yardmaster.—The Division of Labor now has under consideration the question of applying the basic 8-hour day to yardmasters and others.

Car Repair Shops.—In circular No. 20, dated July 13, B. F. Bush, regional director of the Southwestern region, called attention to the fact that some roads are working their car repair shops less than 60 hours per week and quoted from a letter from Frank McManamy, assistant director, mechanical department, division of operation, instructing that the hours of freight car repair on all lines and in all shops where work can be furnished them should be increased to 60 hours per week and more if practicable.

Building Refrigerator Cars in Company Shops.—In inquiry No. 2, dated July 9, the regional director of northwestern railroads asks the lines in his territory to advise him of the number of refrigerator cars that can be built and rebuilt at each of their shops without interfering with other necessary car repair work.

Cars With Short Draft Timbers.—In inquiry No. 1, dated July 9, the regional director of northwestern railroads asks the lines under his jurisdiction to advise him of the number of wooden cars owned by each road which are equipped with draft timbers extending only to the body bolster, secured to draft sills by bolts, showing the total number, separated by class and capacity. If arrangements have been made to dispense with the use of such draft timbers the roads are asked to advise what will be substituted for them.

Prices for Lumber.—The regional purchasing committee of all western railroads announces revised prices on yellow pine lumber, including railroad material of specified grades, recently issued by the director of lumber of the war industries board. Railroads are requested not to place orders at higher prices than those shown in the price list.

Union Station Ticket Offices.—The regional director of central western railroads announces that the western passenger traffic committee will in the future have jurisdiction over all union station ticket offices. The committee will determine whether the ticket selling forces and the information bureaus in such ticket offices are equipped satisfactorily to conduct the business and serve the public; whether salaries paid to ticket office forces are adequate and whether physical facilities at such offices are sufficient or best arranged for prompt and satisfactory service to the public.

Contract Brokers.—The regional directors of the central western and the southwestern lines ask the roads under their jurisdiction to be governed by a letter of the United States attorney-general, which prescribes that in the future no contracts with the government shall be made through the agency of contract brokers or contingent fee operators. The attorney-general's letter points out that some manufacturers, because of

*These are among the more important orders that have been issued and which have not previously been noted either as coming from the Railroad Administration at Washington or some of the other regional directors.

ignorance or misinformation, have thought it necessary to negotiate with the government through contract brokers or contingent fee operators, and have added a contingent fee to their bid, with the result that the government has been forced to pay unnecessarily high prices.

Shipping Grain.—The regional director of central western railroads reminds the lines under his jurisdiction that the heavy grain shipping season is approaching and preparation should be made with a view of attaining maximum efficiency in handling it. While he appreciates that a large number of box cars have already been placed in storage anticipating the grain movement, he believes that this supply will soon be exhausted when the movement begins. It will be necessary to maintain a substantial and steady movement of empty cars from the eastern lines. Central western railroads are asked to inform the regional director fully as to their requirements, advising the approximate number of grain cars required during the next 30 days, stating the approximate number of grain cars in storage and the various car service orders now in existence covering the movement of box cars from eastern to western lines.

Cars Damaged by Switching.—The regional director of central western railroads quotes a letter from the Car Repair Section of the division of operation of the Railroad Administration, which points out that an increasing number of freight cars are being damaged by switching crews, and urges that special men be placed in transportation yards to check up the rough handling of equipment in order to place responsibility so that necessary corrective measures may be taken. By reducing the number of damaged cars in switching yards a reduction is effected in the number of cars placed on shop tracks, thereby assisting materially in making men available for repairs to equipment becoming defective from other causes and making more cars available for service. The regional director asks that the lines under his jurisdiction take the steps suggested by the Car Repair section.

How Can Coal be Saved on the Engine ?

By Master Mechanic

THE FIRST ESSENTIAL and the greatest factor of all in fuel saving is whole-hearted co-operation, not only on the part of engineer and fireman, which is absolutely necessary, but also on the part of all officers, train dispatchers, train crews, agents and every one having any part in train movement. Next to labor, fuel is the largest item of expense on the railways, and the cost per 1,000 ton-miles per engine for a year, as well as the total amount of the yearly fuel bill of the railways, should be impressed upon all concerned.

I would offer the following suggestions as an aid to fuel economy:

Proper distribution of the coal, so that the same quality will be steadily furnished to the same district. A poor quality of coal can be successfully burned, if it is the only grade received and arrangements are made to burn it.

Coal should be properly broken when placed on tenders. When this is not done, the temptation to throw large chunks into the firebox is usually too strong to resist, especially when the fireman is tired.

All locomotives should be furnished the same grade of coal. If the passenger engine, with experienced fireman, cannot successfully burn the coal as it is furnished, how can it be expected that a man with a heavy drag and probably a green fireman will be able to burn the screenings (after picking the lumps out of it for passenger service) without engine failures?

A statement of the correct weight of coal placed on engine tenders should be furnished, and records of individual performance should be kept. On the majority of roads these records are only guesswork. It is hard to talk to engine crews on fuel economy without being able to give the correct weight of coal furnished.

The quality of coal supplied is usually governed by its availability. The question is not so much the procuring of coal of better quality as the satisfactory and economical burning of the kind received. There is little doubt but that in practically all cases the coal provided can be burned successfully if properly handled. The old excuse of poor coal for engine failures should not be considered.

Engines should be properly drafted under the supervision of an expert, preferably the road foreman of engines. No change should be made except by his authority, and proper records should be kept.

Engines should be kept in repair and be provided with sufficient grate and ash pan openings.

The regular assignment of engines, when it can be maintained, is one of the greatest aids to fuel economy.

Engines should pull their tonnage and be helped or doubled over hills where necessary. It is a question, however, whether there is any economy in overloading engines, so that it requires ten or more hours to go 50 or 60 miles. I have never yet met a thoroughly practical train or engine man who did not question this practice, and a large number of them were men who are absolutely loyal to their employers and their interests. If you wish to clean up a congestion you do not increase train loads, but cut the tonnage and get the trains over the road.

Properly maintained brick arches are a distinct advantage and a great help in fuel economy.

Engine tanks should be of sufficient capacity to avoid overloading and should be provided with guards to prevent the coal being lost through the gangways or through holes in the decks.

Keeping the engines clean, both outside and inside of the cabs, will promote fuel economy and induce good work in other ways.

Firemen when hired should be picked from the best available men. However, at present it is hard to keep good men on the waiting list. On most roads business fluctuates to such an extent that when firemen are needed they usually have to be taken as found. Seniority rights govern in most cases, and if necessary to lay men off because of slack business, there is no chance to get rid of the poor material.

Firemen when hired should be sent on student trips only with good reliable engine crews. Much depends on the first instructions given the green man. Instructions on the principles of fuel combustion should be given to men handling fuel on engines, and more especially to the new fireman, but only in such plain language as can readily be understood by a graduate of the common schools. Firemen are not usually college men. Regular examinations should be held on fuel economy, the same as on signals, book of rules and machinery.

There should be a sufficient number of road foremen and assistants, so that the work of the fireman can frequently be checked. These men should be relieved from other duties. Possibly one good road foreman, with three or four of the best firemen as assistants, would do in most cases. When firemen are used they should always be classed as assistant road foremen, as some engineers will resent their instructions or will find fault with their work if they are classed as a traveling fireman.

The grates should not be shaken unnecessarily. Usually when firing is done properly and the engine is correctly handled, the grates will need only a slight shaking once or twice over a hundred-mile division. Grates shaken often usually mean stuck grates, especially with green coal.

Firemen should be taught that the one who can keep the

steam pressure near the popping point without allowing the pops to open, while using the smallest amount of coal with the least exertion, is the best man. The man who desires to see the "white feather" constantly is not a good asset for any railroad, regardless of which side of the cab he occupies.

The fire door should be closed after each shovelful of coal is placed in the firebox, and the unnecessary use of the blower avoided.

The education of the fireman to the necessity of maintaining a clean fire as light as can be kept, considering the work to be done, should not be overlooked. Fires should not be allowed to die down when drifting down hill or standing on side tracks. This will often cause the boiler to leak. A leaking engine is not an economical engine. Superheater engines should never be allowed to drift without a small amount of steam being fed to the cylinders, whether going down hill or into stations. Alternate firing on each side, with an occasional shovelful in the center, and a close watch being kept to avoid holes and to see that the fire is maintained close up to the front end of the firebox, will usually furnish steam and avoid an excessive amount of black smoke.

Methods good or bad, constantly practiced, become habits, and are much harder to break when once formed than to develop in the first place. Special care should be taken to see that men start right, either as firemen or engineers.

There can only be one captain on an engine, and that should always be the engineer. While an engineer should at all times give his fireman fair and just treatment, he should also insist that his instructions be obeyed. Since he is held responsible, his authority should be sustained by the officers under whom he works. Engine crews should be kept together as much as possible. When this is done they anticipate each other's moves, and as a result less coal will be used.

It is usually best for the pumping to be done by the engineer, the water being kept as low as safety and circumstances permit. Fuel can not be saved when water is carried so high that it floods the valves. While this may not occur as much on superheated as on saturated steam engines, yet steady, consistent boiler feeding, with particular attention to care for any unusual or severe conditions that may arise, will

save coal. Engineers should advise firemen of expected moves, so that the fire can be prepared accordingly.

Engines should not be worked harder than the service demands, and the reverse lever should be hooked back as fast as possible when pulling out of stations. Blow-off cocks should be placed where they can easily be handled, and should be opened for three or four seconds every few miles. It is usually best to do this when starting from stations or after standing. By so doing very little water is lost, a better steaming engine is secured, and a clean boiler maintained.

Engineers should see that proper work reports are made out at the end of each trip. They are handling the engine and should be better able than any one else to ascertain and report its defects. Their interest in the proper upkeep of the engines should be greater than that of any other group of employees.

Care should always be taken to see that a full glass of water is left in the engine at points where they are left by engine crews. The water should never be put in when an engine is standing still, if it can possibly be avoided. If necessary to do so, a large amount should not be put in at any one time; the injector should be closed for a period after each half-inch of water fed into the boiler.

In conclusion I wish to emphasize the need of co-operation. Team work is required from everyone concerned in fuel economy as well as from the engineer and fireman. Gentlemanly treatment and regard for the feelings of fellow employees should be maintained at all times. Economy will not result when men are antagonizing each other.

GERMAN USE OF THE LIMBURG RAILWAY.—Traffic between Germany and Belgium over the Limburg Railway, which was one of the subjects of the recent crisis, began June 4, according to The Hague newspaper, Nieuwe Courant. In accordance with the agreement, 25 trains will run in both directions daily. The trains will be operated by a Dutch crew across Dutch territory. The freight conveyed will be examined at the frontier. No passengers will, presumably, be carried.

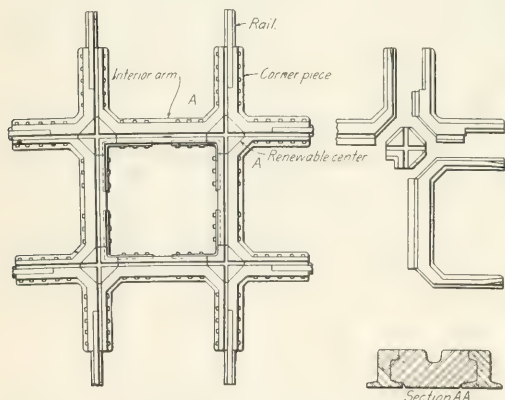


The First Standard 55-Ton Hopper Car to Be Completed for the United States Railroad Administration Just Delivered by the American Car & Foundry Company. These Cars Will Be Lettered with the Name of the Railroad to Which They Are Assigned

A New Form of Crossing Construction

A NEW CROSSING of the cast-manganese type has recently been placed on the market which contains a renewable center or block at each intersection of the flange ways. This block includes within its limits those parts of the tread, flange ways and guard rails of the two tracks at the intersection which receive the severe wear produced by the wheels jumping the flangeways. It is securely held in place in the body of the crossing construction, while permitting of its ready removal when occasion demands.

As shown in the drawing the crossing is made up of separately cast members provided with grooves and projections on the adjoining faces, so that the several parts fit into each other to form a complete crossing. There are four U-shaped side pieces or interior arms each forming the tread, flange way and guard rail of one of the four sides of the crossing, as well as the guard portion of the two exterior arms. In addition there are four corner pieces forming the tread portions of the exterior arms. All these pieces are chamfered at each corner to make room for the corner units. The sides of these corner units are also provided with tenons which engage corresponding grooves in the adjoining members so that the blocks are secured in position without the direct assist-



The Renewable Center Crossing

ance of bolts other than those holding the other members together. As a consequence this arrangement has all the advantages of an articulated construction which eliminates the possibility of fracture in the crossing under the deformations taking place with passing loads, while introducing the center block, which may be renewed whenever excessive wear has taken place. This crossing was developed by the Balkwill Manganese Crossing Company, Cleveland, Ohio, and is patterned in part after the Balkwill articulated crossing described in the *Railway Age Gazette* of November 23, 1917, page 949.

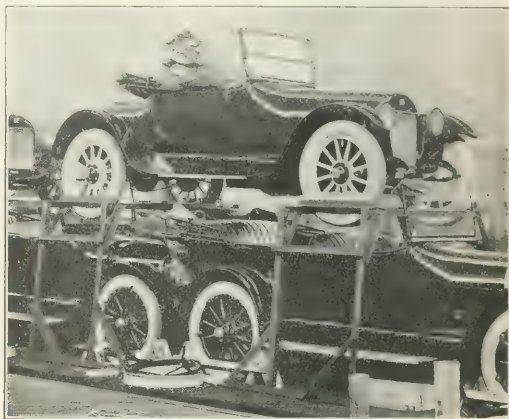
THE RAILWAYS OF NICARAGUA.—Nicaragua, notwithstanding its population of 600,000 and its position as the largest of the six Central American states, is possessed of hardly more than 200 miles of railway in operation.

RAILWAY CONSTRUCTION IN INDIA.—The Government of India has sanctioned the construction by the agency of the Madras & Southern Mahratta Railway, on behalf of the Forest Department, of a light meter railway from Alnavar, a station on the Madras & Southern Mahratta to Dandeli, in the North Kanara district, a distance of about 19 miles.—*Railway Gazette, London.*

Steel Deck Supports

for Heavier Car Loading

THE UTILIZATION of the full cubical capacity of freight cars is impossible when handling certain commodities unless a large amount of dunnage is used. The expense of providing temporary supports in cars has prevented the roads and the shippers from securing the maximum loading efficiency. To avoid the waste incident to the use of temporary wooden supports and to reduce the weight of the dunnage, the Carbo Steel Post Company, Chicago Heights, Ill., has developed a collapsible deck support. This device, which is known as the Carbo steel loading and ship-



Automobiles Double Decked by the Use of Collapsible Steel Supports

ping deck, is built up of angle irons. The transverse members for supporting the deck can be adjusted to various heights. Among the commodities for which these decks are particularly well adapted are merchandise, goods shipped in sacks, fruits and vegetables, eggs, tiling and automobiles.

At present, the device is used principally for double decking loads of automobiles, trucks and tractors. Special supports are provided for the wheels and no decking is used so that the maximum amount of space can be utilized. In double decking flat or box cars the automobile is raised, either by jacks or hoists, and the loading deck is assembled under it. Another automobile can then be rolled into position beneath the support. In some cases, the maximum capacity is secured by placing an automobile at the end of the car, with one pair of wheels elevated and resting on the steel deck. With this device four automobiles can usually be placed in a 36 or 40-ft. car and six or eight in a 50-ft. car. The steel decks, when removed from the car, are returned to the original shipping point. It is claimed that the cost of double decking by this method is only 25 per cent of the cost of wooden supports and as the weight of the steel decks is less there is also a saving in freight charges.

NEW RAILWAYS TO UKRAINE.—The Rumanian official journal *Steagul* announces that two new direct railway communications between South Germany and Austria-Hungary and the Ukraine, crossing Moldavia, are being planned. One of these lines would go from Munich, via Vienna and Budapest, to Odessa, passing through the Rumanian towns Piatra, Meamett, Roman, Jassy and Kishineff. The other railway line going to Mohileff would touch Rumanian territory near Dorohoi.

General News Department

"Stop Eating Freight" is the exhortation addressed to the people of Pittsburgh, by W. D. George, county food administrator at that city. That is to say, eat those things that are grown nearest home, so as to save railroad transportation. Every person should keep on planting those things that can be grown before cold weather sets in.

The mail by airplane arrived in New York on July 10 in two hours, 30 minutes, from Washington, which time included a stop of eight minutes at Philadelphia. This makes the average speed about 90 miles an hour. The shortening of the time has been accomplished because of the increasing familiarity of the flyers with the conditions which they have to meet.

Fifty retired employees of the Pennsylvania Railroad, at Sunbury, Pa., were notified recently that places were open for them if they wished to return to work, and provided they should pass necessary physical tests. Many of these men are mechanics. They were told that in going to work now they would not disturb their relations to the company as pensioners.

The deportation of striking miners from Bisbee, Ariz., into New Mexico, in July, 1917, is the subject of suits recently entered in the county court at Tombstone, Ariz., against corporations and individuals for damages resulting from the alleged kidnapping of the miners, of whom there were over 1,100. Each suit asks for \$20,000 damages; and included among the defendants are Phelps, Dodge & Co., and other mining corporations and the El Paso & Southwestern Railroad Company.

The Big Horn Basin line of the Chicago, Burlington & Quincy was put out of commission on July 10 for the second time within the past month, owing to a cloudburst in the vicinity of the Bad Water river. Considerable lengths of track and a number of bridges were washed out. Two weeks previous to this last cloudburst the same portion of the road was damaged, and the repairs had been completed only a few days when the second storm occurred, resulting in parts of the new work being washed away.

Grain leaking from a moving freight car may mean a considerable loss within a few hours, and to prevent such losses, O. E. Linn, trainmaster on the St. Louis system of the Pennsylvania Lines, at Decatur, Ill., has issued a bulletin instructing trackmen, agents and operators who notice cars leaking in trains to signal the trainmen by holding both arms in an upright position at full length. If a leaking car cannot be repaired it must be set out of the train. Conductors are also instructed not to take cars which in their opinion are not in suitable condition for transporting grain.

The Lexington avenue subway, New York city, from the Grand Central Terminal, 42nd street, northward to 167th street, was opened for local traffic this week. The connection between this subway and the existing line, south of 42nd street is not yet completed and through trains will not be run for several weeks yet. The introduction of through trains on the west side of the city will also be delayed. The Jerome avenue branch of the subway, north of 167th street—which is not a subway but an elevated line—is to be connected with the elevated lines on the west side of Manhattan, those running through Sixth avenue and Ninth avenue; and trains will be run through, thus making virtually an extension of the Sixth and Ninth avenue elevated lines.

The Hampden Railroad, which is an elephant on the hands of the Boston & Maine, has figured in the news columns of the daily press on two occasions recently. In the Superior Court at Springfield, Mass., the Hampden Railroad Corporation sued the Boston & Maine to recover the cost of the construction of the line, \$4,000,000, or thereabouts, the basis

of the suit being that the Boston & Maine had agreed to take a lease of the road and to operate it and had failed to do so. The suit, after a long trial, was decided in favor of the Boston & Maine. The Hampden, about 15 miles long, and built to the highest standards of construction, connects the New York, New Haven & Hartford at Springfield with the Boston & Maine at Bondsville, Mass.; but has never been used. Mr. Mellen's plans for through trains between New York and Boston by this route fell through before the connecting link was finished. The other news item is to the effect that the Government has commandeered 100 tons of rails, lying on the Hampden Railroad premises, for use at the Watertown (Mass.) arsenal. Some of the rails were in a long side track and others had never been put into the track. All of them are 85 lb. section, and they have been lying unused about four years.

A plan to send a business commission to Russia, discussed in the press despatches this week, is said to have been decided upon by the administration at Washington and to have received President Wilson's approval; and Daniel Willard, president of the Baltimore & Ohio, is understood to have been selected as its head. Frank A. Vanderlip, president of the National City Bank, New York City, is slated as the leading financial member of the mission. The aim of the President in sanctioning an economic mission to Russia is to bring about a restoration of commercial relations with that country which were interrupted in 1911 and further suspended in 1915 by the war, which has shattered Russia's industrial structure. The mission is the outgrowth of conferences of business men in New York and other cities. American merchants are reported as willing to engage in trade restoration with Russia, but manifest some hesitation unless there can be government support behind the project. At present the condition of foreign exchange and the want of a clearing-house to take care of the banking functions necessary in any attempt to restore commercial relations constitute an almost hopeless barrier to the effort to accomplish relief for the Russian people.

The Telegraph Control Law

The Senate on July 13 passed by a vote of 46 to 16 the joint resolution previously passed by the House authorizing the President to take over and operate telegraph, telephone, cable and radio lines for the period of the war. The resolution encountered considerable opposition because no hearings had been held to demonstrate its necessity, but it was adopted without amendments. The 16 who voted against it are all Republicans. While there has been no indication as to when and how the President will exercise the power, granted by this law, Postmaster General Burleson has issued a statement saying that if he is called upon to select a man to direct the work there will be no favoritism and no censorship of press wires. During the debate it was stated that only trunk lines would be taken over.

Burlington Relief Department

In the year ending December 31, 1917, the Relief Department of the Chicago, Burlington & Quincy paid out \$666,900 in benefits to members; \$151,732 to those disabled through sickness; \$192,155 for deaths from sickness; \$187,776 for disability from accidents; \$79,378 for death from accident and \$55,858 for surgical attendance. A total of 12,031 cases of disability were reported during the year. The membership was 29,690, or 1,368 increase in 12 months. The payments by the company in establishing, operating and maintaining the Relief Department during its existence (27 years) have amounted to \$2,062,730. J. N. Redfern is superintendent and Dr. J. A. Denny is assistant superintendent and medical director.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY, 1918 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues.			Operating expenses.			Total.	Operating railway operation.	Net from railway operation.	Railway tax accruals.	Income (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Maintenance of equipment.	Traffic.	Trans-portion.				
Colorado & Southern.....	1,100	\$7,992,440	\$150,171	\$94,836	\$125,869	\$94,293	\$7,054	\$306,165	\$679,400	\$2,984,436	\$47,000	\$21,436
Cripple Creek & Colorado Springs.....	16	6,851	19,045	25,896	7,680	2,079	1,412	44,366	14,366	14,366	9,277	15,453
Detroit & Toledo Shore Line.....	977	186,580	186,580	373,160	113,340	15,981	2,133	56,417	80,637	101,584	9,287	18,458
El Paso & Southwestern Co.....	1,339	960,595	19,353	1,446,643	1,446,643	93,971	11,293	347,523	667,531	96,963	11,850	11,853
Elgin, Joliet & Eastern.....	874	1,897,735	10	1,611,206	145,491	367,071	9,161	50,142	1,008,831	55,22	479,133	69,958
Erie.....	4,993	1,055,676	6,771,211	8,64,007	2,886,466	2,486,466	93,185	3,215,563	6,458,700	95,38	31,251	1,452,269
Fond du Lac & Milwaukee.....	1,089	4,993,081	57,094	600,513	7,054	7,033	606	33,080	4,143	3,667	4,300	3,570
Franklin Park & Indiana.....	5,609	2,757,676	11,177	1,115,053	16,433	363,729	11,177	351,708	716,075	60,86	31,874	15,891
Rocking Valley.....	349	915,388	1,067,042	1,067,042	16,433	16,692	1,827	50,015	135,096	73,88	64,238	27,188
Houston, East & West Texas.....	1,000	1,13,587	40,705	170,484	100,311	83,276	1,963	451,401	464,439	70,56	303,299	6,432
Indianapolis & Cincinnati.....	9,928	4,227,599	198,147	453,303	96,384	90,401	1,034	257,404	1,147	17,602	106,461	6,910
Kansas City & Michigan.....	110	89,671	511,435	41,576	41,576	109,624	2,006	140,630	9,230	3,005	10,968	189,501
Kansas City Southern.....	7,76	66,585	20,995	1,260,808	140,539	197,290	17,996	433,322	433,322	66,03	4,837	37,134
Lehigh & New England.....	276	307,62	1,962	3,322,711	41,815	56,157	2,974	93,389	7,957	2,853,306	6,324	111,658
Lehigh Valley.....	144	4,372,949	4,075,11	5,445,485	4,833,011	1,031,782	66,426	2,169,380	36,795	1,507,266	161,477	15,924
Long Island.....	109	18,640	1,866,150	30,860	30,860	33,939	4,916	74,704	1,149,466	73,67	56,403	6,350
Louisville, Cincinnati & St. Louis.....	5	5,613	24,207	8,855	18,499	18,499	4,916	52,932	3,580	81,637	1,249	9,345
Maryland, Delaware & Virginia Ry. Co.....	1,891	3,994,971	1,145,969	5,249,021	581,397	771,148	64,590	2,059,631	95,363	3,636,045	69,28	1,611,135
Michigan Central.....	1,626	3,315,566	148,121	871,534	178,761	175,589	10,925	438,174	24,658	817,133	69,47	331,158
Missouri, Kansas & Texas System.....	3,601	2,895,361	1,181,609	4,012,043	789,803	968,994	38,288	1,254,703	3,58,179	50,895	15,639	347,468
Missouri, Kansas & Gulf.....	3,303	1,306,735	37,803	355,018	84,587	84,587	2,244	2,653,009	155,943	3,507,762	75,53	63,984
Missouri Pacific.....	7,38	4,613,435	1,144,041	1,385,224	1,385,224	1,385,224	84,587	2,569,600	155,943	3,507,762	75,53	63,984
Mobile & Ohio.....	1,150	1,000,001	153,900	1,31,040	151,040	315,302	29,611	530,308	3,018	1,036,396	137,018	144,827
Monongahela Valley.....	1,060	1,866,110	1,866,110	1,866,110	1,866,110	1,866,110	34,019	635,494	39,708	1,257,163	31,434	38,509
North & South Shore.....	1,14	1,34,757	15,310	16,540	16,540	16,540	6,827	40,700	8,351	8,351	41,405	34,101
New Orleans & North Eastern.....	293	3,31,272	99,550	47,600	45,500	83,304	6,827	160,048	309,986	65,44	103,674	136,100
New Orleans, Great Northern.....	54	131,063	34,48	177,023	19,214	22,564	3,578	55,954	7,192	109,453	6,81	50,411
New York Central.....	6,079	14,316,045	4,760,491	22,464,875	2,350,850	4,487,059	301,984	8,976,836	49,534	16,804,631	25,07	5,600,344
New York, Chicago & St. Louis.....	1,477	3,757,936	1,886,662	5,001,083	870,175	1,535,967	34,286	3,19,488	23,573	6,136,495	74,56	1,853,488
New York, Philadelphia & Norfolk.....	1,11	461,907	118,147	118,147	664,006	45,193	15,317	358,490	6,967	457,886	307,030	193,576
New York, Susquehanna & Western.....	135	297,799	40,045	391,243	33,333	51,340	3,391	195,400	6,965	289,337	73,93	101,997
Pennsylvania Company.....	2,683	5,555,311	276,019	6,522,181	795,043	1,482,285	44,720	3,900,607	167,573	4,570,446	69,54	1,901,736
Pennsylvania Railroad.....	1,584	7,525,501	1,594,541	24,653	7,525,501	1,594,541	24,653	3,918,513	385,207	1,592,878	79,437	1,9,437
Pennsylvania Railroad.....	5,334	19,273,766	2,612,949	30,071,913	3,280,420	6,838,957	278,720	11,751,767	243,815	6,892,196	87,418	6,019,634
Pennsylvania Railroad.....	19	18,657	5,718	11,528	11,528	18,529	62,146	3,485	46,010	7,464	4,953	1,580
Pittsburgh & West Virginia.....	64	104,231	3,567	168,865	26,566	31,999	1,377	40,563	157	101,166	3,839	3,860
Pittsburgh, Carthage, Chm. & St. Louis.....	3,385	1,788,341	1,788,341	633,440	49,765	10,730	163,559	8,068	2,955,541	1,577,676	17,582	1,582,713
St. Joseph & Grand Island.....	558	106,551	28,046	207,350	48,560	34,350	1,475	93,092	7,311	185,664	89,55	5,938
St. Louis, Brownsville & Mexico.....	548	178,501	84,994	285,212	46,282	48,344	6,091	88,833	12,079	202,536	71,01	8,680
St. Louis, Merchants' Bridge Terminal.....	9	437	297,024	42,973	3,993	31,993	701	1,926,423	640,35	2,545,36	83,69	42,490
St. Louis, San Francisco.....	4,741	3,411,560	1,06,380	5,172,437	835,896	1,101,181	47,137	1,636,133	147,290	4,081,34	78,96	1,291,114
St. Louis, San Francisco & Texas.....	3,561	1,467,388	64,063	3,000,668	64,063	1,110	1,781	49,918	89,437	2,880	1,157	1,130
Seaboard.....	3,361	1,467,388	64,063	3,000,668	64,063	1,110	1,781	49,918	89,437	2,880	1,157	1,130
Southern.....	6,982	5,612,214	3,101,627	9,851,637	950,460	1,718,046	107,896	3,430,449	188,939	3,430,449	65,17	3,430,449
Southern Pacific.....	7,703	6,099,733	3,103,316	12,727,457	1,409,989	1,917,042	170,871	4,803,015	827,457	67,109	54,917	37,343
Staten Island Rapid Transit Co.....	36	89,061	3,860,319	42,370	37,066	37,066	721	108,736	2,949	133,905	63,10	11,366
Texas & New Orleans.....	449	185,411	501,167	72,529	91,423	5,267	195,714	11,166	391,539	66,23	196,936	18,091
Toledo & Ohio Central.....	405	666,590	50,803	781,205	116,648	170,016	9,445	376,311	13,206	6,75,659	80,29	154,046
Toledo, St. Louis & Western.....	1,18	59,388	11,943	81,984	11,943	1,152	1,385	46,164	37,760	4,807	4,000	88,665
Union Pacific.....	3,610	7,599,594	860,534	1,040,185	1,040,185	1,040,185	56,316	1,270,848	172,968	4,071,064	56,08	3,188,591
Union R. of St. Louis.....	1,1	607,141	88,466	136,900	607,141	88,466	1,999	86,041	5,813	90,705	83,50	90,617
Vicksburg, Shreveport & Pacific.....	1,1	111,963	6,774	40,101	1,119	32,574	1,999	69,881	14,38	56,811	10,535	46,116
Virginian.....	2,319	1,043,240	49,134	1,114,447	1,114,447	177,777	54,017	1,696,379	88,57	1,30	667,199	33,263
Wabash.....	2,319	1,043,240	49,134	1,114,447	1,114,447	177,777	54,017	1,696,379	88,57	1,30	667,199	33,263
West Jersey & Seashore.....	350	995,000	449,499	790,979	157,023	1,24,031	1,852	336,678	17,755	640,896	82,16	141,075
Western Maryland.....	707	1,113,459	79,308	1,213,107	162,681	1,33,069	2,114	501,875	31,415	1,013,666	43,700	186,241
Western Maryland.....	1,382	1,217,045	290,702	1,582,133	227,232	333,565	13,785	586,277	48,298	1,199,762	61,538	330,938

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REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF CALENDAR YEAR 1918. (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of way and equipment			Operating expenses			Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.).	Structures.	Trains and equipment.	Total.	Traffic.	Trans- portation.	General.	Total.				
Norfolk & Western.....	2,983	\$3,370,865	\$8,342,240	\$11,713,105	\$6,900,697	\$6,900,697	\$13,801,394	\$1,015,471	\$1,015,471	\$2,331,573	78.59	\$8,885,327	\$3,370,865	\$5,514,462	\$2,019,462
Pennsylvania Railroad.....	5,034	75,986,620	32,300,458	108,287,078	16,841,783	16,841,783	121,445,291	12,901,149	12,901,149	111,827,332	92.88	\$8,633,158	\$3,370,865	\$5,262,293	\$2,019,462
Peoria & Pekin Union.....	5,334	19,000,575	29,699	19,030,274	116,401	116,401	19,146,675	1,290,149	1,290,149	17,956,526	95.80	4,376,787	4,376,787	15,579,739	15,071,041
Pittsburgh & Shawmut.....	94	468,025	19,330	487,355	54,341	54,341	537,994	5,628	5,628	482,366	91.14	43,678	46,859	25,139	96,117
Pittsburgh, Cincin. & St. Louis.....	2,398	20,401,427	6,072,993	26,474,420	3,976,449	3,976,449	30,450,869	432,420	432,420	26,018,449	88.95	3,133,410	11,848,800	1,972,881	3,821,500
St. Louis & San Francisco.....	4,761	15,512,480	7,494,376	23,006,856	3,606,384	3,606,384	26,613,240	262,972	262,972	26,350,268	90.04	4,018,803	11,848,800	7,829,413	3,220,658
St. Louis, San Francisco & Texas.....	143	357,855	88,733	446,588	61,770	61,770	508,358	10,527	10,527	497,831	90.14	181,396	43,033	181,396	181,396
St. Louis, St. Paul & Northern Pacific.....	4,155	1,067,418	402,705	1,470,123	356,075	356,075	1,826,198	15,339	15,339	1,810,859	98.14	181,396	43,033	181,396	181,396
St. Louis, Merchants' & Marine Terminal.....	548	965,184	439,173	1,404,357	256,642	256,642	1,660,999	43,762	43,762	1,617,237	96.32	115,560	49,723	49,723	155,001
St. Louis, Merchants' & Marine Terminal.....	548	965,184	439,173	1,404,357	256,642	256,642	1,660,999	43,762	43,762	1,617,237	96.32	115,560	49,723	49,723	155,001
St. Louis-San Francisco.....	4,761	15,512,480	7,494,376	23,006,856	3,606,384	3,606,384	26,613,240	262,972	262,972	26,350,268	90.04	4,018,803	11,848,800	7,829,413	3,220,658
St. Louis, San Francisco & Texas.....	143	357,855	88,733	446,588	61,770	61,770	508,358	10,527	10,527	497,831	90.14	181,396	43,033	181,396	181,396
St. Louis, St. Paul & Northern Pacific.....	4,155	1,067,418	402,705	1,470,123	356,075	356,075	1,826,198	15,339	15,339	1,810,859	98.14	181,396	43,033	181,396	181,396
Seaboard.....	3,661	8,821,525	4,214,652	13,036,177	1,453,107	1,453,107	14,489,284	635,150	635,150	13,854,134	95.73	1,108,134	5,082,332	3,973,799	2,861,467
Southern.....	26,432	24,322,766	14,055,662	38,378,428	4,441,218	4,441,218	42,819,646	3,351,815	3,351,815	39,467,831	92.18	3,351,815	13,512,357	10,165,482	6,847,131
Southern in Mississippi.....	702	294,512	14,968,623	15,263,135	1,075,975	1,075,975	16,339,110	11,301	11,301	15,228,109	91.54	98,640	45,000	53,640	33,148
Southern Pacific Mail Transport Co.....	718	38,533,827	14,968,623	53,502,450	7,499,440	7,499,440	60,991,890	727,578	727,578	59,764,312	97.99	13,919,401	2,861,043	11,048,358	4,620,339
Terminal R.R. Wash. & St. Louis.....	5	251,516	13,811	265,327	10,526	10,526	275,853	3,428	3,428	272,425	98.75	357,383	147,230	209,866	130,177
Texas & New Orleans.....	469	1,985,616	766,197	2,751,813	362,604	362,604	3,114,417	34,972	34,972	3,079,445	95.68	111,552	111,552	90,366	33,181
Toledo & Ohio Central.....	435	2,720,760	245,579	2,966,339	457,120	457,120	3,423,459	1,039,063	1,039,063	2,384,396	69.33	2,384,396	131,798	3,256,194	2,720,760
Toledo, St. Louis & Western.....	454	2,588,736	214,823	2,803,559	457,120	457,120	3,260,679	1,039,063	1,039,063	2,221,616	68.13	2,221,616	131,798	3,256,194	2,720,760
Union R.R. Balt. & Annapolis.....	3,128	3,500,401	36,262	3,536,663	54,363	54,363	3,591,026	39,977	39,977	3,551,049	100.11	11,533,173	1,433,700	10,100,473	4,481,374
Union R.R. of Penna.....	23	606,504	286,233	892,737	270,836	270,836	1,163,573	1,418	1,418	1,162,155	115.77	33,577	37,893	3,730	1,744,311
Vienna, Shreveport & Paris.....	171	606,504	286,233	892,737	270,836	270,836	1,163,573	1,418	1,418	1,162,155	115.77	33,577	37,893	3,730	1,744,311
Virginia.....	518	3,659,070	233,698	3,892,768	414,371	414,371	4,307,139	26,016	26,016	4,281,123	97.31	333,760	48,946	384,613	607,726
Wabash.....	2,319	11,366,762	3,333,013	15,000,394	1,889,205	1,889,205	16,889,599	330,656	330,656	16,558,943	86.68	1,128,507	363,985	9,940,500	7,940,500
West Jersey & Shore.....	207	4,773,720	2,036,134	6,809,854	748,626	748,626	7,558,480	40,403	40,403	7,518,077	100.82	163,106	554,807	1,566,777	1,566,777
West Virginia.....	207	4,773,720	2,036,134	6,809,854	748,626	748,626	7,558,480	40,403	40,403	7,518,077	100.82	163,106	554,807	1,566,777	1,566,777
Winning & Atlantic Eve.....	511	3,843,760	161,194	4,004,954	1,400,007	1,400,007	5,404,961	38,593	38,593	5,366,368	94.85	657,555	346,057	410,953	1,023,249
Yazoo & Mississippi Valley.....	1,152	6,100,796	1,685,538	7,786,334	1,080,721	1,080,721	8,867,055	81,209	81,209	8,785,846	71.25	2,322,841	307,640	2,034,370	418,311

Holiday Traffic on the Long Island

On the fourth of July and the four other days of heavy traffic incident to the celebration, the Long Island Railroad carried 1,121,560 passengers, or about 10 per cent more than the number carried one year ago, and considerably more than ever before in a similar period. The number of passenger train movements in the five days, 4,857, was slightly less than last year, and something like 10 per cent less than in 1916 and previous years. Records of this holiday movement have been kept for five years and in each of the five the average delay to passenger trains was less than four minutes, except in 1916, when it was four minutes 33 seconds.

Curtalement of Non-War Industries

Further curtalement of the activities of non-war industries is contemplated by the authorities at Washington. The Fuel Administration order of July 3 cutting down the fuel allowance to breweries, according to a statement issued by Dr. Garfield, is merely another step in the program of curtalement of non-war industries begun several months ago. This is necessary in order that coal may be immediately delivered to war industries and to consumers in sections of the country remote from the mines. The railroads report that 200 more cars can be daily passed through the New England gateways, provided the coal can be furnished, and that it is imperative that advantage be taken of this opportunity, because two-thirds of New England's coal supply goes in by water and after winter sets in shipments are greatly reduced. The order was issued after conference with a special committee appointed by the President to consider the reduction of activities in non-war industries to save raw materials, food, labor and transportation. This committee recommended the appointment of another committee, which includes Edward Chambers, director of the division of traffic of the Railroad Administration, to study each industry with a view to ascertaining what curtalement can be made and to report to the priorities board from time to time. The priorities board in turn will advise the various administrative departments to take such action as will effectuate its recommendation.

A Record Freight Movement

The number of freight cars passing Columbia, Pa., on the Pennsylvania Railroad in the 24 hours of June 20, was 9,531, which is 358 more cars than on the largest preceding day. The total movement for the month of June was 250,322 cars, as follows:

	Eastbound	Westbound
Loaded.....	106,342	32,190
Empty.....	4,589	107,201
Total.....	110,931	139,391

The average daily movement in June, 8,344 cars, would make a train 70 miles long, or roughly, a westbound train 35 miles long, and an eastbound train the same length. Another calculation would show a car moving eastward, on the average, once every 20 seconds and a westbound movement of the same frequency.

It is believed that the movement of June 20 stands as the world's record for the greatest number of freight cars ever moved past a given point in twenty-four consecutive hours on any railroad, American or European. The large westbound movement of empties in June reflects the war conditions which have greatly increased export freight traffic and at the same time have reduced import freight almost to zero. An overwhelming proportion of the enormous eastbound traffic originated on the Pennsylvania and its branches between Harrisburg and Pittsburgh. It consisted in large part of the iron and steel products of the Pittsburgh industrial region, coal from the mountains in central Pennsylvania and coke from the many ovens in the same region; ship-plates and other material for vessel construction in the tide-water yards, supplies for the building of new ship yards and other war industrial plants, raw and semi-finished materials to keep the eastern munition plants in full operation, and fuel for the eastern industries and for the ships which are keeping up the vital line of communication with Europe.

The Black Tom Explosion

The disastrous explosion at the Lehigh Valley freight terminal, New York City, on July 30, 1916, is the basis of a suit which has been filed at Trenton, N. J., by the Bethlehem Steel Corporation against the railroad company for \$2,920,213, the value of 19 carloads of munitions destroyed in that explosion. The plaintiff charges disobedience of the government rules regulating the storage and care of explosives, and also that the railroad company was grossly negligent under the common law, failing—

To provide careful men to handle the cars at the Black Tom.

To provide proper fire apparatus and equipment.

To take reasonable precautions against fire.

To use reasonable diligence in providing safe storage.

To use reasonable diligence in keeping unauthorized persons from having access to the explosives.

To take reasonable precautions to safeguard the immense quantities of explosives continually in its charge.

American Train Dispatchers' Association

This association, successor to the Western Train Dispatchers' Association, formed last year on the Pacific Coast, held a convention at Spokane, Wash., on June 11, 12, 13, 14 and 15. The officers of the association for the ensuing year are: President, J. G. Luhrsen, Great Northern; vice-president, Robert Firth, Northern Pacific; secretary, C. L. Darling, Northern Pacific, Spokane, Wash. The pamphlet issued by the association after the meeting shows a membership of 1,427, including 161 chief dispatchers. Among the eastern roads represented in the membership are the Atlanta, Birmingham & Atlantic, the Baltimore & Ohio, the Delaware & Hudson, the Florida East Coast, the Grand Trunk, the Illinois Central, the New York Central, the Pennsylvania, the Rutland, the Southern, and the Wabash. One of the principal aims of the new association is declared to be to get all railroads to give train dispatchers one day of rest in every seven days. It was voted to hold the next meeting at Chicago in June, 1919, the date to be fixed by the executive committee. A resolution was adopted expressing "the

warmest sentiments of fraternity" and good wishes toward the members of the Train Dispatchers' Association of America.

United States Highways Council

All functions of the various government agencies so far as they relate to streets and highways have been co-ordinated in a body called the United States Highways Council, composed of one representative each from the War Department, the Department of Agriculture, the Railroad Administration, the War Industries Board, and the Fuel Administration. These representatives, under designation by the heads of their respective departments, selected L. W. Page, as chairman, and J. E. Pennybacker, secretary. The member on behalf of the railroad administration is G. W. Kirtley. The council was formed primarily to prevent the delays, and loss incident to taking up each highway problem in its turn with a separate and distinct government agency. This council utilizes the organizations of the 48 state highways departments, and provides a single agency in the nature of a clearing house where all highway projects calling for governmental action of any character may be considered.

The Railroad Administration will, of course, have a vital influence, as vast quantities of crushed stone, gravel, sand, cement, brick, steel, and bituminous materials are required to be transported by rail. The Car Service Section has issued an order which provides for appeal to the director of the Office of Public Roads through the state highways departments, where transportation needs are urgent and the local railroads cannot handle the situation. The director in turn brings the appeal before the central Highways Council for appropriate action.

Revenues and Expenses of Express

Companies for January, 1918

The Interstate Commerce Commission has issued the following statement, subject to revision, compiled from the monthly reports of operating revenues and operating expenses of the principal express companies for January, 1918:

Item	Adams Express Co.		American Express Co.		Canadian Express Co.	
	1918	1917	1918	1917	1918	1917
Mileage of all lines covered (miles).....	48,606.16	45,165.92	73,083.87	73,409.07	12,447.14	12,049.93
Charges for transportation.....	\$4,323,865	\$3,808,099	\$5,839,305	\$5,128,455	\$356,998	\$314,545
Express privileges—Dr.....	2,157,246	1,893,777	2,956,869	2,580,778	187,807	172,753
Operations other than transportation.....	42,136	61,062	267,177	277,289	13,837	11,845
Total operating revenues.....	2,208,775	1,975,384	3,149,613	2,824,966	183,028	153,637
Operating expenses.....	2,875,943	2,850,680	3,853,930	2,800,497	208,503	164,309
Net operating revenue.....	*667,187	*175,296	*704,317	24,468	*25,474	*10,672
Uncollectible revenue from transportation.....	1,219	977	1,141	2,208	1,644	153
Express taxes.....	25,280	21,344	47,186	38,879	5,000	7,000
Operating income.....	*693,688	*197,518	*752,645	*16,619	\$2,119	*17,826

Item	Great Northern Express Co.		Northern Express Co.		Southern Express Co.	
	1918	1917	1918	1917	1918	1917
Mileage of all lines covered (miles).....	9,095.25	10,060.29	8,290.39	8,294.45	34,918.30	34,861.60
Charges for transportation.....	206,881	232,020	216,067	217,968	1,749,003	1,639,804
Express privileges—Dr.....	126,194	140,966	128,114	121,103	906,378	851,209
Operations other than transportation.....	3,765	4,227	3,142	3,297	26,910	38,402
Total operating revenues.....	84,448	95,282	91,095	100,163	869,536	826,997
Operating expenses.....	90,345	107,183	111,277	92,909	750,487	663,762
Net operating revenue.....	*5,896	*11,901	*20,182	7,254	119,048	163,235
Uncollectible revenue from transportation.....	29	23	10	58	165	187
Express taxes.....	5,739	4,365	8,000	6,600	29,253	16,801
Operating income.....	*11,665	*16,289	*28,192	1,195	89,630	146,246

Item	Wells Fargo & Co.		Western Express Co.		Total for companies named	
	1918	1917	1918	1917	1918	1917
Mileage of all lines covered (miles).....	115,409.67	107,089.19	5,236.90	5,253.32	307,087.68	296,183.77
Charges for transportation.....	4,838,786	4,078,645	112,728	105,529	17,645,638	15,525,070
Express privileges—Dr.....	2,490,195	2,118,100	54,100	51,982	9,006,913	7,930,672
Operations other than transportation.....	102,850	103,342	3,190	3,402	463,012	502,870
Total operating revenues.....	2,451,440	2,063,886	63,818	56,949	9,101,737	8,097,268
Operating expenses.....	2,618,355	2,029,677	68,183	60,911	10,577,027	8,069,934
Net operating revenue.....	*166,914	34,208	*4,364	*3,963	*1,475,290	27,334
Uncollectible revenue from transportation.....	1,629	1,062	6	3	5,846	4,675
Express taxes.....	34,851	38,670	1,308	1,821	156,621	134,782
Operating income.....	*203,395	*5,524	*5,679	*5,787	*1,637,757	*112,123

* Deficit or loss.

Traffic News

G. A. Tomlinson, federal manager of New York State Canals, under the Railroad Administration, has been appointed also to have charge over the Delaware & Raritan canal (Pennsylvania Railroad, lessee), which has been taken over by the Federal Administration.

The union city ticket offices in New York are not being opened with the promptness that was promised; and most of them, it appears, will be opened about August 1. The window of the office at the corner of Chambers street and Broadway contains a placard saying that the place will be ready for business about July 25.

Frank E. Herriman, Manager of Coal Development of the New York Central Lines, who was recently appointed vice-president of the Clearfield Bituminous Coal Corporation, has been elected president of that corporation, succeeding A. H. Smith, Regional Director of Eastern Railroads. John Carstensen has been appointed vice-president in place of Mr. Herriman.

The Car Service Section, in a circular to the railroads, calls attention to the fact that binder twine is important in connection with the grain harvest; ammonia cylinders are important in connection with food conservation in order to promptly transport ammonia for refrigeration purposes, and canning machinery is very essential in connection with the government's food conservation program. Therefore, arrangements should be made to accept and move promptly all shipments of these commodities.

C. R. Custer, general advertising agent of the Chicago & North Western; W. H. Simpson, general advertising agent of the Atchison, Topeka & Santa Fe; and T. T. Maxey, advertising agent of the Chicago, Burlington & Quincy, have been appointed members of an advisory advertising committee to assist the Western Passenger Traffic Committee, at Chicago. C. A. Searle, general baggage agent and manager of mail traffic of the Chicago, Rock Island & Pacific at Chicago, has been appointed to assist the Passenger Traffic Committee in matters affecting train schedules.

Reduction of the quantity of baggage carried by traveling salesmen in order to meet the shortage of baggage cars has been requested of all dry goods wholesalers by the conservation division of the War Industries Board. It is estimated that there are only 9,700 baggage cars in the country, in which it is estimated 24,000,000 sample trunks were checked last year. This was equivalent to 30 per cent of the total baggage carried free by the railroads. During the last few months many baggage cars have been converted into dining cars for troop trains and it has been necessary to use freight cars for baggage. Their reuse, however, has resulted in delays caused by hot boxes and consequently a reduction in the number of salesmen's trunks handled will facilitate the movement of troops.

The Food Administration has requested that, beginning at once, reports be made to it by all Southern District railroads of loss of and damage to foodstuffs due to improper or insufficient containers, so that steps may be taken looking toward the conservation of the resources of the country. This is the salient point in a circular issued by W. S. Battle, Jr., general claim agent of the Norfolk & Western, calling on the agents of the company to embrace every opportunity to avoid waste and promote economy. He calls for reports showing the commodity, name of shipper, point of origin, name of consignee, destination, the character of the packages, the extent of the loss and, so far as can be determined, the causes of the trouble. "Do not think because you are but one of many that your assistance will not amount to much. Remember the motto of our nation. The same applies to individuals. Let us all work and pull together. Think what a grand result can be accomplished by the 30,000 employees of this railway working together shoulder to shoulder for our government, our country, and the boys Over There. Watch

carefully the freight received and delivered by you. If it is damaged make a full report on the regular form (F. C. A. 126) and give all the facts; and also give your suggestions as to how to avoid similar losses and damages in the future."

The director of traffic of the Railroad Administration has authorized the modification of the increase in rates on petroleum oils, carloads, as required under General Order No. 28, and tariffs will be filed as soon as possible, effective on one day's notice, making the increased rates uniformly 4½ cents higher than the rates in effect on May 25, 1918, instead of 25 per cent higher, except that the increased class rates for the ratings provided in the Official, Western and Southern Classifications will not be exceeded. Producers of copper and other bullion metals were given a hearing on July 11 to protest against the increased rates on those commodities because the government has fixed their prices. The Indiana railroad commission has also submitted a complaint that the adjustment of rates under General Order No. 28 unduly prejudices Indiana and favors Illinois.

Coal Production

The observance of July 4 caused bituminous coal production during the week of July 6 to decrease 2,981,000 net tons or approximately 17 per cent. The total output (including lignite and coal made into coke) is estimated at 10,259,000 net tons as against 12,340,000 net tons during the week preceding and 9,241,000 net tons during the current week of 1917. The average production per working day (five day week) is estimated at 2,052,000 net tons, slightly lower than the average production per working day during the week of June 29 of 2,057,000 net tons and 11 per cent greater than average production per working day during the week of July 6, 1917.

Anthracite shipments during the week of July 6 decreased 10,148 carloads or 25 per cent, the total movement amounting to 31,493.

Freight-Rate Information in New York City

B. Campbell, chairman of the Freight Traffic Committee, eastern Region, announces that within a few weeks information regarding freight rates heretofore supplied in New York City by "off line agencies" of roads formerly having representation in New York, will be furnished by the initial lines, as below:

Baltimore & Ohio, N. A. Allen, general freight agent, 295 Broadway.	Chic. & Northwestern. Cinn., Ind. & Western. Missouri, Kan. & Texas. St. Louis & San Fran. St. Louis South Western. Seaboard Air Line. Western Maryland.
Central of N. Y., J. McDonough, general Eastern freight agent, 143 Liberty street.	Louisville & Nashville. Nash. Chat. & St. L. Norfolk & Western.
Delaware, Lackawanna & Western, J. J. Byrne, general eastern freight agent, Woolworth Building.	Chicago Gt. Western. Denver & Rio Grande. International & G. Northern. Missouri Pacific. Northern Pacific. Texas Pacific. Western Pacific.
Erie Railroad, W. S. Cowie, general Eastern freight agent, 399 Broadway.	Atchison, Topeka & Santa Fe. Colorado Midland. Kansas City Southern. K. C. Mex. & Orient. Los Ang. & Salt Lake. Toledo, St. L. & Western.
Lehigh Valley, Fred E. Signer, general Eastern freight agent, Woolworth Building.	Chic. Milw. & St. Paul. Great Northern. Illinois Central. Mobile & Ohio. Pere Marquette. Wabash.
New York Central, Ira H. Hubbel, assistant freight traffic manager, Woolworth Building.	Chic., R. R. Island & Pac. Chic., Ind. & Louisville. Cleve., Cinn., Chic & St. Louis. El Paso & So. Western. Lake Erie & Western. Minn. & St. Louis. Union Pacific System.
N. Y., O. & Western, Fred Berghelm, gen'l Eastern agent, 377 Broadway.	Chic., Peoria & St. Louis. Ann Arbor. Chic. & Eastern Illinois. Chicago & Alton. Atlantic Coast Line. Atlanta & West Point. Chesapeake & Ohio. Chicago, Burl. & Quincy. Colorado Southern. Georgia. Norfolk & Southern. Southern Ry. System. Western of Ala.
Pennsylvania, A. B. Scott, district representative, Woolworth Building.	

Commission and Court News

Interstate Commerce Commission

The fifteenth section application filed by Randall Clifton, chairman of the Southern Freight Rate Committee, for authority to increase refrigeration rates on shipments of berries, melons; domestic fruits and vegetables, from points of origin south of the Ohio and Potomac rivers and east of the Mississippi river, to all points of destination in the United States and Canada has been assigned by direction of the Commission to the formal docket and will be set for hearing.

The commission has issued an order making the Director General of Railroads a respondent in the railway mail pay case, in which the commission is making a general investigation of the rates and basis for compensating the railroads for handling United States mails; and the commission has assigned the proceeding for hearing on November 4, at Washington, before Attorney-Examiner George N. Brown. A large amount of statistical evidence has been collected in connection with the investigation, and a statement of the postmaster general showing the transportation required of all railway common carriers has been filed with the commission.

The following Conference Ruling has been adopted by the commission:

The Supreme Court of the United States in *U. S. ex rel. v. Interstate Commerce Commission* decided on April 29, 1918, held that the right to recover reparation on account of unlawful freight charges accrues when they are paid, and not upon the delivery of the shipment as held by the commission in *Blinn Lumber Co. v. S. P. Co.*, 18 I. C. C. 430. The commission will therefore entertain petitions for the reconsideration of any such formal or informal claims that were filed within two years from the time the charges were paid and were denied by the commission under the ruling of the *Blinn* case. Such petitions should be filed not later than December 31, 1918. Modifying Conference Ruling 508.

State Commissions

The Public Service Commission of New York, second district, has issued a decision allowing the New York Central to increase from 25 cents to 50 cents its charge per car for weighing cars on a shipper's track scales. The railroad presented figures showing that, in 1908, when the 25-cent rate was prescribed, the actual cost of weighing a car was 35 cents; and that now it costs much more than that.

The Public Utility Commissioners of New Jersey, denying an application for authority to make a general increase in fares, has authorized the Public Service Railway Company, operating extensive electric lines in the northern part of the state, to charge one cent for each transfer issued to a passenger who has paid five cents. The petition for authority to make a general increase was bitterly opposed by the New Jersey League of Municipalities, said to comprise representatives of 146 cities and towns. In granting the right to charge for transfers the commissioners require the company to make monthly reports showing in much detail the income from fares, and the expenses of operation; and, further, it is proposed that a zone system of fares be devised.

Public Service Commissioners of all of the six New England states met in conference at Boston on July 16 to consider questions relating to the recent increases in freight rates; whether the general level is too high; whether the increases on coal and certain other commodities are reasonable; whether passenger rates ought to be readjusted, and other details. Edgar J. Rich, formerly general counsel of the Boston & Maine, appeared before the conference, in behalf of the Associated Industries of Massachusetts, to complain that the rates which have been fixed by the director general for the transportation of freight are unjustly dis-

crimatory against New England. Mr. Rich declared that these freight rates had been fixed after political and sectional pressure had been brought to bear on the director general.

Personnel of Commissions

A. J. Maxwell has been appointed a member of the North Carolina Corporation Commission in place of E. L. Travis. Mr. Maxwell has been clerk of the commission for the past eight years.

Alonzo G. Pack has been appointed chief inspector of locomotives, for the Interstate Commerce Commission (not for the Railroad Administration) as noticed in this paper, last

week. Mr. Pack was born on July 22, 1865, at Princeton, W. Va. His first 15 years were spent on a farm, and in 1880 he entered the service of the Norfolk & Western on construction work. In 1882 he went to the Chesapeake & Ohio, as an apprentice in the boiler shop. He also served on that road as a brakeman. In 1887, he went to Denver, and worked for the Union Pacific and the Denver & Rio Grande, as locomotive fireman. In 1895, he became connected with the Colorado Midland as an

engineman. In 1900, he went to the Colorado Springs & Cripple Creek, serving as locomotive engineman, until 1911, when he was appointed district inspector of locomotive boilers, of the Interstate Commerce Commission, with headquarters at Denver, Colo. In 1914, he was promoted to assistant chief, inspector, and now becomes chief inspector of locomotives, with headquarters at Washington, D. C.

Wilfred P. Borland, who has recently been promoted from assistant chief to chief of the Bureau of Safety of the Interstate Commerce Commission, succeeding H. W. Belnap,

appointed manager of the Safety Section of the Railroad Administration, has been in the service of the Interstate Commerce Commission for 16 years, having become identified with its safety appliance work when it was first established under the late secretary of the commission, E. A. Moseley. Mr. Borland entered railroad service in 1876 as a brakeman on the Flint & Pere Marquette, and in about a year became fireman. He was later fireman and engineman on this road, the Denver & Rio Grande, and the

Northern Pacific, making a total of about 20 years in railroad service, which he left in 1896. He was then a stenographer at the Mare Island Navy Yard, and became connected with the Interstate Commerce Commission in 1902. He was for a number of years inspector clerk in the safety appliance department, and later was secretary of the Block Signal and Train Control Board. On February 5, 1914, he was appointed assistant chief inspector of safety appliances.



A. G. Pack.



W. P. Borland.

W. H. Harland has been appointed senior electrical engineer of the Interstate Commerce Commission, Bureau of Valuation, Eastern District, engineering section, succeeding Milan V. Ayres, resigned to accept an appointment as major in the National Army. Mr. Harland will have charge of the electrical, signal, telegraph and telephone branches.

John M. Hall, formerly district inspector of locomotive boilers for the Interstate Commerce Commission and recently supervisor of equipment in the locomotive section of the Railroad Administration, has been appointed assistant chief inspector of locomotive boilers of the Interstate Commerce Commission, succeeding A. G. Pack, promoted to chief inspector.

Court News

Contributory Negligence of Passenger at Station

In an action for personal injuries it appeared that the plaintiff, proposing to take a train operated by one of the defendant's tenant companies went to the station a few minutes before train time. The waiting room of the station opened upon an inclosed space separated from the tracks by a high iron fence equipped with sliding gates, which could be locked and were in charge of a gateman. The gateman went into the waiting room and announced the train, passed through the crowd of passengers in the enclosure, unlocked the gate near which the plaintiff was standing, went through, and stood on the other side. As the approaching train slackened, a woman near the gate opened it and the passengers went through. About the time the train stopped, a switch engine, with headlight burning and bell ringing, approached on the track next to the inclosure. The plaintiff went through the open gate and started to cross the near track diagonally, with his back towards the engine, and was struck by its beam. One of the defenses was the plaintiff's contributory negligence, but the trial court charged the jury that the evidence of it was not sufficient to submit to them. On appeal, the Circuit Court of Appeals, Eighth Circuit, held that, while the plaintiff was a passenger, yet as he was complete master of his movements and his powers of observation, unlike a passenger on a train, it was improper to declare, as matter of law, that he was free from contributory negligence, but that question should have been submitted to the jury.—*St. Louis Merchants' Bridge Terminal R. Co. v. Munger*, 246 Fed., 938. Decided October 29, 1917.

Recovery of Charges for Disinfecting Cars

The consignee of an interstate shipment of 58 cars of live stock to New Orleans paid all the charges except those for disinfecting. In an action for these he denied liability on the ground that the railroad knew or should have known that he was a factor or commission merchant; that immediately on the arrival of the live stock he sold it, deducted expenses, etc., and remitted the balance of the proceeds to his principals; that when the cars arrived he paid all charges demanded; that having led him to believe the amount then asked and paid was in full settlement, the railroad was estopped from demanding more of him. The federal district court for the Eastern District of Louisiana upon its own initiative dismissed the action for want of jurisdiction. The Judicial Code provides that district courts shall have original jurisdiction "of all suits and proceedings arising under any law regulating commerce." The Interstate Commerce Act requires the carrier to collect and the consignee to pay all lawful charges duly prescribed by the tariff. In support of the trial court it was said: There is no jurisdiction unless the suit in part at least arises out of a controversy in regard to the operation or the effect of the act of Congress. The Supreme Court of the United States holds that the district court had jurisdiction. The railroad company set up a claim based on provisions of a tariff duly filed, published and approved as required by the Interstate Commerce Act; the result of the action necessarily depended upon the construction and effect of that act. The judgment was accordingly reversed and the cause remanded.—*L. & N. v. Rice*. Decided May 20, 1918.

Supply Trade News

The Cleveland Frog & Crossing Company, Cleveland, Ohio, recently obtained a permit to construct a storage building 40 by 60 ft. to cost approximately \$3,000.

The Edison Storage Battery Supply Company has moved its New Orleans office from 201 Baronne street to larger and more commodious quarters in the Maison Blanche building, Room 911.

Robert Brown Carnahan, Jr., vice-president of the American Rolling Mill Company, Middletown, Ohio, was accidentally killed on June 22. He was educated at the University of Pitts-



R. B. Carnahan, Jr.

burgh, graduating with the class of 1891. Upon the completion of the university work he became associated with the Dewees-Wood Company at McKeesport, Pa., where he was engaged in research work in connection with gold mine prospects. He remained with that concern until 1899 when he went with the Carnegie Steel Company at its Homestead works, where he was engaged in special work in connection with the manufacture of open hearth steel. In 1900 he entered the service of the American Rolling Mill Company as chief

chemist and open hearth superintendent at what is now known as its Central works. Under Mr. Carnahan's direction the Armco American ingot iron was developed.

James M. Hopkins, chairman, Camel Company, Chicago, has accepted a position with the Priorities Committee of the War Industries Board. Mr. Hopkins will reside in Washington.

The United States Metallic Packing Company, Philadelphia, announces that it no longer represents the Watertown Specialty Company for the sale of that company's automatic cylinder cock.

Charles R. Hook, vice-president of the American Rolling Mill Company, at Middletown, Ohio, has been elected a director of that company, succeeding the late **J. G. Battelle**, of Columbus, Ohio.

The Bird-Archer Company has moved its Chicago office from Room 866 to Room 1105 Peoples Gas building, to obtain larger space. This company has recently established a plant in Chicago and one at Cobourg, Ont.

The Certes Supply Company, located at the Frisco building, St. Louis, Mo., has been appointed district sales agents for the Track Specialties Company. T. D. Kelley is president and Patrick T. Kilgariff is vice-president. The J. S. Morrison Company located at the Oliver building, Pittsburgh, Pa., has been appointed Pittsburgh representative.

At a meeting of the board of directors on June 28, **George W. Wildin** was elected general manager of the Westinghouse Air Brake Company, vice **A. L. Humphrey**, resigned. Mr. Humphrey continues as ranking vice-president, and in that capacity will as heretofore have general direction of the company's operations in all departments and subsidiary organizations, Mr. Wildin reporting to him. As general manager of the Locomotive Stoker Company, Mr. Wildin has been succeeded by **D. F. Crawford**, formerly general manager of the Pennsylvania Lines West, who was elected

vice-president and general manager of the Stoker Company. At the same meeting of the Stoker Company, **N. M. Lower** was elected assistant general manager. Sketches and portraits of Mr. Wildin and Mr. Crawford appeared in the *Railway Age* of April 5 and June 21 respectively.

Ray Frazer, general manager of the Lyle Corrugated Culvert Company, Minneapolis, Minn., died on June 17, ten days after meeting with an injury in an automobile accident. Mr. Frazer was born at Pleasant Town, near Topeka, Kan., on December 9, 1882. Five years later he moved to Lyle, Minn., where he received his early education. He entered Carleton College, Northfield, Minn., in 1899, where he remained for two years. After spending several years in the drug business he became connected with the Lyle Corrugated Culvert Company as manager. Upon the removal of the headquarters of that company to Minneapolis, he was made general manager of all of the company's activities. One of his recent developments has been the metal sign business, he becoming actively interested three years ago in the design and building of the machines now being used for the manufacture of Lylesigns.

Clinton C. Murphy, vice-president of the P. H. Murphy Company, and the Standard Railway Equipment Company, of Chicago, died on July 13, in that city. Mr. Murphy was born at Cumberland, Md., on June 5, 1875, and was educated at the Smith Academy, at St. Louis, Mo. After completing his education he entered the employ of the Cairo Short Line as a machinist's apprentice. In 1898 he entered the railway supply business as a representative of the Murphy Roofing Company at St. Louis, following which he moved to Chicago, on his election as vice-president of the Standard Railway Equipment Company. In 1915 he organized and was made president of the Union Metal



C. C. Murphy

Products Company. He was also interested in the Imperial Appliance Company and the Pressed Steel Manufacturing Company, both of Chicago.

A FUSSE IS A MIGHTY DANGEROUS THING to pack a hot box with. This is the text of a circular which has been issued by the safety engineer of the Grand Trunk, to tell of an engine man and a brakeman who used powder taken from fuses to cool hot journals. This is characterized as the latest fashion in getting hurt, a fashion which all employees in Canada are reminded to steer clear of. A fusee contains potassium perchlorate, sulphur, charcoal and a lot of other things that do not get along well together in a hot box. A fusee is a safety device when burning on the track, but a death device when burning in a hot box.

BRITISH CONTROL OF ROAD TRANSPORT.—The British Board of Trade has issued the Road Transport Order, 1918, by which all persons owning or having in their possession or under their control any horse or vehicle which is used for the transport of freight by road shall, before July 31, make a return in the form provided. This return must be sent to the secretary of the Road Transport Committee for the area in which the horse or vehicle is usually kept. Before disposing of any horse or vehicle referred to in the return notice must be given in writing, and after September 1 no person shall use any horse or vehicle that is being used for road transport except in accordance with the terms of a permit granted by the Road Transport Board. The order does not apply to horses or vehicles used wholly or mainly in agriculture or to horse-drawn vehicles having a load capacity of less than 15 cwt.—*Railway Gazette, London.*

Railway Construction

CANADIAN PACIFIC.—This company is lining its Connaught (B. C.) tunnel at a cost of approximately \$250,000. The Carter-Hall-Aldinger Company, Limited, Winnipeg, Man., has the contract for the work.

CHICAGO, BURLINGTON & QUINCY.—This company will build a bridge across the Platte river at Bridgeport, Neb., to cost approximately \$150,000. The foundations will be built for double track, but only a single track superstructure will be erected at the present.

CHICAGO & NORTH WESTERN.—This company has given a contract to the C. W. Gindele Company, Chicago, for a 20-stall roundhouse to be built at Fond du Lac, Wis.

PENNSYLVANIA-DETROIT RAILROAD COMPANY.—This company has bought property for a large freight depot at Detroit, Mich., but on account of war conditions has postponed construction work indefinitely. The property extends from Third to Sixth streets and from Congress to Larned streets.

PENNSYLVANIA LINES WEST.—This company has awarded a contract to the Austin Company, Cleveland, Ohio, for the construction of engine terminals at several points on that system. This work will include a roundhouse of steel construction with reinforced concrete roof and 75-ft. bridge cranes, which will be provided with smoke exhaust and washing systems. The first structure of this type will be erected at Crestline, Ohio, and will be a 30-stall house costing approximately \$500,000, which is to be completed in 120 days. It is planned to begin similar work at Richmond, Ind., in the near future. The Austin Company has also been awarded a contract for the construction of a locomotive erecting and machine shop, 200 ft. by 420 ft., at Logansport, Ind., costing approximately \$600,000, which is to be built according to the designs and specifications of the Austin Company. This shop, which will be equipped with a 250-ton bridge crane, is also to be completed in 120 working days.

PHILADELPHIA & READING.—A contract has been given to D. S. Warfel, Lancaster, Pa., for putting up a new machine shop at Rutherford, Pa. The building is to be a one-story structure, 20 ft. wide by 158 ft. long, of brick construction on concrete foundation and base, with steel frame roof and steel sash.

TEXAS & PACIFIC.—This company is planning to construct shops at a different location to take the place of its machine shop and auxiliary buildings at Marshall, Tex., which were destroyed by fire on June 9 with an estimated loss of about \$300,000.

AIR-RAID PRECAUTIONS ON GERMAN RAILROADS.—Special precautions against air raids are now being taken on the German railways in those districts especially liable to aerial bombardments by the Allies. The Palatinate Railways, in particular, are adopting precautionary measures, and a writer in the *Lokal-Anzeiger*, who recently traveled on this system, describes the darkening methods adopted at night. For hours, he writes, the train traveled "as though in a dark cave, without lights, without conductors, without any station names being called out when the train stops. When every lamp is extinguished throughout the countryside, and the towns and villages, as though constrained by agony, have closed their shops, the journey oppresses one's mind and is nowise reassuring. One goes on in uncertainty, facing danger. Everywhere placards indicating 'how to behave during air raids,' show that one is in the aviator's territory. Slowly, very slowly, the train proceeds on its journey; in a river alongside the line one still sees the locomotive which, together with its train, plunged into the water on the occasion of a recent accident. A train with broken windows—not a pane has remained intact—passes near us; another train passes all blackened and half consumed with fire. And on arriving at the end of this dismal journey, the first question heard by the traveler is 'Will they come tonight?'"

Railway Financial News

BALTIMORE & OHIO.—See Pennsylvania.

COLORADO MIDLAND.—Judge J. W. Sheafor of Colorado Springs has appointed President A. E. Carlton receiver of this property and has ordered him to stop the operation of the road, after due notice, on or about August 5. The Denver News states that the rails and other materials which will be obtained from the junking of the Colorado Midland will be turned over to the government and sent to France for the construction of military roads. The Colorado Midland operating 338 miles of line was sold to A. E. Carlton and his associates in April, 1917, for \$1,425,000.

ERIE.—The New Jersey Public Utility Commission has authorized this company to issue \$12,500,000 of 20-year 6 per cent series B bonds, under its refunding and improvement mortgage dated December 1, 1916. The bonds must not be sold for less than 90 per cent of their face value and are to realize net proceeds of at least \$11,250,000.

LOUISVILLE BRIDGE & TERMINAL COMPANY.—This company, which is a consolidation of the Pennsylvania Terminal Railway and the Louisville Bridge Company, has filed articles of incorporation in Louisville with a capital of \$5,000,000.

PENNSYLVANIA.—Director General McAdoo has issued the following statement: "In some inexplicable way a report has gained circulation that the Pennsylvania Railroad and the Baltimore & Ohio Railroad have deferred their usual dividends because the contract between the government and the roads under federal control has not been signed. There is no basis for this report." Both of these roads, after the meetings of their boards of directors held in June, announced that the dividend declarations had been deferred until the meetings in July.

PITTSBURGH, CINCINNATI, CHICAGO & ST. LOUIS.—A semi-annual dividend of 2 per cent, payable July 25 to stock of record July 22, has been declared. This compares with the previous rate of 2½ per cent. In connection with the declaration of the reduced dividend, the board of directors authorized the following statement: "On June 26 the board deferred action on the semi-annual dividend because this company having commenced business on January 1, 1917, as the result of consolidations had no dividend record for the three years' test period. Therefore, in accordance with the Act of Congress, it applied for the approval of the government to the declaration of a 2½ per cent semi-annual dividend, the same as it paid in 1917. The company is advised that the government has no objection to the payment of a semi-annual dividend of 2 per cent. In view of this determination by the government, the directors have declared a 2 per cent semi-annual dividend."

SOUTHERN PACIFIC.—Paul Shoup of San Francisco has been elected a director to succeed William Sproule, resigned to become district director. W. B. Scott has resigned as a director, having been appointed federal manager of the Texas and Louisiana lines.

EXPORTS TO THE ARCTIC PORTS OF RUSSIA.—The total value of merchandise shipped from the United States to the Arctic frontage of Russia, Archangel and Kola, from the beginning of the war to date was in round terms \$750,000,000, while the value of that going by way of her Pacific frontage, chiefly Vladivostok was \$321,000,000. With this enormous quantity of merchandise from the United States alone, coupled with that from other parts of the world, the receipts of merchandise at the Arctic and Pacific frontages soon came to exceed the transporting capacity of the railways, and quantities of war material and military supplies accumulated at both frontages, some of which presumably still remain in the vicinity of the ports at which they were landed.—*Bulletin of the National City Bank of New York*, July 9, 1918.

Railway Officers

Executive, Financial, Legal and Accounting

T. H. Burgess, assistant general solicitor of the Erie, has been appointed general solicitor with headquarters at New York.

Howard Elliott, has been elected president of the Northern Pacific, succeeding J. M. Hannaford, who was recently appointed federal manager.

Morrison A. Waite, general attorney for Ohio and Indiana, of the Baltimore & Ohio, has been appointed general solicitor, western lines, with headquarters at Cincinnati, Ohio.

H. F. Scheiman, assistant treasurer of the Grand Rapids & Indiana, with headquarters at Grand Rapids, Mich., has been appointed treasurer, with office at Grand Rapids.

Henry H. Pease, secretary and treasurer of the Lehigh & New England, with headquarters at Philadelphia, Pa., has been appointed local treasurer, and Leroy E. Reed has been appointed attorney.

Morton C. Bradley, assistant controller of the Boston & Maine, with office at Boston, Mass., has been appointed assistant general auditor, and John F. Turner, general auditor, with office at Boston, has been appointed assistant general auditor.

Herbert R. Wheeler, assistant treasurer of the St. Johnsbury & Lake Champlain, has been appointed local treasurer of the St. Johnsbury & Lake Champlain, the Montpelier & Wells River, and the Barre & Chelsea, with office at North Station, Boston, Mass.

Julius Kruttschnitt, chairman of the executive committee of the Southern Pacific, with headquarters at New York, has been elected president, to succeed William Sproule, resigned to become district director. Mr. Kruttschnitt will also continue as chairman of the executive committee.

A. R. McNitt, freight claim agent of the Oregon Short Line, with office at Salt Lake City, Utah, has been appointed freight claim agent of the Union Pacific, with headquarters at Omaha, Neb., effective July 1, succeeding W. H. Hancock, who has been retired on a pension.

Albert J. Haynes, auditor of the Maine Central, with office at Portland, Me., has been appointed general auditor; Frank W. York, treasurer at Portland, has been appointed local treasurer, and Charles H. Blatchford, attorney at Portland, Me., has been appointed general solicitor.

E. A. Stockton, deputy controller of the Pennsylvania Railroad, at Philadelphia, Pa., has been appointed general auditor; J. F. Fahnestock, treasurer, at Philadelphia, has been appointed local treasurer and W. A. Moncure, assistant real estate agent, at Philadelphia, has been appointed real estate agent.

Eugene A. Wigren, assistant auditor of the Michigan Central, with headquarters at Detroit, Mich., has been appointed auditor of the Michigan Central, the Toronto, Hamilton & Buffalo Railway Company, the Toronto, Hamilton & Buffalo Navigation Company, and auditor and secretary of the Chicago, Kalamazoo & Saginaw, vice Frank O. Waldo, resigned.

C. B. Seger, acting chairman of the executive committee of the Union Pacific, with headquarters at New York, has been elected president of the Union Pacific and the Oregon Short Line, succeeding E. E. Calvin. Mr. Seger has been elected also president of the Oregon-Washington Railroad & Navigation Company to succeed J. D. Farrell. An appreciation of Mr. Seger and his photograph were published in the *Railway Age* of March 22, 1918, page 707.

W. E. Kay, assistant general counsel of the Atlantic Coast Line, at Jacksonville, Fla., has been appointed general solicitor—Georgia, Florida and Alabama, and P. A. Willcox, general counsel, at Wilmington, N. C., has been appointed

general solicitor—North Carolina and South Carolina; **H. C. Prince**, comptroller at Wilmington, has been appointed general auditor, and **J. T. Reid**, treasurer at Wilmington, has been appointed local treasurer of the Atlantic Coast line and the Winston-Salem Southbound.

Paul Shoup has been elected director of the Southern Pacific and also vice-president and assistant to the president, succeeding **W. R. Scott**, resigned. Mr. Shoup will have his headquarters in San Francisco, but will retain his position as president of the Pacific Electric Railway, the general office of which is at Los Angeles. He will be the executive representative of the Southern Pacific on the Pacific coast, but will have nothing to do with the operation of the railway under the United States Railroad Administration. He will succeed **William Sproule** in subsidiary corporations controlled by the Southern Pacific.

James Brown, chairman of the executive committee of the Bangor & Aroostook, with headquarters at New York, has been elected president of the company, to succeed **Percy R. Todd**, who resigned as president to become assistant to the district director of the United States Railroad Administration, for New England, and general manager of the Bangor & Aroostook. **Frank C. Wright**, vice-president of the Bangor & Aroostook, with office at Bangor, has resigned to become assistant director, Railroad Administration, Division of Operation, at Washington, D. C.; **H. J. Hart**, general counsel of the Bangor & Aroostook, has been appointed general solicitor, with headquarters at Bangor, and **W. F. Cram**, treasurer, has been appointed local treasurer, with office at Bangor.

R. R. Richards, auditor of disbursements of the Michigan Central and the Toronto, Hamilton & Buffalo Railway, with office at Detroit, Mich., has been appointed assistant auditor of both roads and the Toronto, Hamilton & Buffalo Navigation Company. **F. W. Sparling**, assistant auditor of disbursements of the Michigan Central, with office at Detroit, has been appointed auditor of disbursements of all the above roads. **H. J. Van Vleck**, assistant auditor of the Toronto, Hamilton & Buffalo, has been appointed assistant to auditor of the same road and the Toronto, Hamilton & Buffalo Navigation Company. **N. J. Hill**, assistant auditor of passenger accounts of the Michigan Central, with office at Detroit, Mich., has been appointed assistant auditor of disbursements, vice **F. W. Sparling**. **J. W. Piper**, general accountant, has been appointed assistant auditor of passenger accounts to succeed **Mr. Hill**.

Operating

C. E. Reynolds, car accountant of the Virginian Railway, with office at Norfolk, Va., has been assigned to other duties, and his former position has been abolished.

R. E. Marks has been appointed passenger trainmaster of the Grand Trunk, Eastern lines, with headquarters at Montreal, Que., vice **W. E. Weeger**, transferred.

W. J. Harahan, federal manager of the Seaboard Air Line, with headquarters at Norfolk, Va., has been appointed federal manager also of the Macon, Dublin & Savannah.

J. S. Cox, trainmaster of the Norfolk Southern, with office at Raleigh, N. C., has been appointed superintendent of the Western division, with headquarters at Raleigh, vice **C. W. Akers**, promoted.

W. M. Corbett, president of the Kansas City Terminal, with headquarters at Kansas City, Mo., has been appointed terminal manager, of the Kansas City terminal switching district, effective July 12.

F. A. Deverell, assistant general auditor of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed assistant to federal manager (accounting), western lines, with headquarters at Cincinnati, Ohio.

F. F. Small has been appointed trainmaster of the Salt Lake division of the Southern Pacific, with headquarters at Mina, Nev., with jurisdiction over Mina sub-division, vice **G. H. Moore**, who has accepted service with the government.

C. M. Kittle, federal manager of the Illinois Central and lines in central western and southern territory, has also been

appointed federal manager for that portion of the line of the Louisiana Railway & Navigation Company east of the Mississippi river.

The appointment of **R. V. Taylor** as federal manager for the Gulf, Mobile & Northern, is canceled by reason of the fact that that property is not now under federal control. Mr. Taylor is federal manager of the Mobile & Ohio and the Southern Railway in Mississippi.

J. B. Stewart, general manager of the Bangor & Aroostook, with office at Bangor, Maine, has been appointed general superintendent of the Bangor & Aroostook and of the Van Buren Bridge Company, with the same duties for the present as he has hitherto performed as general manager.

A. S. Johnson, assistant general manager of the Terminal Railroad Association of St. Louis, has been appointed terminal manager of all lines within the switching limits of St. Louis, East St. Louis district, reporting to the regional director of the Southwestern region, effective July 9.

W. H. Newell, general superintendent of the Atlantic Coast Line, at Rocky Mount, N. C., has been appointed general superintendent also of the Winston-Salem Southbound, with office at Rocky Mount, N. C., to succeed **W. H. Johnson**, who has been appointed superintendent of the Winston-Salem Southbound with office at Winston-Salem.

J. F. Murphy, general manager of the Missouri Pacific, with headquarters at St. Louis, Mo., has been given the jurisdiction of the Chicago, Rock Island & Pacific line, from St. Louis, Mo. to Kansas City, in addition to the duties of general manager of the Missouri Pacific, as announced in the *Railway Age*, July 12. Mr. Murphy's headquarters are at St. Louis, Mo.

J. C. Johnson who has been appointed superintendent, of the Middle division, of the Pennsylvania Railroad, with office at Harrisburg, Pa., as has already been announced in these



J. C. Johnson

columns, was born on April 26, 1866, at Curtin, in Center county, Pa. He entered the service of the Pennsylvania Railroad on January 5, 1885, as a telegraph operator, on the Schuylkill division. In June, 1887, he was appointed train despatcher, of the Schuylkill division, and on January 1, 1903, was made assistant trainmaster of the same division. He was appointed division operator and assistant trainmaster, of the Schuylkill division, on November 16, 1905, remaining in that position until

October 24, 1907, when he became chief clerk to the superintendent of telegraph, at Philadelphia. In January, 1910, he was appointed superintendent of telegraph, which position he held until his recent appointment as superintendent, of the Middle division, of the same road, with headquarters at Harrisburg, Pa., as above noted.

Mr. J. Lowell White, district superintendent of the Atlantic Coast Line at Norfolk, Va., has been appointed superintendent of transportation of the Winston-Salem Southbound Railway, and his authority as superintendent of transportation of the first division of the Atlantic Coast Line is extended over the line between Winston-Salem and Wadesboro; office at Rocky Mount, N. C.

F. J. Gavin, assistant general superintendent of the Great Northern, at Spokane, Wash., has been appointed general superintendent of the western district, with headquarters at Seattle, Wash., succeeding **J. H. O'Neill**, whose appointment as terminal manager of the Puget Sound terminals was announced in the *Railway Age* of July 12. **J. M. Doyle**,

superintendent of the Cascade division, with headquarters at Everett, Wash., has been appointed assistant general superintendent of the western district, with headquarters at Seattle, succeeding Mr. Gavin. **C. M. McDonough**, trainmaster at Whitefish, Mont., has been appointed superintendent of the Cascade division, succeeding Mr. Doyle.

T. F. Darden, assistant to president and assistant secretary of the Atlantic Coast Line, at Wilmington, N. C., has been appointed assistant to federal manager; **C. J. Chenworth**, assistant to vice-president, at Wilmington, has been appointed office assistant, and **Robert Scott**, superintendent of the insurance department at Wilmington, has been appointed superintendent of insurance and safety.

George Wallace Dailey, whose appointment as assistant general superintendent of the Chicago & North Western lines in Minnesota and Dakota, with headquarters at Huron, S. D., was announced in the *Railway Age*, on June 21, was born at South Milwaukee, Wis., on July 31, 1870. In the spring of 1888, Mr. Dailey learned telegraphy and entered the service of the North Western. In the latter part of the same year he worked for the Wisconsin Central, as a telegraph operator, remaining with that company until March 1, 1892, when he went to Texas where he was employed by the Gulf, Colorado & Santa Fe, in telegraph and train service work. In the latter part of 1892, he returned to the North Western, and subsequently for several years was telegraph operator, trainman and train despatcher on the Wisconsin division, and for two years was engaged in track elevation work on the same division. On May 1, 1899, Mr. Dailey was appointed chief train despatcher on the Northern Iowa division. Two years later he was promoted to trainmaster on the same division, and on June 30, 1902, was promoted to superintendent of the Iowa division, with headquarters at Boone, Iowa. The following year he was appointed superintendent of the telegraph department, with headquarters at Chicago, remaining there until December 1, 1908, when he was promoted to superintendent of the Wisconsin division, at Chicago, which position he held until his recent promotion.

V. J. Bradley, assistant to vice-president of the Pennsylvania Railroad, with office at Philadelphia, Pa., has been appointed general supervisor of mail traffic; **R. H. Newbern**, superintendent, insurance department, has been appointed superintendent, insurance and safety, and **H. T. Wilkins**, assistant secretary, at Philadelphia, has been appointed special assistant to federal manager.

J. B. Fisher has been appointed transportation assistant, **J. T. Carroll**, mechanical assistant, and **E. B. Temple**, engineering assistant to **Charles H. Markham**, regional director of the Allegheny region, United States Railroad Administration. Mr. Fisher was superintendent of freight transportation, of the Pennsylvania Railroad, at Philadelphia; Mr. Carroll was assistant general superintendent of motive power, of the Baltimore & Ohio, at Baltimore, Md., and Mr. Temple was assistant chief engineer of the Pennsylvania at Philadelphia.

F. C. Dow, trainmaster of the Chicago, Milwaukee & St. Paul, at Tacoma, Wash., has been appointed acting superintendent, Coast Division, and Tacoma Eastern, with office at Tacoma, vice **Mott Sawyer** who has been granted leave of absence to enter military service. **A. O. Veitch**, trainmaster at Moberge, S. D., has been appointed assistant superintendent, Missoula division, with office at Avery, Idaho,

vice **T. J. Hamilton**, who has been granted leave of absence to enter military service, and **H. L. Wiltrout**, trainmaster at St. Maries, Idaho, has been appointed trainmaster, Coast division, and Tacoma Eastern, vice Mr. Dow.

S. U. Hooper, assistant division superintendent of the Baltimore & Ohio at Toledo, Ohio, has been appointed superintendent of transportation, western lines, with office at Cincinnati; **J. B. Carothers** has been appointed assistant to federal manager, with office at Cincinnati; **E. W. Scheer**, general superintendent at Cincinnati, O., has been appointed general superintendent of the Northwest district, with office at Cleveland; this district now includes the Chicago, Newark, New Castle and Cleveland divisions; **F. B. Mitchell**, general superintendent at Cincinnati, has been appointed general superintendent of the Southwest district, with office at Cincinnati; this district now includes the Ohio, Indiana, Illinois and Toledo divisions and the Dayton & Union Railroad.

C. H. Buford, trainmaster of the Chicago, Milwaukee & St. Paul, on the La Crosse division, with headquarters at Milwaukee, Wis., has been promoted to superintendent of the Wisconsin Valley division, with headquarters at Wausau, Wis., succeeding **H. H. Ober**, who has been transferred to the Iowa & Dakota division, with headquarters at Mason City, Iowa, in place of **E. G. Atkins**, deceased. **C. F. Holbrook** has been appointed trainmaster of the La Crosse division, succeeding Mr. Buford. **E. A. Meyer**, trainmaster of the Chicago & Milwaukee division, with headquarters at Chicago, has been appointed superintendent of the Southern Minnesota division, with headquarters at La Crosse, Wis., succeeding **M. J. Larson**, transferred to the Sioux City & Dakota division, with headquarters at Sioux City, Iowa, in place of **F. L. Richards**, assigned to other duties. **F. E. Devlin** has been appointed trainmaster of the Chicago & Milwaukee division, succeeding Mr. Meyer. The above changes were effective July 15.

Noel W. Smith whose appointment as general superintendent of the Eastern Pennsylvania division, of the Pennsylvania Railroad, with headquarters at Altoona, Pa., has already been announced in these columns, was born at Williamsport, on December 25, 1869, and was educated in the public schools of his native town. He entered the services of the Pennsylvania as a student in telegraphy at Williamsport, and then until September, 1889, was clerk in the division freight agent's office at the same place. The same year he left railway work, to enter Lehigh University, and after graduation from that university returned to the service of the Pennsylvania as a rodman on the Sunbury division in April, 1893. He was subsequently assistant supervisor, on the Baltimore division, of the Northern Central; Renovo and Williamsport divisions of the Erie division; Maryland division of the Philadelphia, Baltimore & Washington, and engaged on experimental track work for the chief engineer of maintenance of way at Harrisburg. In January, 1900, he was promoted to supervisor at Williamsport, and was then transferred in the same capacity, first to Middletown and then to Harrisburg, on the Philadelphia division. In December, 1905, he was made supervisor in the office of the principal assistant engineer at Altoona, and in May of the following year was promoted to assistant to the principal assistant engineer at Altoona. In April, 1907, he was made division engineer of the Middle division, and on January 15, 1910, was appointed superintendent of the Central division of the P. B. & W., from which position he was appointed superintendent of the Middle division, in June, 1913,



G. W. Dailey



N. W. Smith.

and now becomes general superintendent of the Eastern Pennsylvania division, of the Pennsylvania Railroad, as above noted.

W. A. Baldwin, transportation assistant of the Erie, has been appointed general manager, with office at New York; **Jesse G. June**, superintendent of the Allegheny and Bradford division at Salamanca, N. Y., has been appointed superintendent of the Buffalo division, with office at Buffalo, vice **Enoch W. Underwood**, resigned; **Edward J. Edmunds**, superintendent of the Delaware and Jefferson division, at Susquehanna, Pa., succeeds Mr. June; **Joseph D. Rahaley**, trainmaster of the New York, Susquehanna & Western division, at Susquehanna, has been appointed superintendent of the Delaware and Jefferson division, with office at Susquehanna, Pa., vice Mr. Edmunds; **Arthur B. Caldwell**, trainmaster at Buffalo, N. Y., has been appointed superintendent of the Rochester division, with office at Rochester, vice **J. D. Cummin**, promoted to inspector of maintenance of way and construction for the federal manager.

Charles S. Krick, who has been appointed assistant general manager of the Pennsylvania Railroad, Eastern lines, with headquarters at Philadelphia, Pa., as has already been announced in these

columns, was born on March 16, 1866, at Reading, Pa. He was educated in the public schools, also at the Carroll Institute, Reading, and in June, 1887, graduated from Lafayette College. The following month he entered the service of the Pennsylvania Railroad as rodman on the Schuylkill division, and later was transferred to Altoona. On December 14, 1890, he was appointed assistant supervisor of the Tyrone division, and in April, 1892, was transferred in the same capacity to

C. S. Krick.

the Philadelphia division, becoming acting supervisor about three years later at the Schuylkill division. He was promoted to supervisor in June, 1896, and was subsequently supervisor on the Middle division, and later on the Pittsburgh division. On January 1, 1903, he was made assistant engineer of the Eastern and Susquehanna divisions, and later was transferred to the Philadelphia Terminal division, becoming principal assistant engineer of the Philadelphia, Baltimore & Washington in January, 1906. In April of the following year he was made superintendent of the New York Terminal division, and on January 1, 1912, when the Hudson and New York Terminal divisions were combined to form the Manhattan division, he was appointed superintendent of that division at New York. In February, 1914, he was appointed superintendent of the Philadelphia Terminal division, with headquarters at West Philadelphia, Pa. In November, 1915, he was appointed acting general superintendent of the New Jersey division, and in May, 1916 was appointed general superintendent of the same division, with headquarters at New York, which position he held until his recent appointment as assistant general manager, of the Pennsylvania Railroad, Eastern lines, as above noted.

E. H. Coapman, federal manager of the Southern Railway System, Georgia Southern & Florida, Alabama & Vicksburg, the Carolina, Clinchfield & Ohio and the Carolina Clinchfield & Ohio, of South Carolina, with headquarters at Washington, D. C., has been appointed federal manager also for the segregated line of the Baltimore & Ohio lying between Harrison, Va., and Lexington, Va.; the Ashville & Craggy Mountain; Ashville & Southern; Atlantic & Yadkin; Blue Ridge Railway; Carolina & Northwestern; Carolina & Tennessee Southern; Cincinnati, Burnside & Cumberland River; Cum-

berland Railway; Danville & Western; Ensley Southern, Harriman & Northeastern; Hartwell Railway; Hawkinsville & Florida Southern; High Point, Randleman, Asheboro & Southern; Lawrenceville Branch Railroad; Northern Alabama Railway; Roswell Railroad; Sievern & Knoxville; Tallulah Falls; Tennessee & Carolina Southern; Yadkin Railroad; and Louisiana & Mississippi Transfer (at Vicksburg, Miss.).

The Boston & Maine, including the York Harbor & Beach Railroad, the Montpelier & Wells River, the Barre & Chelsea, the St. Johnsbury & Lake Champlain, the Vermont Valley and the Sullivan County has been divided into two operating districts: **James D. Tyter**, general superintendent at Boston, Mass., has been appointed general superintendent of the First district, comprising the Portland, Southern, Fitchburg, Berkshire, W., N. & P. and Terminal divisions, with office at the North Station, Boston, Mass., and **Harley E. Folsom**, superintendent at Lyndonville, Vt., has been appointed general superintendent of the Second district, comprising the lines in Vermont and the C. & P. and White Mountains divisions, with office at Lyndonville. **Charles M. Woodward**, assistant superintendent, with office at Springfield, Mass., has been appointed superintendent of the Connecticut and Passumpsic division, South, with office at Springfield; **John A. Ahern**, assistant superintendent at Lyndonville, Vt., has been appointed superintendent of the Connecticut and Passumpsic division, North, with office at Lyndonville, and **Frederick C. Mayo**, secretary, treasurer and assistant superintendent of the St. Johnsbury & Lake Champlain, has been appointed superintendent of the St. J. & L. C., with office at St. Johnsbury.

Traffic

E. T. Campbell, traffic assistant of the Erie, has been appointed traffic manager, with headquarters at New York.

George S. Hobbs, second vice-president of the Maine Central, with office at Portland, Me., has been appointed traffic manager.

G. M. Houghton, passenger traffic manager of the Bangor & Aroostook, has been appointed general passenger agent, with headquarters at Bangor, Maine.

C. L. Thomas, freight traffic manager of the Baltimore & Ohio, at Cincinnati, Ohio, has been appointed traffic manager, western lines, with office at Cincinnati.

D. C. Boy has been appointed manager development service, of the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio of South Carolina, with headquarters at Johnson City, Tenn.

J. B. Cook, traveling agent on the Great Northern, at Billings, Mont., has been appointed supervisor of coal traffic for Montana and Northern Wyoming, under the Railroad Administration, with headquarters at Billings, Mont., effective July 12.

R. A. Brand, vice-president of the Atlantic Coast Line, at Wilmington, N. C., has been appointed traffic manager; **James Menzies** freight traffic manager at Wilmington, has been appointed assistant traffic manager—freight; **W. J. Craig**, passenger traffic manager at Wilmington, has been appointed assistant traffic manager—passenger. **J. W. Perrin**, assistant freight traffic manager, at Wilmington, has been appointed general freight agent.

Engineering and Rolling Stock

L. G. Curtis, assistant chief engineer of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed chief engineer of the western lines, with office at Cincinnati, Ohio.

M. J. McCarthy, superintendent of motive power of the Baltimore & Ohio, with office at Cincinnati, Ohio, has been appointed superintendent maintenance of equipment, western lines, with office at Cincinnati.

J. B. Trenholm, engineer of roadway on the Atlantic Coast Line, has been appointed engineer of roadway of the Winston-Salem Southbound Railway, and his authority as engineer of roadway, first division of the Atlantic Coast Line, extended over the line between Winston-Salem and Wadesboro, with office at Rocky Mount, N. C.

E. J. Brennan, general master mechanic on the Baltimore & Ohio at Pittsburgh, Pa., has been appointed superintendent of motive power of the Chicago, Milwaukee & St. Paul lines east of Moberg, with headquarters at Milwaukee, Wis., succeeding **W. Alexander**, who has resigned to enter the motor service department of the war department, effective July 10. **W. F. Walsh**, traveling mechanical expert for the Galena Signal Oil Company, with headquarters at Chicago, has been appointed assistant superintendent of motive power of the Southern district of the Chicago, Milwaukee & St. Paul, with headquarters at Dubuque, Iowa, succeeding **J. J. Connors**, resigned, effective July 10. **R. W. Anderson**, division master mechanic at Miles City, Mont., has been promoted to assistant superintendent of motive power of the middle district, with headquarters at Milwaukee Shops, Milwaukee, Wis., succeeding **A. N. Lucas**, who has been appointed shop superintendent, with jurisdiction over the locomotive department of the Milwaukee shops, effective June 15. **A. J. Vogler**, general foreman at the passenger terminal at Western avenue, Chicago, has been promoted to master mechanic of the Sioux City & Dakota division, with headquarters at Sioux City, Ia., succeeding **G. J. Messer**, who has been transferred to the Dubuque division, with headquarters at Dubuque, Iowa, in place of **George P. Kempf**, who has been appointed engineer of tests, with headquarters at Milwaukee, Wis., succeeding **H. K. Fox**, who has been appointed mechanical engineer, with headquarters at Chicago, in place of **C. H. Bilty**, who has resigned to enter the service of the government, as mechanical engineer on the staff of the regional director of Northwestern railroads, effective July 8.

Railway Officers in Government Service

H. B. Feroat, district passenger agent of the Baltimore & Ohio at Washington, D. C., has been assigned by the Railroad Administration to the War Industries Board, where he will conduct a railroad information bureau for the convenience of the board and its personnel.

G. W. Briece, car accountant of the Missouri Pacific at St. Louis, Mo., has been appointed Supervisor of Transportation, Southwestern region, effective July 1; **W. E. McGarry** has been appointed Supervisor Car Service, Southwestern region, effective July 1; both with headquarters at St. Louis.

Railway Officers in Military Service

J. M. Hammond, formerly assistant to the chief engineer of the Kansas City Terminal, has been commissioned captain in the construction division of the Quartermasters Corps and assigned to duty at Washington.

F. A. Delano, formerly president of the Wabash, and later of the Chicago, Indianapolis & Louisville, who has resigned as a member of the Federal Reserve Board, has been commissioned as major in the Engineer Officers' Reserve Corps, for service in France.

Purchasing

W. S. Galloway, assistant purchasing agent of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed purchasing agent, western lines, with headquarters at Baltimore.

W. A. Starritt, purchasing agent of the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio of South Carolina, at Johnson City, Tenn., has been appointed local purchasing agent, with headquarters at Johnson City.

Robert Baker Pegram, who has been appointed general purchasing agent of the Southern Railway System, the Alabama & Vicksburg, the Georgia, Southern & Florida, the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio of South Carolina, with headquarters at Washington, D. C., as has already been announced in these columns, was born on August 22, 1874, at Marion, Ala., and was educated in private schools at Memphis, Tenn. In July, 1890, he began railway work with the Southern Railway. In 1895 and 1896 he was chief clerk of the Memphis Freight Bureau and later in 1896 served as chief clerk to the assistant general freight agent of the Illinois Central, at Memphis. In January, 1904, he was appointed soliciting freight agent of the Southern Railway and subsequently served as commercial agent

at the same place, and later as chief clerk to the vice-president at St. Louis, Mo. In December, 1905, he was appointed assistant general freight agent at Nashville, Tenn., and in April, 1907, he was promoted to general freight agent at the same place, subsequently serving as general freight agent at Charleston, S. C. On May 1, 1910, he was appointed general agent, executive department, with office at Charleston, and since January, 1917, was executive general agent with office at Memphis until his recent appointment as general purchasing agent as has been noted.

Obituary

J. B. Wadleigh, local representative agency and public service, on the St. Louis Southwestern, with headquarters at Dallas, Tex., died in Los Angeles, Cal., on July 5, at the age of 73 years.

Daniel C. Corbin, who was president of the Spokane International until that road was purchased by the Canadian Pacific and the Minneapolis, St. Paul & Sault Ste. Marie in the latter part of 1916, died of pneumonia at Spokane, Wash., on June 29. Mr. Corbin was born in New Hampshire in 1837, and went west in 1862. In 1886 and 1887 he built the railroad connecting the Coeur d'Alene mines with the Northern Pacific, which he sold to that company in 1888. In the spring of 1889 he began the construction of the Spokane Falls & Northern, from Spokane, Wash., north 141 miles, to the international boundary, and the Nelson & Fort Shepard, an extension of the Spokane Falls & Northern, from the international boundary to Nelson, B. C., 60 miles, and sold both roads in 1898 to the Northern Pacific. In 1905 and 1906 he built the Spokane International from Spokane, Wash., to a connection with the Canadian Pacific at Kingsgate, B. C. Mr. Corbin was one of the pioneer railroad builders of the Spokane region. Besides the roads mentioned above, he built and operated other shorter lines in the mining districts of Idaho and Washington, and at the time of his death was president of the Eastern British Columbia, with office at Spokane, Wash.

Samuel G. Hatch, passenger traffic manager of the Illinois Central, with headquarters at Chicago, died suddenly in that city, on July 12. Mr. Hatch has been in the service of the Illinois Central passenger department, continuously, for 22 years. He was born at St. Louis, Mo., on March 22, 1865, and began railway work in 1880 as a clerk in the general passenger department of the St. Louis-Keokuk & Northwestern, now a part of the Chicago, Burlington & Quincy. Two years later he was promoted to ticket agent for that road and the Burlington at Keokuk, Iowa, remaining there until 1885. In November, 1888, he was made traveling passenger agent on the St. Louis, Arkansas & Texas, now the St. Louis-Southwestern. Later he was promoted to district passenger agent at Louisville, Ky., and then to chief in the general passenger department. In March, 1895, he was appointed district passenger and ticket agent on the Chesapeake, Ohio & Southwestern at Memphis, Tenn. The following year he was promoted to general passenger agent and in August, 1896, he entered the service of the Illinois Central as division passenger agent at Cincinnati, Ohio. He was promoted to assistant general passenger agent at Chicago, in April, 1900. In July, 1905, he was promoted to general passenger agent, and in February, 1911, to passenger traffic manager, which position he held at the time of his death as mentioned above.



S. G. Hatch.

EDITORIAL

Railway Age

EDITORIAL

Scientific treatises extensive enough to fill volumes have been written about how to save fuel on locomotives. The situation can be summed up in general in the words of a former engineer: "I

Saving Coal on the Locomotive

always aimed to go into the terminal so that my fireman could say: 'I'll be ready to go when you are.'" In other words, he aimed to conserve the energy of the fireman by intelligent co-operation; and while this resulted in the expenditure of less physical exertion, the saving in fuel was in direct proportion. Asked why he did this, the engineer replied: "In those days we had no rest laws and we could be called for another run at the expiration of the time we designated when we came in. If my fireman was too tired I either had to wait for him to get rested or go out with a new man. The new man would, of course, not be accustomed to my ways and if he was green I might even have to spell him off with the firing." It is significant that the engineer made such a record for fuel economy and efficient locomotive operation that he is now regarded as one of the nation's foremost locomotive fuel experts.

On July 14 a number of newspapers in various parts of the country published what purported to be an interview with

The Mistakes of an Interviewer

the editor of the *Railway Age* on the freight car shortage. The views said to have been expressed and the alleged information given were so widely at variance with what has been repeatedly said in the columns of this paper that readers of the *Railway Age* who saw the interview must have surmised at once that it was replete with mistakes. Without going into details it will probably be sufficient to say that the interview was the product of an amateur struggling with a technical subject. When the interview, as written up, was submitted to the editor of the *Railway Age* for approval, the erroneous statements in it were pointed out, and an earnest effort was made to prevent its publication, but in some way it got into a number of newspapers. We should hope that there are few people who would believe it possible for the editor of this paper to say, as this interview represented him as saying, that "there were 4,072 fewer freight cars in use on American railways in 1917 than at the beginning of 1911," and that the freight car shortage was "responsible for the chaos of last winter!"

Americans are giving a good account of themselves in the great battle now raging in France. They would be still better

Will You Do Your Part?

prepared had the government been able to expend the 19 billion dollars which it had planned to do in the year ended June 30 last, instead of only 12 billions. That it could not do so was because of competition of its citizens for labor and materials which were needed for war work. Frank A. Vanderlip, president of the National City Bank, New York, who has given most of his time for months to promoting the War Savings Stamps campaign, asks this pointed question: "If the Government has not been able to get done for itself and Allies more than \$12,000,000,000 worth of work in the year past, with the industrial organization working to capacity, how will

it get \$30,000,000,000 worth done in the year to come? Is it still necessary to argue that private demands upon the industries must be curtailed and that all energies must be concentrated upon the war work?" Useless slaughter and suffering can be avoided if each individual in the nation will fully awaken to the seriousness of the situation and reduce his or her expenditures to a minimum. Our allies are even going without what we regard as necessities in order that ships may be used to get as many of our men and their equipment to the front as soon as possible.

The *Railway Age* has repeatedly warned the railroads about making adequate and thorough preparation for the care and

Women Workers in Railway Shops

instruction of women workers before they are put to work in railway shops. The number of women so employed has increased steadily and rapidly in recent months and in most instances the shop superintendents have taken advantage of the experiences with women workers in Great Britain and on the Canadian Pacific and Grand Trunk Railroads in Canada. In a few cases, however, those in charge have failed to profit by the experiences of others and mistakes have been made which it will be hard to overcome. In two cases in particular which have come to our notice, little or no attention was given to investigating the previous history of the women who applied for work. As a result conditions soon developed which threatened to destroy discipline and in one case actually resulted in a scandal and undesirable publicity. There are locomotive repair shops in the east today with a considerable percentage of machines lying idle because of the shortage of men. The shop authorities hesitate to take on women workers but will undoubtedly have to do so in the near future. Splendid service can be obtained from the women if they are rightly handled. It is a mistake, however, blindly to rush in and put them to work without first studying the situation carefully; and they should be hired only after special provisions have been made for their convenience and the regulations governing their conduct and work are thoroughly understood by all concerned.

A significant statement appears in the report of the committee on trade apprenticeship of the National Association of

Necessity for Train- ing Workers

Corporation Schools in that part referring to the railroads. It is this: "During the year railroads having well-organized apprentice systems have about held their own as to the number of apprentices and methods of instruction. In the shop where no modern system of training men exists, the apprenticeship has practically passed out of existence. * * * One road reported losing over 500 apprentices, etc." Those roads that had the wisdom and foresight to install real apprenticeship systems have therefore a double advantage. Not only are they able to attract new boys in spite of losing a large percentage of the advanced apprentices, but they have available a splendid staff of instructors to help break in the large number of green men or to assist in the instruction of women workers. The apprenticeship organization and program should be encouraged more than ever before, since as the war progresses it will become more and more necessary to ad-

vance those with any experience to higher and more difficult positions and add inexperienced men and women who must be rounded into shape as quickly and thoroughly as possible. It is to be hoped also that in spite of the difficulties in the way, special training methods will be extended to cover other than the shop apprentices in the mechanical department. There is hardly a department which could not profit greatly by furnishing intensive courses of instruction for new employees or for older employees to fit them for promotion.

The despatcher had the habit of talking to himself. Running his finger over the train sheet and apparently forgetful of the

The Despatcher and the Coal Pile

presence of a visitor, he said: "Engine 1406 out of ——. She's not in very good condition. Bill Jones on her. Worse luck! The combination is sure to make trouble. I'll have to keep them out of the way." Can you imagine the train in question making a good run, or of any sort of record in fuel economy? Surely not, for even if the locomotive and crew did exceptionally good work the despatcher was against them. Listen again to the despatcher: "Engine 1501 out of ——. Rot-ten condition. Big load. Tom Smith in charge. Tom never yet lost out if he had a ghost of a show. He'll get the old tub over the road." Did Tom Smith and 1501 make the run in good time, without delays and with a small amount of fuel burned? They did, for the despatcher was with them. Some locomotives burn more coal standing still than they do pulling the train over the division. The despatcher can be a big factor in fuel economy, if he knows the road, the power, the men and local conditions. Few expenditures will give bigger returns than to have the despatcher get out of the office and go over the road at frequent intervals and acquaint himself with local conditions.

Sherman Was Right

SOME OF THE TREATMENT accorded the shippers by the Railroad Administration recalls the remark of an editor who once said that his ideal would be attained when his paper became strong enough to make it safe for him to tell an advertiser to go to a place whose name is spelled with four letters. Of course, the editor did not want any of his advertisers to do anything of the kind, because they were the source of most of his revenue. That was merely his way of expressing the degree of independence to which he aspired. Apparently the present management of the railroads considers that it has attained a similar degree of independence of the shippers who furnish most of the wherewithal to buy axle-grease and coal. The administration bears the shipper no ill will but its six months' history records one case after another in which it has broken down or walked calmly over various privileges which the shippers have fought, bled and died for and in most cases have got away with.

First the right of the shipper to route his freight was taken away, demurrage rates were raised almost over night, competitive solicitation and solicitude were abolished almost simultaneously, freight rates were boosted right under the nose of the Interstate Commerce Commission, notice was issued that the payment of transportation charges would be put upon a cash basis, and now the division of traffic of the Railroad Administration has instructed the railroads that they need no longer petition the Interstate Commerce Commission for permission to file a tariff containing an increased rate, but may obtain their authority from the traffic division, which will also allow them to disregard the requirement of 30 days' notice.

Under the plan of cash collection of charges the shipper

will be advised very promptly of the amount of his freight bill after the goods have been moved. Moreover, he may make a protest to a district or regional traffic committee, just as he could before to a railroad traffic officer, and the shippers will have representation on the committees, which is more than most of them had on most railroads.

Of course, the Interstate Commerce Commission still retains its control of the reasonableness of rates by its power to review them after they are in effect, but the rates will be made first and discussed afterward, somewhat in the way the question of just compensation for the railroads that were taken over on December 28 is being discussed. The commission will also have jurisdiction over tariffs of joint rates with carriers not under federal control. This is not an obituary of the Interstate Commerce Commission, which will still have a great deal of work to perform although its authority is somewhat curtailed. Then there are the state commissions, which retain their authority to hold down the rates of the short line railroads not under federal control.

While the *Railway Age* does not advocate the arbitrary exercise of authority it occasionally finds leisure for a philosophical comparison of some of the aspects of war time efficiency with some of the results attained by the former efforts of the railroads toward efficiency. It is doubtless discouraging and unpleasant for a shipper to have his rates advanced without his consent and on short notice, or to have to wait for an investigation by the Interstate Commerce Commission to find out whether he has paid a reasonable rate. But it is probably no more so than it formerly was for a railroad to have its rates reduced or suddenly suspended or to have to await a protracted investigation to find out whether it would be allowed an advance in revenue to meet a retroactive increase in wages.

If so many rates had not been reduced in the last 12 years it would not now be necessary to raise them to such an extent as they are being raised and if the shippers had not obtained in 1910 the enactment of the law authorizing the commission to suspend rates they would not now be complaining because rates go into effect on the date intended.

Railway Earnings and Expenses

THE STATISTICS OF EARNINGS and expenses for May, which recently have been issued by the Interstate Commerce Commission, afford the last opportunity for making a very satisfactory comparison of railway earnings and expenses under private operation with earnings and expenses under government operation. The statistics for June, 1918, will include a considerable increase of earnings due to the recent large advance of freight and passenger rates, and also a large increase of expenses due to the large advance of wages now being made.

Whatever else may be said about government operation, it certainly cannot be said that, up to the end of May, it had much success in keeping down operating expenses. In the five months, January to May, inclusive, total earnings increased from \$1,549,000,000 to \$1,690,000,000, or \$141,000,000, while operating expenses increased from \$1,119,000,000 to \$1,381,000,000, or \$262,000,000. The advance in wages to be charged back into operating expenses will make the increase in them at least \$125,000,000 more, or a total increase in operating expenses in five months of \$387,000,000.

The figures for May are especially significant. In that month general transportation conditions had returned as near to normal as they are ever likely to return while the war lasts. The Railroad Administration was enjoying the benefit of the 15 per cent advance of freight rates made since a year ago in eastern territory where almost one-half of the country's entire traffic is carried. In that month both earn-

ings and expenses exceeded any figures ever previously reached, earnings being \$378,000,000, or \$32,000,000 more than last year, and expenses \$285,500,000 or \$47,000,000 greater than last year. Comparisons on a mileage basis usually are more instructive than comparisons of large figures. The following table gives the operating revenue, the operating expenses, the net operating revenue, the taxes, and the net operating income per mile of the Class I roads in May for the last four years:

MAY EARNINGS, EXPENSES, ETC., PER MILE, FOR FOUR YEARS.

	1918	1917	1916	1915
Total operating revenues.....	\$1,613	\$1,492	\$1,302	\$1,644
Total operating expenses.....	1,25	1,030	857	735
Net operating revenue.....	\$398	\$462	\$450	\$309
Taxes.....	68	62	55	50
Net operating income.....	\$330	\$400	\$395	\$259
Operating ratio per cent.....	75.49	69.	65.5	70.

Both the total earnings and the total expenses in May were larger than in any previous month of normal operating conditions in the history of the railroad industry, but the expenses were relatively much higher than the earnings. It will be noted that, in spite of the 15 per cent advance of rates in eastern territory, the ratio of expenses to earnings was 75.49 per cent, which was not only higher than in May, 1917 or 1916, but higher than in May, 1915, when total earnings were at a very low ebb. When the expenses for May have included in them the increase of at least \$25,000,000 in wages which will have to be charged into them, the ratio of expenses to earnings will be increased to over 80 per cent.

When the government took control of the railways there was a lot of loose talk to the effect that enormous economies would be effected. In fact, according to some estimates, these economies would be so great that they would offset all advances in wages and other unit costs. Some important economies have been and will be effected, but they have been and apparently will continue to be almost negligible compared with the increases of expenses. In the entire year 1917, the increase of operating expenses was \$476,000,000. This included large advances in wages and in the prices of materials and fuel. It would appear that even in the absence of any general advance of wages the increase of operating expenses in 1918 would be around \$600,000,000. It is true the railways are handling a larger traffic now than they did in 1917; but the increase in their traffic in 1917 was relatively greater than it has been thus far in 1918. The record thus far made can hardly be said to justify the claims that have been advanced as to the enormous savings that could be and would be effected by centralized government management and unified operation.

Negotiations Regarding Compensation Contracts

THE REPRESENTATIVES of the Railroad Administration and of the owners of railroad securities are still far apart in the negotiations over the form of contract to be made by the government and the railway companies for the compensation of the companies for the use of their properties by the government. This is not surprising, in view of some of the provisions the representatives of the Railroad Administration are trying to put into the contracts.

The railroad control law provides that the compensation of the companies shall be based on the average net operating income earned by them in the three years ended June 30, 1917. Naturally, it was originally assumed that in fixing the compensation the net operating income would be computed as it was in the three years taken as a basis. On the contrary, while the corporate expenses of the companies were included in operating expenses during those three years,

they are not to be included in them under government control, but must be paid from the guaranteed compensation. Of course, this means that the guaranteed compensation is reduced by the amount of the corporate expenses.

The law provides that the properties shall be maintained in substantially the same condition as when they were taken over. The Railroad Administration anticipates, however, that it may find it expedient, from the government's standpoint, to spend more on the maintenance of some properties than was done by the private managements, and the representatives of the Railroad Administration propose that this "excess maintenance" shall be deducted currently from the compensation of the companies. Since the Railroad Administration would have authority absolutely to determine what the "excess maintenance" should amount to, it could conceivably make it so large as to absorb all of a company's "compensation," and leave it nothing with which to pay its fixed charges, thereby reducing it to bankruptcy. The Railroad Administration gives the assurance that its policy will be to maintain the same interest and dividends as were paid during the three years taken as the basis for determining the compensation; but the companies cannot pay their fixed charges with assurances by which a future director general might not consider himself bound.

The representatives of the Railroad Administration propose, in effect, that the Administration shall keep control of the companies' compensation; shall invest as much of it as the Administration thinks fit in additions and betterments; shall leave absolutely to the Interstate Commerce Commission the determination of whether the additions and betterments are of permanent value, and therefore shall finally be paid for by the companies, and shall give the director general discretion to determine what rate of interest, not exceeding 4½ per cent, shall be paid the companies on this new investment. The mere statement of this proposition should, it would seem, brand it as so unfair and one-sided as to be almost grotesque. The boards of directors should have a right to determine what part of the companies' funds are to be invested, and what they are to be invested in; and if they are to be deprived of this right, certainly they should be allowed recourse, not merely to the Interstate Commerce Commission, but to the courts, to determine whether funds commandeered have been used for a purpose of any value to the security-owners. Likewise, if the rate of interest to be paid to the companies on new investment is not to be fixed in advance in the contracts, the determination of it should not be left to the unrestricted discretion of the director general.

After having reduced the basis of compensation below that allowed by law and proposed to take the possession and disposition of it practically out of the hands of the directors and officers of the companies, the representatives of the Railroad Administration have tried to insert in the contract a provision exempting the government from all liability for damages done to the property during the period of federal control.

The conduct of the negotiations regarding the contracts on the part of the representatives of the Railroad Administration has borne very little resemblance to the promises of fair treatment which were given to the railway companies by President Wilson and Director General McAdoo immediately after the railways were taken over. The proposed contract might be all right for the richer companies, but it could be carried out by the government in such a way as absolutely to ruin the poorer companies. The way the government has treated the railway companies during the past ten years indicates that it is pretty likely to use, and not at all unlikely to abuse, any power over them which it may be given. Therefore, if the companies and their security-owners desire to feel safe, they will hold out for a contract which protects them, as nearly as a contract can, from all possibility of an abuse of power.

Letters to the Editor

Tank Engines

ROCHESTER, N. Y.

TO THE EDITOR:

In your issue for July 19 there is a letter written by Austen Bolam suggesting the use of tank locomotives for suburban traffic.

While Mr. Bolam's criticism is perhaps just, still a brief survey of motive power history may help answer the question. In the past, this country has seen three types or kinds of tank locomotives, viz.: the Forney, Fairlie and bogie.

The Forney type of locomotive originated with Mathias N. Forney. It was used on the elevated lines in New York City; it was also used extensively on steam roads for suburban service and one road, the Illinois Central, I understand, uses it today in the Chicago terminal. The electrification of certain terminals and the increased weight of rolling stock has tended to drive this type of locomotive out. The Philadelphia & Reading has a few running out of Philadelphia; the Boston, Revere Beach & Lynn (narrow gauge) uses this and some of the bogie type altogether, and there are a few more scattered over the country.

The Fairlie type originated with Robert Fairlie, an Englishman, and never was popular in this country. William Mason built a few but they were not popular with the roads.

The bogie was Mr. Mason's improvement of the Fairlie. In their day they gave wonderful service and there were about two hundred, perhaps more, built. Similar in a way to either of the above types, their advantage lay in that their driving wheels were mounted and turned like a truck and the steam pipe had to have a flexible joint. They were also equipped with the Walschaert valve gear (1876). For that time, however, they were too complicated and the master mechanics did not like them, though the present generation has seen both of these features adopted in the modern Mallet. Mr. Mason spent considerable time and energy in urging the adoption of this type of locomotive and they were found on roads like the New York & Manhattan Beach (now Long Island), Wheeling & Lake Erie, Boston, Revere Beach & Lynn, and Denver, South Park & Pacific. For the latter road he built some with four pairs of drivers, and for that crooked and hilly road, they performed yeoman service.

So much for the past. The difficulty that is continually facing the present day motive power officers is what to do with motive power, still fit for service, but not heavy enough to handle the heavy loads economically; the answer has been on practically all the roads to retire it to such light service as they may have. On some roads this has been carried pretty far and the result is that some very heavy passenger locomotives are doing work which could be done better by machines half their weight, and there appears to be no other solution of the problem.

On the large road this problem should not be so difficult to handle. Take for example the Eight wheel type of locomotive, which was popular and rendered efficient service on heavy trains up to 1900 and was driven out only by the Atlantic type. A road like the New Haven finds plenty of uses for this type of locomotive on its shorter hauls and there are many of them, twenty years in the service and some older, doing efficient service. Or consider the Pennsylvania. This road as late as 1906, perhaps later, was building this type of locomotive in its Juniata shops and I have seen suburban trains in and around Philadelphia pulled by these locomotives consisting of six to seven steel suburban coaches; moreover, the Pennsylvania Railroad has added the outside steam

pipe and has placed superheaters on many of this type.

There is another course followed by a road, the name I do not care to mention for fear this communication, should it be published, might make trouble, and I believe the policy of this road is the right one. As fast as locomotives cannot be used economically it sells them and replaces them with modern machines. If a Mallet can be bought that will do the work of two other locomotives, which on the payroll will result in the saving of at least one man, perhaps two, is it good policy to maintain the older locomotives and try to get any service out of them? This road thinks not, and for a small road I believe it has adopted a very wise policy.

Mr. Bolam's query will doubtless be answered by motive power officers in perhaps somewhat this fashion, "Show me a way to use my locomotives, still good for service but not ready for the scrap, and I can use your 'tanks.' As it stands now, the suburban service is the only use I have for them."

CHAS. E. FISHER.

NEW YORK.

TO THE EDITOR:

The inquiry from Mr. Austen Bolam relative to tank engines deserves an answer, as it introduces a subject of some interest.

Tank engines are used on American railways, though not to the extent common in Europe. There are various reasons for this, as railroad men are aware, and these will be explained further on.

Small 2-4-4 tank engines are in use on the Putnam division of the New York Central where, for many years, the traffic has been such as to justify the employment of a special class of suburban locomotives. This engine, No. 38, is equipped with piston valves, Walschaert valve gear, outside steam pipes, superheater and arch, and is a thoroughly up-to-date little power plant on wheels.

In other sections of the country tank engines are used if conditions warrant, and have been for many years. It is true, however, that there has been no general rush to this type, and that fact brings us up to Mr. Bolam's inquiry.

Within the past ten years improvement in locomotive design has been so rapid that use had to be found for engines displaced by modern motive power on the more important runs. In fact, this process had been going on even before the period mentioned. Old eight-wheelers had been put on suburban runs, and when these went to the scrap, ten-wheelers and finally Atlantics succeeded them. With this supply of old power available the roads did not feel justified in getting out special designs of tank engines at a large capital outlay.

Conditions are different in England, where, of course, changes have not been so rapid. In that country, the tank engine has long been a regular item in the motive power as a whole, due to the persistence of certain kinds of traffic and the settled habits of the population. For many other reasons which need not be discussed here, the motive power practice in other lands could not be applied in the United States—at least, to any appreciable degree.

More than 25 years ago the New York Central tried the 2-6-6 type tank engine between 42nd street, New York City, and Yonkers. Later, the same wheel arrangement with larger boiler and firebox was tried. These engines were not continued in service, however, and disappeared long before the electrification of the suburban district.

If Mr. Bolam will take a look at some of the heavy commuters' trains operated out of the large cities in the afternoon, he will see why the tank engine "won't do."

It is impossible to handle this question in a brief letter, but I think that most railroad men will agree with me when I repeat that a special class of tank engine can be justified only by the existence of unusual conditions.

ARTHUR CURRAN.



One of the Midway Plaisance Subways Built in 1893. Now Being Replaced

Illinois Central Rebuilds Early Track Elevation

Street Subways Constructed in 1893 Are Being Replaced in Close Quarters Under Heavy Traffic

By C. C. Westfall

Engineer of Bridges, Illinois Central, Chicago, Ill.

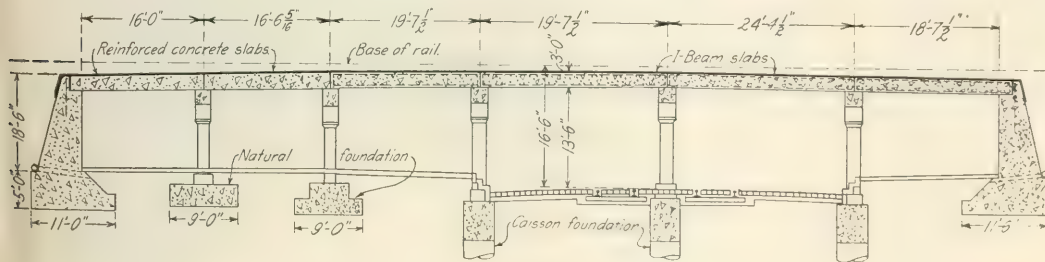
THE RECONSTRUCTION of the Hyde Park subways of the Illinois Central marks the passing of the first, but one, of the track elevation structures built in Chicago. They were built under an ordinance of May 23, 1892, to separate grades of the heavy street and railway traffic incident to the World's Fair held at Jackson Park, Chicago, in 1893. The only track elevation structure antedating these was a viaduct to carry the Chicago & Western Indiana over Twenty-sixth street and Ogden avenue constructed under an ordinance of September 30, 1882.

Old Structures Became Inadequate

The original Hyde Park bridges were of the through plate girder type with trough floors. The exact designing loads are not available at the present time, but it has been found that the double-track girders can be remodeled into single

suburban tracks the only power operated was the light engines used for many years in the suburban service and the strengthening of the bridges on these tracks was unnecessary. The work done at that time consisted of replacing the floors in the girders over the streets, where it was not desirable to place falsework, using an I-beam floor-beam and stringer type of construction. At certain other streets falsework was driven and long I-beam spans installed and at less important streets and over station spaces ordinary timber trestles were built. This work was only temporary; in 1916 under an ordinance passed by the City Council on February 7, 1916, work was started on the replacement of the old bridges with steel and reinforced concrete structures designed to meet the present requirements of railroad power and modern city traffic conditions.

There were a total of 14 subways to be rebuilt, the ones at



Section Through the Subway at Sixty-Third Street

track girders having an efficiency of about 90 per cent of the present designing load of the Illinois Central. The trough floors, retaining as they did, cinders and various other rubbish, suffered considerably from deterioration and were the first parts of the structures to demand attention. In 1914, owing to the greatly increased weight of motive power handled over these bridges and the condition of the floor system, it was deemed advisable to strengthen the floors in the girders on the through passenger and freight tracks. On the four

Fifty-ninth and Sixtieth streets being each joint subways over city streets and drives of the Midway Plaisance. Of the 14, four are over boulevards under the jurisdiction of the South Park Commission, while the other 10 are under the jurisdiction of the city government.

Three Types of Structures Required

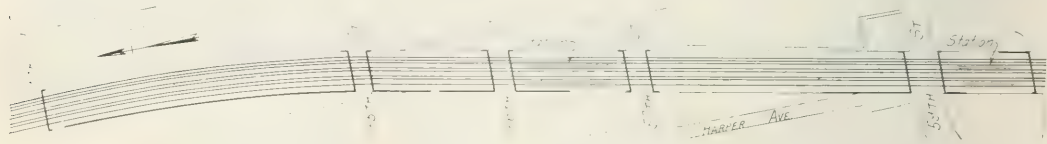
In the design of the new bridges several conditions served to limit the types of structure. At some of the streets the

ordinance provided for clear spans from curb to curb and at others, columns were to be permitted in the center of street. The presence of the South Side Elevated bridge over the right of way at Sixty-third street and the established grade of the streets limited the thickness of the floor at Sixty-third and Sixty-fourth streets. At Fifty-first street the established grade of the street, and the established grade of the tracks at Forty-seventh street, limited the thickness of the floor at these points also.

In consequence three types of bridge were adopted. Where a long span was required, deck plate girders with concrete

load plus dead load. For I-beams encased, and for reinforced concrete slabs, 75 per cent and 50 per cent, respectively, of impact obtained from the above formula was used. In the design of the reinforced concrete work, unit stresses of 17,000 lb. per sq. in. in the steel and 750 lb. per sq. in. in the concrete were used. The columns having spiral reinforcement are designed for a stress of 1,000 lb. per sq. in. on the core. In other respects the design follows the recommendations of the "Joint Committee."

Concrete in the abutment foundations and caisson bells is of 1-3-6 mixture. The top two feet of the abutment, the



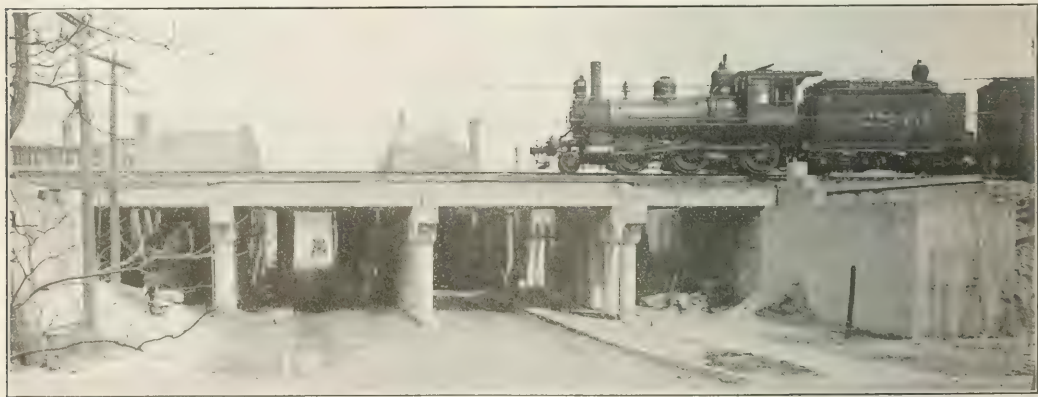
Map of the Eight-Track Line—Fifty-Third Street to the "Midway"

floor slabs were used. Where the thickness of floor was necessarily reduced to a minimum, I-beams encased in concrete were adopted, while at those subways where there were no limiting conditions, reinforced concrete slab construction was used. The superstructure is supported on abutments of gravity section and upon circular columns with arched girders, the column spacing being six feet center to center.

The foundations for the columns are of two types. At property lines and in station spaces the columns rest upon spread foundations. At the curb lines and in centers of streets the columns are supported on cross girders, which, in

shafts of the caissons and the cross girders and reinforced foundations are 1-2-4; the main body of the abutment, 1-2½-5; and the circular columns and arched girders are 1-1½-3 concrete. Crushed stone is used as aggregate for all mixtures.

In addition to the subways, it was necessary to extend a 10-ft. brick arch, serving as a foot passageway beneath the tracks at Sixty-second street. It was desired to have the extension present as nearly as possible the same appearance as the original arch, so forms were built and one layer of brick was placed in cement mortar against the inside form. Every fourth course of the brick work was made a header course



New Subway for Sixty-fifth Street Nearly Completed

turn, are carried on concrete caisson foundations 18 ft. center to center, sunk by the open or Chicago method. It was deemed advisable to adopt the caisson foundations for the supports adjacent to the street to prevent any possibility of danger on account of excavations which may be carried on by the city or by public utilities. Spread foundations are designed for a load of 3,000 lb. per sq. ft. and rest upon sand. The caissons are designed for a pressure of 8,000 lb. per sq. ft. and are carried to hardpan.

The design of the structures was made in accordance with the Illinois Central standard specifications for a loading practically equivalent to Coopers E-55. In the design of steel not encased in concrete, impact was allowed in accordance with the formula, live load squared, divided by live

to provide bond. After the brick work was completed, concrete was poured to form a standard concrete arch section.

Little Room to Carry on the Work

Because of the magnitude of the work and the amount of falsework to be constructed, it was necessary to handle the work in two sections. The construction of falsework for the subways between Sixty-third and Sixty-seventh streets, inclusive, was begun in the spring of 1916 and the general contract was let for the masonry and street work for this portion.

The presence of the old Sixty-third Street station, now removed, made it impossible to build any additional tracks for construction purposes. This made it necessary to remove

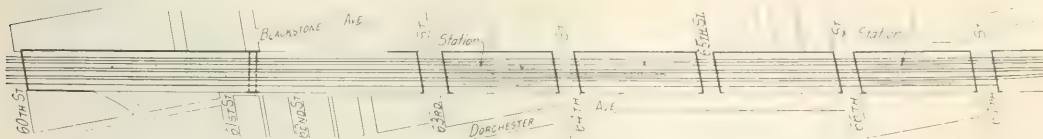
traffic from each track as it was being worked upon. This method was followed in all but the two easterly tracks carrying the express suburban trains upon which it was necessary to work on Sundays when express service was discontinued, as there was no possible way of handling this traffic except on the proper tracks.

Labor and material conditions made it impossible to start work on the second section, extending from Fifty-first street to Sixty-third street, until the summer of 1917, when the construction of falsework was begun. A general contract for the masonry and street work for this section was made

30-ft. I-beams in the falsework. The railroad embankment and natural ground being for the most part sand, it was necessary to make use of a jet in driving the piling for this falsework. The pile driving was all handled by means of four Illinois Central standard derrick cars equipped with steam hammers.

Traffic Interferes with Concrete Work

All of the concrete work has been handled from a plant erected upon cars stationed on a dead track. The contractor on the first section handled the concrete above the founda-

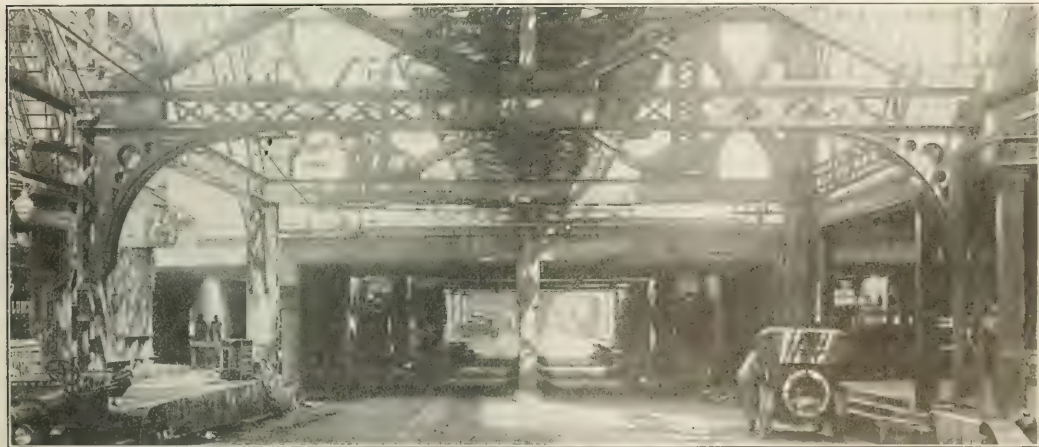


Map of the Eight Track Line—Sixtieth Street to Sixty-seventh Street

in the fall of last year and the substructure work is now well under way. In handling the work in the second section, conditions made it possible to construct a new track west of the original westerly track so that as the work progressed across the right of way, the traffic could be moved one track to the west of its original location, thus maintaining the original number of tracks (eight) in service at all times.

Although the Hyde Park district is devoted to residential purposes, there are several spur tracks serving coal yards,

tions with wheelbarrows on runways at the track level. Considering the fact that there are in the neighborhood of 350 passenger trains daily, in addition to all the freight business to and from the South Water Street terminal, it will be seen that wheeling across the tracks is both hazardous and inconvenient. The contractor on the second section of the work is moving concrete by means of Koppel cars on a track beneath the falsework. This makes it possible to place all of the foundation concrete and the bulk of the abutment concrete by dumping from the cars, leaving it necessary to dump



Sixty-third Street Subway, Elevated Trains Above and Street Traffic Below

which must be maintained during the course of the work. This has been accomplished without inconvenience either to the railroad or the industries.

Because of the interference of the old with the new structures, it was necessary to build falsework to carry every track. Permission was obtained from the city and South Park Commission to place intermediate bents in the driveway spaces at most of the streets. At Fifty-sixth, Sixty-third and Sixty-seventh streets, it was necessary to span practically the entire distance between curbs. This was accomplished with the old girders by adding new sets of stiffener angles and seating the girders on pile bents driven to suit the conditions, shortening the span in some cases 10 ft. Over the Midway drives clear spans of 28 ft. were obtained by using

the concrete for the upper portions of the abutments and all of the columns onto shovel boards from which it is handled into the forms with shovels. Only a small portion of the concrete work, other than the foundations, has been handled in this manner, but the method promises to be satisfactory.

At some of the streets, the original subways were constructed with long spans back of the property line so that in many cases the abutments for the new bridges will be in front of the old abutments. At these places the stone from the old abutments is not removed, but will be buried in the fill. While there has been space along the right of way for disposing of a considerable amount of the excavated material it has not been sufficient for all of the excavation and a great deal of it is loaded onto cars.

This work has been handled in two ways. One contractor erected a tower and loaded the material by means of an elevator bucket and hoisting engine. The outfit used by the second contractor consists of a derrick car rigged up for this purpose and a clam shell. Practically all of the material loaded onto cars is sand and can be used in the adjacent territory for raising tracks. A small percentage of it is stone which must be hauled to other points.

At several streets, street car traffic has been necessarily maintained and at practically every street there have been conduits and pipe lines, water mains or sewers which it has been necessary to divert to clear either the falsework or the foundations for the permanent structure. At Sixty-third street there was a 66 in. brick sewer in the center of the street and also a double-track street car line. It was necessary first to divert both street car tracks to the extreme north side of the street, carrying both lines of street car traffic and all vehicle traffic on half of the street until the sewer diversion



Looking South from Sixty-third Street Elevated Viaduct; Concreting Train in the Foreground

on the south side of the street was completed. The southerly street car track was then shifted to the extreme south side of the street to permit making the connection with the new sewer diversion and also to permit the construction of the center row of caissons and columns. It was then possible to move the street car tracks to their final location and pave that portion of the roadway between and adjacent to them.

The fact that there are ticket offices and suburban stations at many of the streets has tended to complicate the work beneath the tracks. It has been necessary to do away with the original ticket offices and substitute small booths, sometimes one and at other places two at each street. The suburban business must of necessity be accommodated with the least possible inconvenience and this has required the building of temporary wooden stairways and platforms to handle this traffic in such a manner as to permit the prosecution of the construction work. All of this work has been carried on without accident to the public.

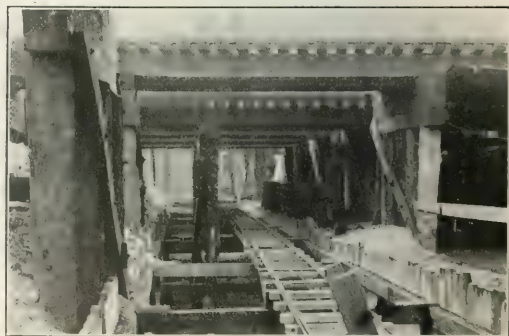
At present all of the foundations, abutments and columns have been completed at Sixty-fourth, Sixty-fifth, Sixty-sixth and Sixty-seventh streets and only the south abutment and two lines of columns and their foundations remain to be completed at Sixty-third street. A portion of the I-beam encased deck at Sixty-third and Sixty-fourth streets has been built in place as has one unit of reinforced concrete slab deck at several of the streets. The steel deck plate girders have been erected at Sixty-sixth and Sixty-seventh streets for the most westerly portion of the bridge and the reinforced



Two Sets of Subway Slabs Ready for Erection

concrete slab has been built on these girders. All of the remainder of the reinforced concrete slabs and the I-beam encased slabs for the work from Sixty-third street south were built by separate contract in a slab yard at the railroad shop grounds at Burnside.

In placing the slabs and building the concrete deck in place, it is necessary to handle the work in a manner similar to that followed in the falsework construction. One new track will be provided at the west side of the right of way, the deck for which will be entirely completed. Traffic will then be removed from the remaining tracks one at a time, thus releasing these tracks so that the bridge structure can



Narrow Gauge Track Used for Concreting an Abutment Footing

be finished. It is necessary to remove the track, set such slabs as have been pre-moulded and build the concrete deck on the deck girders, this work being followed promptly by the waterproofing, which is being handled by contract. After the waterproofing is completed, the track is replaced and traffic on the track is resumed as soon as the age of the concrete slabs will permit. All of the slabs built in the slab yard are seasoned sufficiently to carry traffic before being placed in the bridge. When I-beam spans are encased in

place, it has been found satisfactory to put them into service in one week's time. Reinforced concrete slabs are not permitted to carry load at an age of less than 60 days. The pre-moulded slabs, weighing 35 tons, are handled by means of a single derrick car. In connection with the concrete work the railroad has supplied the pressed steel forms for the circular columns and arched cross girders and is furnishing reinforcing steel for the slabs and all of the concrete stone.

The Bates & Rogers Construction Company, Chicago, has the general contract for that portion of the work from Sixty-third street south, including all sewer, pavement, sidewalk and street work. This contract is on a unit price basis. The



Erecting One of the Concrete Slabs

Gould Construction Company, Davenport, Iowa, is handling the work north of Sixty-third street under a force account contract. The C. F. Massey Company, Chicago, built the deck slabs for the bridges from Sixty-third to Sixty-seventh street inclusive and the waterproofing on these bridges is being done by the Knickerbocker Roofing & Paving Company, Chicago, using Barrett Specification materials. All of the track elevation work is under the general direction of A. S. Baldwin, chief engineer and F. L. Thompson, assistant chief engineer of the Illinois Central. The field work is under M. D. Thompson, assistant engineer, reporting to C. C. Westfall, engineer of bridges, in whose office all plans were prepared.

GERMANS LOOT SUPPLY TRAINS.—A special cable despatch to the New York Sun reports an amazing general order by the commander of the German Third Division, dated May 18, to read as follows: Recently supply trains both on the normal and the narrow gage railways again have been attacked by armed soldiers and pillaged. Threatened by arms, those in charge of the trains, being unarmed and small in numbers, have been unable to offer resistance to these excesses. This conduct on the part of German soldiers constitutes a defiance of discipline and must be repressed with the utmost vigor. Consequently, on the order of Army Headquarters, those in charge of supply trains hereafter will carry arms and if necessary light machine guns and will be provided with ammunition. These men will be in the position of police guards, with all the rights and duties of the latter, and will not hesitate to use their arms in case of an attempt to pillage.

Train Accidents in May¹

THE FOLLOWING IS A LIST of the principal train accidents that occurred on the railroads of the United States in the month of May, 1918:

COLLISIONS					
Date	Road	Place	Kind of Accident	Kind of Train	Kil'd Inj'd
*1.	D. & W. Western	Nay Aug	rc	F. & F.	2 1
7.	Del. & Hudson	Forest City	rc	F. & F.	0 1
10.	W. Jersey & S.	May's Landing	rc	F. & F.	0 25
13.	N. Y., N. H. & H.	Westfield	bc	F. & F.	0 2
†19.	Waycross & So.	Waycross, Ga.	bc	F. & F.	2 2
DERAILMENTS					
		Place	Cause of Derailment	Kind of Train	Kil'd Inj'd
2.	Texas & P.	Texarkana	neg.	P.	1 1
3.	Gulf, Mobile & N.	Louisville	malice	P.	1 0
8.	Balt. & Ohio	Wilmington	neg.	F.	0 2
9.	St. Louis-S. F.	Heyburn, Okla.		P.	2 6
†10.		Camp Jackson, S. C.		P.	8 26
†13.	N. Y. Central	Schodack L'd'g	neg.	P.	4 18
†21.	St. Louis S. W.	Garland	malice	P.	3 16
29.	Southern Pacific	Lafayette	neg.	P.	1 3
29.	Illinois Central	Aplington	flood	P.	6 28
OTHER ACCIDENTS					
			Cause of Accident		
21.	Pennsylvania	New Brunswick	lightning	P.	0 1

The trains in collision near Nay Aug, Pa., on the first of May at 4 a. m., were a westbound freight and a following locomotive without a train. The leading train was moving at about four miles an hour and the empty locomotive came conductor and the flagman, were killed. Their bodies were on at considerable speed, on a descending grade. The caboose of the freight was wrecked and its occupants, the burned to a crisp in a fire which was started from the oil in the headlight of the colliding locomotive or from fire in the caboose stove. One other employee was injured. The empty locomotive had run past distant and home automatic block signals set against it.

The trains in collision near Forest City, Pa., on the 7th, were northbound freight. The caboose of the leading train was wrecked, and three trainmen were injured. The following train had passed a block signal set against it.

The trains in collision near May's Landing, N. J., on the 10th, about 9 p. m., were a northbound passenger and a portion of a freight, which was being shifted, the freight cars being run into by the passenger train. About twenty-five passengers were injured. The passenger train consisted of three electric cars, two of which took fire, from a short circuit; and, with one freight car, were entirely consumed. The cause of the collision was the failure of a brakeman to obey instructions of conductor to remain on the head or northward end of the draft of cars which was to be pulled over to the southward track, with result that eight cars, which had become detached, were left on the northward track.

The trains in collision near Westfield, Mass., on the 13th, were a northbound through freight, drawn by two engines, and a southbound extra freight. Two of the engines and two cars were damaged, and two employees were injured. The collision was due to fault of the northward train, which had encroached on the right of the southbound.

The trains in collision on the Waycross & Southern, near Waycross, Ga., on the 19th, were a southbound passenger and a northbound freight. Both locomotives and one car were damaged. One coach, in which were about 40 passengers, was overturned, and fell down a bank. Two passengers were killed and two others injured. It appears that each train was required to look out for the other and that on both trains this duty was neglected.

¹ Abbreviations and marks used in Accident List: rc, Rear collision—bc, Butting collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—unx, Unexplained—l, Local obstruction—ms, Malicious obstruction—obst, Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P, or Pass., Passenger train—F, or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

The train derailed near Texarkana, Tex., on the second, was westbound passenger No. 7. The locomotive was overturned, and, with 3 mail cars, fell into the ditch. The fireman jumped off and was killed, and one other employee was injured. The cause of the derailment was a false clear signal at the interlocking approaching the Kansas City Southern crossing. A repairman had disconnected a derail and had gone to his tool car, 400 ft. away (without spiking the rail) when on the approach of the train the signalman cleared the signal, with the derail open.

The train derailed near Louisville, Miss., on the third, was a northbound passenger. The engine was overturned and the fireman was killed. The derailment was caused by an obstruction (spike) on the track, placed there by persons unknown.

The train derailed near Wilmington, Del., on the 8th, was a westbound extra consisting of a locomotive and 25 empty passenger cars. The engineman and a trackman were injured. The derailment occurred at a point where a rail had been taken out by repairmen, and the engine and four cars fell down a bank. An eastbound passenger train, passing at the moment of derailment, was uninjured.

The train derailed near Heyburn, Okla., on the 9th, was a westbound passenger. One baggage car was overturned. One express messenger and one trainman were killed and six passengers were injured.

In the derailment at Camp Jackson, near Columbia, S. C., on the tenth, eight passengers were killed and 26 were injured. This was a train of the Atlantic Coast Line carrying troops destined to Greenville, S. C., but the accident occurred on the government tracks inside the limits of the camp. Three coaches fell off a trestle to the ravine below. The soldiers who were injured and killed were in a wooden coach, which, in falling, was crushed by a steel coach, falling on top of it.

The train derailed on the New York Central at Schodack Landing, N. Y., on the night of the 13th, was westbound express No. 29. The train consisted of ten cars, seven of which contained passengers, and was running about 50 miles an hour. The engine, one coach, one combination car and a car of express matter were overturned, and one end of the combination car lodged partly in the Hudson river. The engineman, the fireman, and two passengers were killed or fatally injured, and 18 other passengers were injured. The derailment was due to excessive speed in running through a No. 10 crossover. The train had run past a distant and a home signal set against it. The road was blocked for ten hours. Engineman Richard J. Sherwood, before he died, admitted responsibility for the excessive speed. This accident was reported in the *Railway Age* of June 28, page 1585.

The train derailed near Garland, Ark., on the 21st, was a northbound special passenger, carrying troops. The locomotive and 2 cars were wrecked, and one trainman and one Pullman porter were killed, and 3 employees were injured. Of the soldiers, one was killed and 13 were injured. The derailment was reported as caused by a loose joint, believed to have been maliciously loosened.

The train derailed near Lafayette, La., on the 29th, was westbound passenger No. 101. The locomotive was overturned and ditched, and of the 11 cars in the train only two remained on the rails. Six passengers and five employees were injured. The derailment was due to excessive speed and to a driving-wheel tire not properly set. The flange of this tire showed uneven wear and it was the conclusion of an investigating committee that the engine had crowded to the left. The flange above the counterbalance was worn more than on the opposite side; and this with excessive speed caused the engine to roll so as to force the flange over the rail.

The train derailed near Aplington, Ia., on the morning of the 29th, was a westbound passenger. The locomotive and first three cars were thrown off the track at a bridge and were overturned after reaching the farther side of the creek. The engineman, fireman, one trainman, two mail clerks and an express messenger were killed, and 28 passengers were injured. The west abutment of the bridge had been undermined by a flood, resulting from a cloud burst.

The train involved in the accident on the Pennsylvania Railroad near New Brunswick, N. J., on the afternoon of the 21st, was an eastbound express passenger. One of the coaches was struck by lightning, and one passenger was rendered unconscious, but was revived by a physician, who was on the train. No serious damage was done to the car.

Electric Car Accidents.—In New York city, May 8, a car of the Union Railway became uncontrollable on a steep grade in West 145th street, and one person was killed and 20 were injured. On the Washington, Baltimore & Annapolis electric road, May 17, in a dense fog, there was a collision between one of the interurban cars and a local street car, in which 20 persons were injured. On the Ocean View Electric line near Norfolk, Va., on the 25th, two electric cars, running on parallel or converging tracks, crowded with passengers standing on the steps, came together in such a way that two men were killed and one passenger was injured.

Canada.—On the Canadian Pacific near Smith's Falls, Ont., on the night of May 18, there was a butting collision between an eastbound passenger train and a westbound freight on a bridge 80 ft. high, and one fireman and one brakeman were killed. Neither of the engines fell off the bridge, but several cars fell down the bank on one side or the other.



Photos from Underwood & Underwood, N. Y.

The New Railway for the Camp Bartolomé Training Camp, San Juan, Porto Rico

Doings of the United States Railroad Administration

Director General McAdoo Still in the West. Important Developments During the Week

FOUR OF THE SEVEN directors of departmental divisions of the Railroad Administration have been summoned to the west by Director General McAdoo for the purpose of traveling with him and conferring on important matters in connection with the administration of the railroads. C. R. Gray and Edward Chambers of the operating and traffic divisions went to San Francisco to attend the conference there on July 15 with the western regional directors and federal managers, R. S. Lovett of the division of capital expenditures left Washington on July 16 to meet the director general at Seattle, and W. S. Carter left on July 19.

Judge Lovett's trip to the west was in connection with plans which the director general has formulated on his western trip for unifying railroad facilities by making physical connections between former competing lines and so pooling the tracks that the lines with the most favorable grades in each direction may be devoted mainly to traffic in one direction and circuitous routes may be eliminated. The director general has already announced a plan for routing eastbound freight via the Western Pacific and westbound freight via the Santa Fe and Southern Pacific and similar arrangements will be put into effect in the Northwest. Mr. Gray and Mr. Chambers had discussed the operating and traffic features with Mr. McAdoo and Judge Lovett was called west to take up the question of capital expenditures involved.

Freight Traffic Committees Appointed

The Railroad Administration on Monday announced the appointment of three general and 25 district freight traffic committees composed both of railroad officers and of representatives of the shippers, for the purpose of considering, reporting facts and recommending action regarding the readjustment of freight rates, regulations and practices involved in the general rate advance order, General Order No. 28, for the purpose of carrying out the spirit of that order and at the same time avoiding inequality and injustice. When the general order was issued Director General McAdoo announced that making it effective on the date specified by a simple form of tariff would necessarily lead to the temporary disregard to some extent of established groupings and differentials, but that it was the intention to observe such groupings and differentials as far as practicable and with as much despatch as possible to restore any important relationships which might be for the time being disturbed and to endeavor to remove any existing discrimination and bring about uniformity of rate adjustment throughout sections of the country where conditions are similar.

The committees so appointed to provide for matters of this general character will supersede the freight committees heretofore appointed by officers of the Railroad Administration to deal with similar questions, although the personnel of the railroad officers on the committees is largely the same. The appointment of the committees was announced in a joint letter by Edward Chambers, director of the division of traffic, and C. A. Prouty, director of the division of public service and accounting. The general committees will have jurisdiction respectively over Official, Southern and Western Classification territories and over the several district committees appointed in each of these territories. The railroad traffic officers on the general committees have been named by the regional directors and approved by the director of

the division of traffic; the railroad officers on the district committees have been named by the railroad traffic officers on the general committees, and approved by the director of the division of traffic, and the representatives of the shipping public on both the general and district committees have been appointed by the director of the division of public service and accounting. The general committees will when necessary refer matters to the district committees or may consider such matters and report directly to Washington. They will also receive reports from the district committees and transmit them to the directors of the two divisions at Washington with their recommendation, sending each director a copy. The district committees will investigate the matters brought to their attention, those sent to them by general committees or from Washington, or such as in their opinion require investigation and recommendation. They will report to the general committees unless otherwise instructed in particular instances.

The instructions contained in the letter are only temporary and for the purpose of putting the work of the committees into operation. A little later their appointment and a more definite outline of their duties and method of operation will be covered by an order or circulars, but a copy of the letter was sent to each member in order that they may proceed at once to organize and continue without delay the work which has been done by the several freight traffic committees now superseded. The committees are as follows:

EASTERN FREIGHT TRAFFIC COMMITTEE

Official Classification Territory. B. Campbell, vice-president, New York, New Haven & Hartford, chairman; E. P. Bates, assistant freight traffic manager, Pennsylvania; W. C. Maxwell, vice-president, Wabash; J. C. Lincoln, Merchants' Association of New York; G. M. Freer, Cincinnati Chamber of Commerce; C. C. McCain, chairman, Trunk Line Association, secretary.

New England District Freight Traffic Committee, Boston, Mass.: G. H. Eaton, assistant freight traffic manager, Boston & Maine, chairman; R. Van Ummersen, general freight agent, Boston & Albany; and W. H. Chandler, Boston Chamber of Commerce.

New York District Freight Traffic Committee, New York, N. Y.: H. C. Burnett, assistant general freight agent, Lehigh Valley, chairman; H. R. Lewis, general freight agent, Baltimore & Ohio, and Charles J. Austin, New York Produce Exchange.

Philadelphia District Freight Traffic Committee, Philadelphia, Pa.: J. L. Eysmans, general freight agent, Pennsylvania, chairman; D. G. Gray, freight traffic manager, Western Maryland, and George P. Wilson, Philadelphia Chamber of Commerce.

Buffalo District Freight Traffic Committee, Buffalo, N. Y.: E. H. Croly, assistant general freight agent, New York Central, chairman; I. W. Gantt, assistant general freight agent, Grand Trunk, and J. E. Wilson, Larkin & Co.

Pittsburgh District Freight Traffic Committee, Pittsburgh, Pa.: M. S. Connelly, assistant freight traffic manager, Pennsylvania, chairman; J. B. Nessel, general freight agent, Pittsburgh & Lake Erie, and D. O. Moore, Chamber of Commerce of Pittsburgh.

Detroit District Freight Traffic Committee, Detroit, Mich.: H. R. Griswold, general freight agent, Grand Rapids & Indiana, chairman; P. G. Findlay, general freight agent,

Michigan Central, and H. G. Wilson, Traffic Bureau, Toledo Commerce Club.

Cincinnati District Freight Traffic Committee, Cincinnati, O.: C. L. Thomas, freight traffic manager, Baltimore & Ohio, chairman; W. T. Stevenson, general freight agent, Cleveland, Cincinnati, Chicago & St. Louis; and W. S. Groom, Whitaker Paper Company.

Chicago Eastern District Freight Traffic Committee, Chicago, Ill.: C. J. Brister, traffic manager, Cleveland, Cincinnati, Chicago & St. Louis, chairman; O. A. Constans, freight traffic manager, Baltimore & Ohio, and C. S. Bather, Rockford Manufacturers' & Shippers' Association.

East St. Louis District Freight Traffic Committee, East St. Louis, Ill.: C. H. Stinson, freight traffic manager, Wabash, chairman; C. B. Sudborough, general freight agent, Pittsburgh, Cincinnati, Chicago & St. Louis, and P. M. Hanson, East Side Manufacturers' Association.

Richmond District Freight Traffic Committee, Richmond Va. (appointed jointly for eastern and southern territories): G. S. Rains, freight traffic manager, Seaboard Air Line, chairman; E. D. Hotchkiss, freight traffic manager, Chesapeake & Ohio, and E. S. Goodman, Richmond Chamber of Commerce.

SOUTHERN FREIGHT TRAFFIC COMMITTEE

Southern Classification Territory. Randall Clifton, freight traffic manager, Southern, chairman; N. B. Wright, assistant freight traffic manager, Central of Georgia; Joseph Hatendorf, general freight agent, Illinois Central; H. T. Moore, Atlanta Freight Bureau; J. S. Davant, Memphis Freight Bureau, and L. E. Chaloner, Southeastern Freight Association, secretary.

Richmond District Freight Traffic Committee, Richmond, Va. (appointed jointly for eastern and southern territories): G. S. Rains, freight traffic manager, Seaboard Air Line, chairman; E. D. Hotchkiss, freight traffic manager, Chesapeake & Ohio, and E. S. Goodman, Richmond Chamber of Commerce.

Louisville District Freight Traffic Committee, Louisville, Ky.: J. M. Dewberry, assistant to vice-president, Louisville & Nashville, chairman; J. M. Denyven, general freight agent, Mobile & Ohio, and C. B. Stafford, Louisville Board of Trade.

Atlanta District Freight Traffic Committee, Atlanta, Ga.: E. R. Oliver, assistant general freight agent, Southern, chairman; C. B. Kealhofer, general freight agent, Atlanta, Birmingham & Atlantic, and S. E. Spivey, Chamber of Commerce of Columbus.

Birmingham District Freight Traffic Committee, Birmingham, Ala.: E. A. DeFuniak, general freight agent, Louisville & Nashville, chairman; T. D. Geoghegan, traffic manager, Gulf, Mobile & Northern, and O. L. Bunn, Birmingham Traffic Association.

Jacksonville District Freight Traffic Committee, Jacksonville, Fla.: J. F. Mead, assistant general freight agent, Atlantic Coast Line, chairman; F. D. McConnell, general freight agent, Central of Georgia, and W. D. Nelson, Jacksonville Chamber of Commerce.

New Orleans Southern District Freight Traffic Committee, New Orleans, La.: R. C. Perkins, general freight agent, Illinois Central, chairman; J. B. Bannon, general freight agent, Southern Railway, and B. F. Martin, Natchez Chamber of Commerce.

WESTERN FREIGHT TRAFFIC COMMITTEE

Western Classification territory. A. C. Johnson, general traffic manager, Chicago & North Western, chairman; F. B. Houghton, freight traffic manager, Atchison, Topeka & Santa Fe; S. H. Johnson, freight traffic manager, Chicago, Rock Island & Pacific; H. C. Barlow, Chicago Association of Commerce; Seth Mann, San Francisco Chamber of Commerce; and E. B. Boyd, Western Trunk Line Committee, secretary.

Chicago Western District Freight Traffic Committee, Chicago, Ill.: F. P. Eymann, freight traffic manager, Chicago & North Western, chairman; H. E. Pierpont, freight traffic manager, Chicago, Milwaukee & St. Paul; S. G. Lutz, vice-president, Chicago & Alton; J. S. Brown, Board of Trade of the City of Chicago, and H. F. Sundberg, Commercial Club, Traffic Bureau of Cedar Rapids.

St. Louis District Freight Traffic Committee, St. Louis, Mo.: J. L. West, freight traffic manager, Missouri, Kansas & Texas, chairman; J. E. Johanson, Southwestern Tariff Committee, and P. W. Coyle, St. Louis Chamber of Commerce.

New Orleans Western District Freight Traffic Committee. New Orleans, La.: J. B. Payne, assistant freight traffic manager, Texas & Pacific Railroad, chairman; C. S. Fay, traffic manager, Morgan's Louisiana & Texas, and Carl Giessow, New Orleans Joint Traffic Bureau.

St. Paul District Freight Traffic Committee, St. Paul, Minn.: H. M. Pearce, general traffic manager, Chicago, St. Paul, Milwaukee & Omaha, chairman; Henry Blakeley, general freight agent, Northern Pacific, and W. P. Trickett, Minneapolis Traffic Association.

Kansas City District Freight Traffic Committee, Kansas City, Mo.: D. R. Lincoln, assistant general freight agent, Missouri Pacific, chairman; J. R. Koontz, general freight agent, Atchison, Topeka & Santa Fe, and R. D. Sangster, Chamber of Commerce of Kansas City.

Dallas District Freight Traffic Committee, Dallas, Tex.: Gentry Waldo, general freight agent, Galveston, Harrisburg & San Antonio, chairman; F. Koch, Southwestern Tariff Committee, and G. S. Maxwell, Chamber of Commerce and Manufacturers Association.

Denver District Freight Traffic Committee, Denver, Colo.: Fred Wild, Jr., freight traffic manager, Denver & Rio Grande, chairman; H. A. Johnson, traffic manager, Colorado & Southern, and F. W. Maxwell, Denver Transportation Bureau.

Portland District Freight Traffic Committee, Portland, Ore.: F. W. Robinson, traffic manager, Union Pacific, chairman; W. D. Skinner, traffic manager, Spokane, Portland & Seattle; F. D. Burroughs, freight traffic manager, Chicago, Milwaukee & St. Paul; J. H. Lothrop, Portland Traffic & Transportation Association, and C. O. Bergen, Spokane Mercantile Association.

San Francisco District Freight Traffic Committee, San Francisco, Calif.: W. G. Barnwell, assistant freight traffic manager, Atchison, Topeka & Santa Fe, chairman; G. W. Luce, freight traffic manager, Southern Pacific; H. K. Faye, traffic manager, Western Pacific; H. E. Stocker, San Francisco Chamber of Commerce, and S. H. Love, Zion Co-Operative Association.

Security Owners Present Further Arguments Against Contract Form

The financial committee of 70 of the National Association of Owners of Railroad Securities have applied to the Railroad Administration for a hearing in order to file their objections to certain parts of the tentative contract between the government and the railroads, and conferences between representatives of the railways and of the government have been resumed. The principal points in the tentative contract to which the representatives of the security owners object were stated in last week's issue in the form in which they were outlined in a letter to the Railway Executives' Advisory Committee. These were discussed by the financial committee at a meeting in New York last week, at which resolutions were adopted stating "That in the judgment of this committee the execution by the railways of a contract in the form now proposed in the tentative draft submitted by the government representatives would not only threaten the integrity of the investment of the railroad security owners, but also the credit stability of the country and that such

action should be prevented." On Tuesday of this week 44 members of the committee were accorded a hearing at Washington by the Railroad Administration. This hearing was presided over by Interstate Commerce Commissioner E. E. Clark. Mr. Warfield and other members presented the committee's objections.

Labor Representatives

W. S. Carter, director of the division of labor, has appointed three representatives with headquarters at Washington to represent the department in labor matters, as follows: William Blackman, formerly director of labor, U. S. Shipping Board; John A. Moffitt, formerly mediator in the Department of Labor; and A. M. Banks, formerly of the bureau of safety of the Interstate Commerce Commission.

Operating Statistics Standardized

The operating statistics section of the division of operation, W. J. Cunningham, manager, has completed its work of formulating standard forms. Effective with transactions which accrue on or after August 1 all Class I roads under federal control will make monthly reports to the operating statistics section on the forms and in the manner prescribed by a circular issued by the Division of Operation.

The objects of the standardized forms of reports are:

(a) To furnish the Director General, the Director, Division of Operation, and the Regional Directors with the basic data and the significant averages, ratios or unit costs, which relate to or furnish indices of operating efficiency. In so far as it is practicable, the information on these forms will be utilized in supplying, through the Operating Statistics Section of the Division of Operation, the statistical requirements of the several sections of the Division of Operation or of other divisions.

(b) To provide uniform bases, methods and forms which will insure uniformity in practice, and avoid any question as to comparability in so far as bases and methods are concerned.

The forms standardized by this order are:

- Form O. S. 1, Freight train performance.
- Form O. S. 2, Passenger train performance.
- Form O. S. 3, Locomotive performance.
- Form O. S. 4, Distribution of locomotive hours.
- Form O. S. 5, Freight car performance.
- Form O. S. 6, Locomotive and train costs.
- Form O. S. 7, Condensed income account and operating expenses by primary accounts.

With the exceptions hereinafter noted, the basic information, and most of the percentages, ratios, and averages, are now compiled and computed in meeting the accounting requirements of the Interstate Commerce Commission. The exceptions are:

(a) Gross ton miles—the product of the tons of train behind the tender (cars, contents and caboose) and the miles moved.

(b) Rating gross ton miles—the potential gross ton miles which would have been produced had the train been loaded to one hundred per cent of the slow freight rating for normal weather conditions, taking account of changes in rating over sections of the run.

(c) Net ton miles—the product of the tons of revenue and non-revenue freight in the train and the miles moved. This is to be computed from the conductors' train reports.

(d) Train hours—the aggregate elapsed time of trains between the time of leaving initial terminals and arriving at final terminals, including delays en route.

(e) Distribution of locomotive hours—the number of hours employed by locomotives in freight, passenger, yard and other services, divided to show the percentages of time in useful service, held at terminals, held in enginehouses, and held in reserve.

The reports on the standardized forms are to be made (in duplicate) for each road (operating unit) as a whole, and for systems when such consolidation of statistics is now being made. The present practice of keeping the physical operating statistics (required by Forms O. S. 1 to O. S. 5, inclusive) by divisions and districts should be continued, and such divisional or district statistics should be kept in conformity with the standardized forms herein prescribed. The details by divisions and districts need not be reported to the Operating Statistics Section unless special request is made thereof, but in the case of a railroad which is under the jurisdiction of more than one regional director, it is desirable to make separate reports for each region, if such a course is practicable.

The desirability of separation in the physical operating statistics (required by Forms O. S. 1 to O. S. 5, inclusive) between the main lines and the branches is recognized, but such separation is not required at this time. Where the separation is now made by individual carriers, the practice should continue, so that the detailed information may be available if called for.

Each form contains instructions, by footnotes, or by reference to Interstate Commerce Commission account numbers, which should insure uniformity in the compilation of the figures.

The conductors' train reports are to be the source of the basic information for train miles, locomotive miles, car miles, gross ton miles, rating ton miles, net ton miles, and train hours. As the conductors' train report now in use does not in all cases show the complete data (as, for example, the weight of the car divided between net and gross) it will be necessary in such cases to revise the form of the report so that it will include all of the basic information. If, under the present organization of the work, it is more convenient to use other sources of information (such as the train sheet for train hours, or the engineers' time slips for locomotive miles), the present practice may continue, provided that the data from such sources correspond to that which would be taken from the conductors' train reports, if the latter were used.

In reporting the weight of cars containing less than carload freight, conductors may be instructed to use an arbitrary weight for net tons, such arbitrary to be specified by proper authority and to be based on the experience of the carrier. When carload freight is billed at estimated weights, conductors will report such estimated weights as the net tonnage.

All percentages and averages should be worked out to one decimal place. If the final remainder is equal to or exceeds one-half of the divisor, the decimal in the quotient should be increased by one. The same principle should be applied to ton miles and car miles when expressed in thousands. If the omitted figures are 500 or more, they should be regarded as 1,000. Expenses should be stated in even dollars, 50 cents or more to be counted as one dollar.

Where data called for by the forms are not now compiled, it will not be necessary to work up last year's figures for comparative purposes, but the comparison with last year by individual items is to be made as complete as the existing reports and accounts will reasonably permit.

Forms O. S. 1 to O. S. 5, inclusive, are based entirely upon the conductors' train reports or other operating department data. It is recommended that the work of compiling the figures and making out these reports should be concentrated either in the office of the car accountant or in a similar office of the operating department, and that copies of these reports should be sent to the proper officer in the accounting department for use in compiling costs on Form O. S. 6.

Forms O. S. 6 and O. S. 7 call for operating expenses and unit costs. They are to be compiled in the statistics section of the accounting department.

Forms O. S. 1 to O. S. 5, inclusive, are to be mailed to the Operating Statistics Section not later than the 15th day of the

month following that to which the statistics apply. Forms O. S. 6 and O. S. 7 are to be mailed, as above, not later than the 30th day of the month following that to which the statistics apply.

It is the intention that the standardized forms, when completely in effect, shall take the place of many other statistical reports which are now being made. To that end the circular directs that a careful survey be made of all operating reports and statistics to ascertain how many of them are made unnecessary by the adoption of the standardized forms, and may, therefore, be discontinued.

A supply of the new forms will be distributed through the regional directors to all Class 1 railroads under federal control, and requisitions for additional copies should be made on the regional directors. In advance of the distribution of the working supply, three complete sets were to be sent direct this week to the federal manager or the general manager of each Class 1 road under federal control.

While most of the information called for on the standardized forms is now compiled by most of the railroads, the purpose has been to reduce the units used to a standard form so that statistics of various roads may be readily compared. Some of the other data called for is not required by the Interstate Commerce Commission, but in some cases it is compiled by a large number of roads. For example, the gross ton miles now required to be reported are computed by railroads comprising probably 75 per cent of the mileage of the country.

The net ton miles heretofore have been computed from the waybills and the information obtained is so old when it is received that it is of no practicable benefit for operating statistics purposes, although useful for other purposes. The use of the new interline revenue waybill will increase the delay in computing this information and will make it impossible to show just how freight was moved when alternate routes were available so that the net ton miles cannot be related to the hundreds of physical performances. There is another difficulty in the use of net ton miles as at present compiled in the fact that the net ton miles compiled from the waybills are those that apply to the tonnage taken into account for the month, but not the tonnage actually moved during the month. Under the standardized forms the various units of physical performance will be derived from one source, the conductors' wheel reports.

The rating gross ton miles are now compiled, but the standardized forms provided a uniform basis which is taken to represent 100 per cent, the slow freight rating from normal weather conditions.

The report called for on distribution of locomotive hours is new, having for its object to show the percentage of time during which the locomotive is engaged in useful service, held at terminals, held in engine-houses, or held in reserve. While it has heretofore been possible to obtain this information from various factors, the standardized reports will show the condition in concrete form. The reports on train hours will make it possible to show the gross or net tons per train hour, combining the factors of tonnage and speed. Another new feature of the reports is the information to be shown as to ton miles per car per day. To obtain this information it is now necessary to consider three separate reports, the miles per car per day, the tonnage per car and the car miles.

Maximum for Repairs to Freight Cars

The Committee on Standards for Cars and Locomotives at its meeting at Washington last week decided upon a plan for fixing a maximum amount which is not to be exceeded in making repairs to freight cars, depending upon the age, type and class of cars. Freight cars in need of general repairs will be thoroughly inspected, all defective parts noted and an estimate made showing the cost to place the car in general condition for two years' service, barring accident and

running repairs. A circular will be issued by the division of operation prescribing the limits of cost for making repairs approximately as follows:

Wooden freight cars which have not been rebuilt and improved by application of metal draft arms extending beyond body bolster—continuous steel underframe—steel center sills—steel underframe.

(A) In service 20 years or more:

		Limit of cost of repairs in kind, labor and material
All freight cars		
If equipped with 40,000 lb. capacity trucks or less.....	\$25	
Over 40,000 lb., but less than 60,000 lb. capacity.....	75	
60,000 lb. capacity trucks and over.....	100	

(B) Cars in service 10 years and less than 20 years:

		Limit cost of repairs	
		In kind	With betterments
		All cars except refrg.	All cars except refrg.
		Refrg.	No refrg.
Equipped with 40,000 lb. capacity trucks or less.....	\$25	\$100	Betterments to be applied
Over 40,000 lb., but less than 60,000 lb. capacity.....	100	150	Betterments to be applied
60,000 lb. capacity and over.....	150	500	\$1,200

Cars in service over 5 years and less than 10 years, and cars found equipped with metal draft arms extending beyond body bolster—continuous steel draft arms transom draft gear—steel center sills or all steel underframe.

All cars, having trucks 60,000 lb. capacity and over, will be repaired unless total cost of repairs, including cost of betterments, plus scrap value, exceeds 75 per cent of the value of a new car.

If cost of repairs exceeds 75 per cent of the value of a new car, it will be dismantled and good parts reclaimed for use in repairing cars of similar types. This will apply to existing equipment only.

Cars in service 5 years and less—

All cars, having trucks 60,000 lb. capacity and over will be thoroughly repaired at cost necessary.

Cost of application of safety appliances, wheels, journal bearings and couplers will not be considered in the estimate of the cost of repairs.

All wooden freight cars with trucks of 60,000 lb. capacity and over receiving general repairs, not equipped with metal draft arm extending beyond body bolster, steel draft arms extending full length of car, steel center sills or steel underframe, will be equipped. Where equipped with steel center sills, continuous cover plate will be rivetted to top of sills.

When cost of repairs in kind exceeds the amount allotted to be expended and betterments are not to be applied, the car will be dismantled. Should cost of repairs in kind exceed the amount allotted and betterments are to be applied if material is not available, car may be sent to owners.

When cars are dismantled or sent home to owners for rebuilding a detailed statement will be made showing the estimated cost of repairs in kind by items, and forwarded to owners showing disposition, and copy retained by handling company.

To estimate the detailed cost of repairs 35 per cent should be added to the sum of applied labor and material.

Plans for the standardization of passenger coaches and baggage cars were also discussed at the meeting of the mechanical committee, and subcommittees were appointed for the purpose of reporting on proposed designs. Individual members of the committees were assigned various phases of the designs for study to be reported at the meeting of the committee next month and recommendations will be made as to proposed standard dimensions. A sub-committee was also appointed to investigate the subject of driving boxes.

McAdoo Again Increases Wages of Mechanical Department Employees

Director General McAdoo announced on Wednesday, by telegraph from the west, his approval of Supplement No. 4 to General Order No. 27, providing the following minimum rate and increases in wages for employees of the mechanical department of railroads under federal control:

1. Machinists, boiler makers, blacksmiths, sheet metal workers, moulders and first class electrical workers, 68 cents an hour.
2. Carmen and second class electrical workers, 58 cents an hour.
3. Helpers, 45 cents an hour.

4. Foremen, paid on an hourly basis, 5 cents per hour more than their respective crafts.

5. Foremen, paid on a monthly basis, an increase of \$40 a month, with a minimum of \$155 and a maximum of \$250.

6. The new rates are retroactive from January 1, 1918.

7. Beginning on August 1, the eight-hour day will be applied, with time and one-half for overtime, Sundays and seven specified holidays.

The new order is lengthy and in detail and the full text will be issued from Washington on or before August 1.

In revising the report of the Railway Wage Commission Mr. McAdoo increased the recommendation for shop employees to a minimum of 55 cents an hour, after which, at hearings before the Board of Wages and Working Conditions, the shop organizations asked for 75 cents an hour. To meet the increase asked would involve an addition of \$200,000,000 a year to the payrolls on top of the \$300,000,000 increase provided for by General Order No. 27, and other classes of employees have also asked for further advances. The representatives of the maintenance of way employees and operating department clerks were given a hearing before the board last week. It is understood that the board recommended a compromise, but if this should prove unsatisfactory to the men the problem as to how to retain enough of them in railroad service might become serious and if a large increase is granted to them it will be difficult to satisfy other classes of employees without further advances. To assist him in reaching a conclusion Director General McAdoo last Friday telegraphed to W. S. Carter, director of the division of labor, and Frank McManamy, mechanical assistant to the director of the division of operation, to meet him in the west. C. R. Gray, director of the division of operation, was already with Mr. McAdoo and the subject was to be discussed at a conference in Glacier National Park on Tuesday.

The director general discussed the matter briefly in a speech to railroad shop employees at Hillyard, Wash., on July 22, in which he said:

"I am glad to see you and be associated with you in doing a very great work for our country. To us railroad men has been assigned one of the biggest parts in this war. It depends upon us whether or not the Kaiser will be licked ten times as quickly as he otherwise will be. I know that we are going to lick him ten times as quickly because the railroad men of the United States are going to do their duty to Uncle Sam. You are all Uncle Sam's servants now, no private interests control the railroads any more. Uncle Sam is in command, he has his hand on the throttle, he is running these railroads and you are going to help him make a success of it. I want to give you all just as fair treatment as I know how, but we are all servants of the American people, you and I alike, and it depends upon the way in which we discharge our responsibilities whether or not the American people are going to treat us right.

"The strength of our position must always rest upon public opinion. What I do for you from time to time must be done with reference to what is just not alone to you but to the public which has got to pay the bill. I want to give you a square deal and the public wants to give you a square deal, but the public wants you to give it a square deal as well. When your wages are raised how do we get the money to pay it? We have to put up the rates on all the American people and if we do not treat them fairly they will refuse to sustain me in trying to help you. I want you to help me do the square thing for the American people while I am trying to do the square thing for you. That is fair all around, isn't it? I know that the machinists and the shop men think they were not treated fairly in the original wage commission's report. There are peculiar conditions affecting the machinists and the shop men of the country. Because I recognized that I appointed a new commission, the Board of Railroad Wages and

Working Conditions. They have made a report to me. I am working on that report and shall render a decision on the twenty-fifth of this month. When that decision is made I want you to know that I have conscientiously done the best I could for you, having just regard to your interest and the interests of the public.

"I want you all to accept that decision like true patriots, putting country above self or selfish interest like our brave soldiers are doing in France. We owe that much to our splendid sons who are shedding their blood to make our jobs and our homes safe and to have human liberty throughout the world. If we all do our duty as well as our boys are doing theirs in France, we shall soon plant the Kaiser face downward and keep him there. Let every railroad man hold onto his job and back Uncle Sam to the limit."

Cape Cod Canal Taken Over

Director General McAdoo has announced that the operation of the Cape Cod Canal between Buzzards Bay and Sandwich, Mass., a distance of eight miles, by the United States Railroad Administration under authority of the President's proclamation of July 23, will make possible the water transportation to New England consumers of a much larger tonnage of coal hereafter than would have been possible under the previous status.

The canal has been operated by the Boston, Cape Cod & New York Canal Company. Putting boats and barges through the canal means a saving of approximately 70 miles compared with the distance traveled by sea, and a much greater freedom from fogs.

While the present depth of 19 feet at mean low water will permit the movement of a large tonnage of coal and other freight, the prompt dredging of the canal under government auspices to its original charter depth of 25 feet will permit the safe and quick movement of all the vessels now engaged in carrying coal to New England with the exception of 10 or 12 whose draft exceeds 25 feet, and it is estimated that out of the 12,000,000 tons of water borne coal now moving annually to New England ports of destination north of Cape Cod a maximum of 10,000,000 tons can be moved through the canal after two months' dredging of the sand accumulation at the entrances of the canal and Sagamore bridge.

The towage facilities which the canal company withdrew about a year ago will be immediately restored to a large extent by the Railroad Administration and pilotage service will be installed for the assistance of vessels of all types, steam, sail and barges. Additional terminal facilities will be promptly established near the west end of the canal, at which point the large ocean going tug boats bringing the barges from New York harbor, Philadelphia and Hampton Roads will turn over their barges and a special towing service will be established from Buzzards Bay to Boston and other ports north of Cape Cod. Coal and other supplies for vessels will be available at these barge terminals. The effort of the Railroad Administration will be to maintain the charter depth of 25 feet at all times, which will require the constant service of special dredgers.

It is the intention, as promptly as possible, to operate through the canal the vessels of the Ocean Steamship Company, Clyde Line, and Merchants & Miners Transportation Company, now operated between Boston and Philadelphia, Baltimore, Norfolk, Charleston, Savannah and Jacksonville. The daily passenger and freight service of the Eastern Steamship Company, between Boston and New York, will be continued through the canal as heretofore.

The development of traffic on the canal by the Railroad Administration opens additional interesting possibilities. In good weather barges may move through Long Island Sound to Boston and other ports north of Cape Cod without breaking bulk. It will facilitate the delivery at all seasons, re-

gardless of weather or submarine interference, of the fuel, food, cotton, wool, lumber, pig iron, copper, and other raw materials originating in the South and so essential to New England's industrial activities.

An attitude of cordial co-operation has been evidenced by the United States Shipping Board, the United States Fuel Administration, the Departments of Commerce, War and Navy, the New England Boat Owners and Towers' Association, the Eastern Steamship Company, and many independent vessel owners.

Plans for taking over the canal have been under consideration for some time and action was hastened, perhaps, by the appearance of a submarine off the Massachusetts coast on Sunday. The army engineer corps has been considering plans for having the government take over a series of canals along the coast.

Federal Treasurers and Separate Bank Accounts

Separate federal treasurers for each railroad under government control to handle operating funds as distinguished from those of the corporations and a transfer of cash held for the account of the Railroad Administration from the corporate accounts to a new federal account in the same banks in which it is now held are provided for in General Order No. 37 issued by Director General McAdoo on July 19, as follows:

(1) The local treasurers appointed by federal managers or by general managers appointed in lieu of federal managers, shall hereafter be designated "federal treasurers" and are expected to devote themselves exclusively to the work of the United States Railroad Administration. They ought not to handle any funds for a railroad corporation or perform any other services therefor except in special cases after obtaining express authority. The federal treasurers should be nominated by the federal manager, (or general manager appointed in lieu of federal manager), and the nomination, when it shall have been approved by the regional director, should be transmitted to the Director of the Division of Finance for consideration and final action. In cases where federal treasurers have already been appointed the appointments should be submitted promptly through the regional director with his recommendations for confirmation by the Director of the Division of Finance.

(2) Immediately upon the appointment of federal treasurers the designation of the bank account subject to check of such federal treasurers shall be "(Name of Railroad), Federal Account."

(3) (a)—All cash representing receipts from the operations of its railroad since and including January 1, 1918, now in the hands of the railroad corporation for whose railroad a federal treasurer has been appointed, or held for account of the corporation, and

(b)—Any and all other cash now in the hands of such railroad corporation or held for its account for use in connection with the operation or improvement of its railroad shall be at once transferred by the railroad corporation to accounts in the same banks in which it is now held, designated as prescribed in paragraph 2 hereof, which shall be subject to check by the federal treasurer.

(4) Federal treasurers shall draw on the new accounts to be opened and subject to their check only for (a) the payment of materials and supplies purchased since December 31, 1917; (b) the payment of operating expenses and taxes (other than the war income tax and the excess profits tax) accrued since December 31, 1917, and (c) the payment of such addition and betterment costs as may be approved by the federal manager (or general manager appointed in lieu of the federal manager.)

Federal treasurers shall not draw on such accounts for any other purposes except when expressly authorized by the Director of the Division of Finance and Purchases.

(5) A specimen form of check which has been approved for use by all railroads under government control is attached hereto. In ordering checks for the use of the railroad the Federal Treasurer will follow as closely as practicable the general arrangement and language of the specimen form. The account with every bank must be stated in the name of the railroad with the name "Federal Account" immediately following on the same line, as shown in the attached specimen.

(6) Until further orders checks signed by the treasurer should be countersigned according to the practice now in vogue on the different roads where regulations now call for such countersignatures.

The division of Public Service and Accounting has also issued a circular directing the chief accounting officers to forward statements relating to the first six months' period of federal control showing cash on hand on January 1 and June 30, cash remitted at the request of and to the credit of the director general during that period, cash received for operating purposes from the director general, cash collections for account of the corporation and cash payments out of federal funds for account of the corporation, expenditures incurred for additions and betterments chargeable to the corporation, and also statements of revenues, expenses, taxes, equipment rents and joint facility rents, net income or loss, and balance on the federal books as of June 30 in the accounts revenue and expenses prior to January 1. With these are to be submitted a copy of the trial balance of the federal books taken as of June 30.

The chief accounting officers of Class I carriers are requested in a circular issued by the division of public service and accounting to submit at once the name of any male employee under their jurisdiction who can be spared from his present duties and who, in their judgment, is qualified to correctly interpret and apply the provisions of General Order No. 17, the order providing for the separation of accounts.

It is proposed temporarily to attach such persons to an accounting organization to be formed at Washington for the purpose of examining the accounts stated upon the federal books and to see that the proper separation between the corporate and federal interests has been made thereon. In submitting the name of a candidate for one of these places there should also be furnished information indicating the age of the person recommended and the amount of salary which he now receives or is likely to receive from the railroad in the near future. No employees receiving over \$4,000 a year should be included among the names of persons recommended.

Short Line Section

Effective July 22, 1918, the director general has created a Short Line Railroad Section under the supervision of the director of the Division of Public Service and Accounting. E. C. Niles, chairman of the New Hampshire Public Service Commission, and president of the National Association of Railway and Utilities Commissioners, has been appointed manager of the new section, which will be charged with the duty of securing to the short line railroads not under federal control fair divisions of joint rates with roads under federal control, a reasonable car supply, and protection against any undue disturbance in the routing of traffic.

Special Reports on Wage Increases

For the purpose of ascertaining the effect of the application of the provisions of the order increasing the wages of railroad employees upon operating and other costs, the division of public service and accounting has issued a circular to the carriers directing them to compile and report on forms which are being distributed for the purpose data showing separately for the months of January, March and May the total pay roll charges to operating expenses and

other accounts, based on wages actually accrued in those months under the wage rates which prevailed before the order was issued, the increases in each of the accounts brought about by the application of the order and the percentage of the increase to the total payroll and in each of the accounts. On another form the roads are directed to show separately for the month of August the total pay roll charges to operating expenses and other accounts, the increases in cost over the rates in effect on December 31 due to the application of the order, and the increases in cost due to advances other than those authorized by the order, such as collateral increases in wage adjustments due to other causes. On another form carriers are to report the same information for the month of October as for August. Reports are to be made to the director of the division of operation, the regional directors and the federal managers.

Ticket Standardization Committee

The Ticket Standardization Committee, of which O. P. McCarthy is chairman, was to hold a meeting in Chicago on Wednesday to discuss various phases of its work, including a plan for securing uniformity in the practice of giving reduced rates for clergymen and others to whom reduced transportation rates are allowed by the federal law. The committee was also to meet with a sub-committee of the General Baggage Agents' Association on the subject of baggage checks. The committee recently submitted a preliminary report on the standardization and simplification of ticket forms which was turned over to a committee of the accounting association to be checked.

Troop Movement

Fifty per cent more troops were handled by the railways in the first six months of this year than were handled during the eight months of 1917 after the United States entered the war, according to figures compiled by the Troop Movement Section which have just been made public by the Railroad Administration. The total movement up to June 30 was 5,355,558 men, counting each movement, although of course, there are duplications because most of them were transported two or three times, from the point of enlistment to the training camp, from the training camp to a finishing or concentration camp and from the latter to a port for embarkation, or as has recently been the practice in many cases, from the training camp directly to the port of embarkation. The total includes 1,395,514 National Army arrivals, representing the first movement of enlisted men to camp; 2,880,189 moved in special trains, and 1,079,855 handled on regular trains. Of the total 3,204,570 were moved since January 1. These figures do not include men traveling on furlough or on their own account.

Cars for Loading in Switching Service

The Car Service Section announces that, effective July 1, the following rules will govern the furnishing of cars for loading in switching service:

1. (a) When cars are to be loaded to destinations within the same switching limits in which the shipment originates the obligation of supplying cars ordered rests with the road upon which the car is to be loaded.

(b) When cars are to be loaded on a switching line to destinations beyond the switching limits, primary obligation for equipment ordered rests with the carrier road which is to receive the loaded car for road haul, subject to paragraphs 2 and 3.

2. A road haul line loading cars in switching service destined to points beyond the switching limits on another carrier road shall furnish the cars from such supply as may be available on its rails and when cars required are not available, will call upon the carrier road to furnish necessary cars under paragraph 1 (b).

3. A terminal switching line loading cars in switching service destined to points beyond the switching limits on a carrier road shall furnish the equipment from such supply as may be available on its rails and when equipment required is not available, will call upon the carrier road to furnish necessary cars under paragraph 1 (b).

4. The use of equipment as above is subject to car service rules, and exceptions may be made only upon authority of the Car Service Section or the regional director having jurisdiction.

5. Shippers will be required to place orders for equipment desired with proper representative of the road on which cars are to be loaded.

Charge of New England Discrimination Disputed

Charles A. Prouty, director of the Division of Public Service, of the Railroad Administration, upon having his attention called to the reported statement of Edgar J. Rich at the conference of the New England commissions to the effect that New England rates were unduly discriminatory and had been dictated by politics, said in a statement issued by the Railroad Administration that he could hardly believe Mr. Rich ever said what was attributed to him. Mr. Prouty is himself a resident of New England and was for a long time the representative of New England upon the Interstate Commerce Commission. He states that while in his opinion the rates of New England should perhaps be readjusted, the present rates are the result of the application of a uniform advance in all parts of the country and that any discrimination which exists will be in his opinion promptly remedied by the director general. Nothing could be more absurd than to connect these New England advances with politics, he said.

Transcontinental Rates to Be Readjusted

The old question of transcontinental rate adjustment is to be settled again by the Railroad Administration, this time under conditions which it is hoped will make for a more permanent settlement than those which have been made from time to time by the Interstate Commerce Commission almost ever since it was organized. The fact that the government is in control of the roads and that competition between railroads has now been eliminated has aroused the shippers who have been contending over the rates for years to renewed efforts and apparently they have convinced the director general and his staff that something ought to be done. One of the reasons for summoning Director Chambers of the division of traffic for conference with Mr. McAdoo on the Pacific Coast was to take up the problem and the director general is quoted as saying in Spokane that graded rates are to be put into effect to the Pacific coast and intermountain territory. The rates have been graded more and more in the successive decisions of the commission, but it is understood that plans are now under way, to be acted upon after Mr. Chambers' return, for a further revision reflecting both the absence of water competition and of rail competition.

Automatic Train Control to Be Given Thorough Tests

The fact that the government is in control of the railroads coupled with the facts of recent serious accidents on railroads is likely to result in greater impetus to the development of automatic train control devices. The Railroad Administration naturally has had its attention called to the various devices of this kind which have been installed on various roads and recently has been giving keen attention to the subject. Reports on various devices have been made to it by the bureau of safety of the Interstate Commerce Commission and by its own representatives and plans are being made to arrange for more complete tests of several devices that have been in service and have given good results.

Orders of Regional Directors*

TRACK SCALE INSPECTION.—Complaints having been made relative to the condition of track scales on lines in the Southwestern region and it having been alleged that in some instances scales are weighing lumber all the way from 10,000 to 20,000 pounds too heavy, the regional director has instructed that a systematic inspection and test should be made periodically of all track scales on all lines. Roads are asked to advise what practice, if any, is now in effect with recommendations.

Grain Movement.—In Circular No. 27 dated July 15 the regional director of the Southwestern region called the attention of the roads to the importance of giving the movement of grain close supervision as the season of heavy grain loading has arrived and it is anticipated that a large part of the crop will move as soon as harvested this year. It is the expectation of the Food Administration that local interior mills will absorb as much of the early grain as possible, and that a large quantity will also go to the elevators at the western primary markets. This will result in the maximum efficiency of equipment and secure its earliest return for second loading.

Increasing Honey Production.—Several of the regional directors have written the roads in their areas urging that volunteer stands of sweet clover along the right-of-way be allowed to remain untouched during the blossoming period, which ends about August 15, to assist in securing an increased honey production, thus providing substitute sweets and assisting in the conservation of the sugar supply.

Traveling Engineers' Association.—Regional directors are calling attention to the annual convention of the Traveling Engineers' Association to be held in Chicago in September, at which a list of subjects of unusual interest and importance will be discussed; it is desired that all traveling engineers who can be spared from their work be permitted to attend.

Cross Tie Purchases.—Circular letter No. 325 of the Southern regional director quotes a letter from John Skelton Williams, director of the division of finance and purchases, relative to the financing of cross tie purchases, which directs that each railroad should take up and pay for the ties that originate on its line or on other lines which connect with it, but are not under federal control. If the railroad has not sufficient funds, application should be made to the division of finance and purchases to advance sufficient funds. A railroad so purchasing ties is to ship them to other roads when and as directed by the regional purchasing committee. The exporting road is to make bill promptly and send it to the importing road, which should promptly voucher and pay the bill, although the ties may not yet have been received.

Storing Supplies for the Winter.—Several regional directors have asked that a complete canvass be made to show which industries can and should store as much as possible during the next three months of such supplies as fuel, raw material and storage stocks with a view to meeting their need during the winter months when transportation encounters bad weather, and the relatively heavier war requirements. Every effort should be made to induce all classes of shippers to follow the policy of stocking up during the remaining months of good weather. It is recommended that all freight service men be placed at this task with directions to visit personally every industry on the line.

Unreasonable Detention of Coal Cars.—The regional director of the Southwestern region called attention to the unreasonable detention to coal carrying equipment by commercial consumers. If it becomes apparent that an accumulation is occurring owing to the inability of consignees to currently dispose of arrivals and if an immediate improvement is not

forthcoming on the part of the consignee after his attention has been called to conditions by the railway administration, the roads are instructed to present the problem direct to the car service section so that the Fuel Administration can divert surplus coal to other consumers.

Wage Increases.—The regional director of the Southwestern district issued Order No. 19 on July 18 relative to the interpretation of General Order No. 27 on wage increases and to instructions issued to the effect that no increases are to be made to any class of employees above the rates authorized in supplemental orders, without submitting the matter to the Board of Railroad Wages and Working Conditions for their recommendation and the approval of the director general. This order is stated to apply only to the increasing of wages of employees as a class and does not prevent individual increases or adjustments which the railroads have been heretofore authorized to arrange, and it does not interfere with making increases to common labor as authorized by the Board of Railroad Wages and Working Conditions in its instructions to the effect that "regional directors be authorized to establish hourly rates of pay for section labor and other common labor in general ranging from a minimum of 25 cents per hour to a maximum of 35 cents per hour, according to local conditions."

Supervisor of Coal Traffic.—B. F. Bush has announced the appointment of H. A. Weaver, as supervisor of coal traffic at Kansas City, Mo., representing the regional director in the movement of coal from Arkansas, Iowa, Kansas, Missouri, Oklahoma and Texas and outlining his duties as follows:

Membership in Labor Organizations.—The Southwestern regional director has called the attention of the roads to the fact that any practice which violates the clause in Order No. 8 reading as follows: "No discrimination will be made in the employment, detention or condition of employment of employees because of membership or non-membership in any labor organization," must be abandoned, even though such rule may have been mutually agreed upon with certain of the railroad employees.

Reduced Rates for Charitable Institutions, Etc.—The Southern regional director states that with respect to transporting free or at reduced rates, traffic for account of charitable institutions, it has been decided inasmuch as the proceeds for transportation service are a matter of revenue for the federal government, there would seem to be no justification for granting transportation free or at reduced rates for account of a charity, particularly, as to do so in one instance would require a similar policy towards all, as, of course, there could be no discrimination between one state or section and another. Further, that railroads under federal control may not properly transport free or at reduced rates material used in building or repairing public highways or other operations for state, county and municipal governments.

Cross Ties for Fuel.—Circular letter No. 332 suggests that all railroads give serious consideration to the use of old cross ties for fuel at stationary boilers and at other places where they can be used as fuel, due consideration being given to the fuel value of the ties in comparison with that of cord wood and the cost of distribution and labor charges.

Maintenance of Way and Equipment Standards.—In Order No. 22 B. F. Bush, regional director of the Southwestern lines, instructs that until further notice maintenance of way and equipment standards which have heretofore been in use on individual lines of railroad in the Southwestern region will be continued. It is not the desire at this time that the standard plans of the larger systems be generally adopted by the smaller roads which may have been placed in the same group with a larger railroad. The same instructions will apply to those portions of larger systems which may have been placed under the jurisdiction of more than one federal manager.

*These are among the more important orders that have been issued and which have not previously been noted either as coming from the Railroad Administration at Washington or some of the other regional directors.



A 100-Car Test of the Automatic Straight Air Brake

Runs on Virginian Railway with 100 A. S. A. and Combinations
of 50 A. S. A. and 50 Westinghouse Brakes

ON JULY 4, 1918, a train of 100 loaded coal cars having a gross weight, exclusive of the locomotive and caboose, of about 7,600 tons, equipped throughout with Automatic Straight Air brakes, was run over the Virginian Railway from Princeton, W. Va., to Roanoke, Va. This train was run as the last of a long series of tests, including both rack and road tests, which have been conducted by the Bureau of Safety of the Interstate Commerce Commission to determine the practicability of the Automatic Straight Air brake system, controlled by the Automatic Straight Air Brake Company, New York. Following the 97-mile run from Princeton to Roanoke, the Automatic Straight Air brake equipment on fifty cars was replaced with the Westinghouse equipment generally in use on the class of cars of which the train was made up. The train, thus equipped, was run from Roanoke to Victoria, Va., a distance of 123 miles, with the A. S. A. equipment at the head of the train and the Westinghouse at the rear, and from Victoria to Sewalls Point (Norfolk), Va., 120 miles, with the Westinghouse equipped cars at the head of the train and the A. S. A. cars at the rear.

The test train was made up of 100 52½-ton hopper coal cars averaging about 41,600 lb. light weight, a Mikado type locomotive and a caboose chronograph car. Helper service was available throughout the trips over the Third and Second divisions, but the helper locomotive had no part in the brake operations. The cars are regularly equipped with Westinghouse 10-in. freight brake cylinders and auxiliary reservoirs and K-2 triple valves.

The Automatic Straight Air Brake car equipment of the type with which the train was fitted, consists of a triple valve with separate service and emergency sections, and a change-over valve.* In addition to the usual type of brake cylinder and auxiliary reservoir, the equipment includes a service

reservoir which, during service operations, is in effect a part of the train pipe, providing the necessary train line volume from which to furnish air for service applications. The engine equipment consists of a high volume feed valve and a compensating valve. The former performs the same functions as and replaces the slide valve feed valve, while the latter replaces the equalizing discharge valve of the engineer's brake valve, and in addition to performing the functions of that valve, automatically maintains train pipe pressure while the brake valve is in lap position, at whatever point was established by the preceding position of the brake valve.

Essentially the functions of the Automatic Straight Air Brake equipment are as follows:

- (1) Rapid serial action in service applications and in quick release.
- (2) The maintenance of uniform and constant brake cylinder pressure, irrespective of piston travel or cylinder leakage. The cylinder is fed from the brake pipe, the pressure in which in turn is maintained by the compensating valve while the brake valve is in lap position.
- (3) Graduated release, permitting a variation of brake cylinder pressure at the will of the engineman.
- (4) Quick release when desired.
- (5) Emergency applications of the brake available at any time during or after any service application, and an automatic emergency application on full depletion of train pipe pressure.

Purpose of Test Runs

The purpose of the three 100-car test runs, the first of which was made on July 4, was, first, to demonstrate the ability of the A. S. A. equipment to handle the longest trains ordinarily operated under any conditions, down long heavy grades, and second, to determine the ability of the A. S. A. equipment to operate successfully when combined in trains including brakes of existing types. The train was equipped for the collection of complete data as to the performance of

*For a complete description of the three-unit type A. S. A. car equipment (the type with which the test train was equipped), see the *Railroad Age Gazette* for October, 1917, page 6-7.

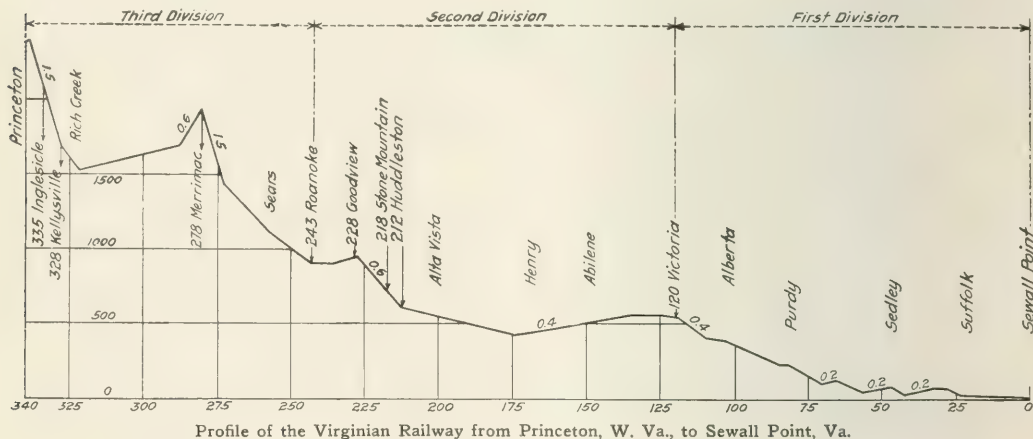
the brakes on practically every car, each car, with one exception, being fitted with a trainagraph, which recorded the brake pipe, auxiliary reservoir and brake cylinder pressures. A chronograph in the caboose provided a continuous chart on which was recorded the time of each brake valve movement, the time of application and release of the brakes on the first, fiftieth and one-hundredth cars, and the usual data as to speed, mileposts, etc. In addition to the trainagraph record of brake valve movements, constant telephone communication was maintained between the locomotive and the caboose. The locomotive and chronograph car were each equipped with a speed recorder. In addition to the equipment for the observation of brake conditions, pyrometer connections were made through slip rings on the axle to the rim, plate and hub of one of the rear wheels on the one-hundredth car, as well as to the brake shoe, from which temperature observations were taken during periods of heavy braking.

To demonstrate the characteristics of the Automatic Straight Air Brake for heavy grade work, the First division of the Virginian Railway from Princeton, W. Va., to Roanoke, Va., was chosen. Beginning at a point about two miles east of Princeton is a 1.5 per cent compensated grade, nearly 11 miles long, ending at Kellysville, which, from the standpoint of braking conditions, is the greatest obstacle im-

posed, instead of resorting to the cycling method of brake operation practiced with existing types of equipment, brake cylinder pressure once established need never be fully released as long as a retarding force is required. On the basis of a braking power of 60 per cent of the light weight of the cars at 50-lb. brake cylinder pressure, an average coefficient of brake shoe friction of 20 per cent and a train resistance of about 3.5 pounds per ton, a rough calculation indicates that a uniform speed of 15 miles an hour should be maintained down a 1.5 per cent grade with a constant cylinder pressure of about 20 pounds. The schedule for the test run down Kellysville Hill, therefore, called for the maintenance of approximately 20-pound cylinder pressure; that is, a ten-pound brake pipe reduction, to be slightly raised or lowered by the manipulation of the brake valve between lap and running, and lap and application positions, as the speed of the train seemed to require.

Exciting Incidents on the Hill

Three incidents interfered with the strict following out of this plan during the first three and one-half miles down the hill. At the first application of the brakes an unnecessarily large brake pipe reduction was made and held too long, with the result that the train was stopped after having proceeded



Profile of the Virginian Railway from Princeton, W. Va., to Sewall Point, Va.

posed in the way of loaded train movement. The length of trains operated down this grade is limited to a maximum of 85 loaded cars. The uncertainty of the control of the brakes throughout the train has made impracticable the successful operation of longer trains.

From Kellysville east for about two miles the grade is slightly ascending, followed by about four miles of .8 per cent descending grade. From Rich Creek this grade is followed by about 43 miles of light ascending grade, most of which does not exceed .2 per cent. Succeeding this is another 1.5 per cent descending grade. This one, however, does not exceed seven miles in length and offers less difficulty in train control than Kellysville hill. The remainder of the First division is made up of a broken light eastbound descending grade and offers little of interest from the standpoint of brake operation.

From Princeton to Kellysville the cars were all operated in graduated release, and 90-pound train lined and 110-pound main reservoir pressures were maintained in accordance with the practice of the road. When operating in quick release the Automatic Straight Air Brake equipment provides the engineman with direct control of the brake cylinder pressure throughout the train. With the train so

equipped, instead of resorting to the cycling method of brake operation practiced with existing types of equipment, brake cylinder pressure once established need never be fully released as long as a retarding force is required. On the basis of a braking power of 60 per cent of the light weight of the cars at 50-lb. brake cylinder pressure, an average coefficient of brake shoe friction of 20 per cent and a train resistance of about 3.5 pounds per ton, a rough calculation indicates that a uniform speed of 15 miles an hour should be maintained down a 1.5 per cent grade with a constant cylinder pressure of about 20 pounds. The schedule for the test run down Kellysville Hill, therefore, called for the maintenance of approximately 20-pound cylinder pressure; that is, a ten-pound brake pipe reduction, to be slightly raised or lowered by the manipulation of the brake valve between lap and running, and lap and application positions, as the speed of the train seemed to require.

Three incidents interfered with the strict following out of this plan during the first three and one-half miles down the hill. At the first application of the brakes an unnecessarily large brake pipe reduction was made and held too long, with the result that the train was stopped after having proceeded

about one and one-half miles from the top of the grade. During this stop a maximum cylinder pressure of 32 pounds was recorded on the last car. The brakes were released and the train started in about eight minutes after the stop and about one minute later, when the speed had attained 11 miles an hour, an emergency application was effected by the blowing off of a hose on the rear end of the ninety-fourth car. This occurred just after a 10-lb. brake pipe reduction had been made on the engine; nevertheless, the emergency action was effective throughout the length of the train, which came to a stop without noticeable shock at either end. Following this incident, five minutes after the train had again been started, the train parted between the eighty-fourth and eighty-fifth cars, due to the slipping by vertically of the coupler knuckles. This occurred about four minutes after a brake pipe reduction of approximately 10 lb. had been made, and again the emergency application of the brakes brought both ends of the train to a smooth stop, about 125 ft. apart.

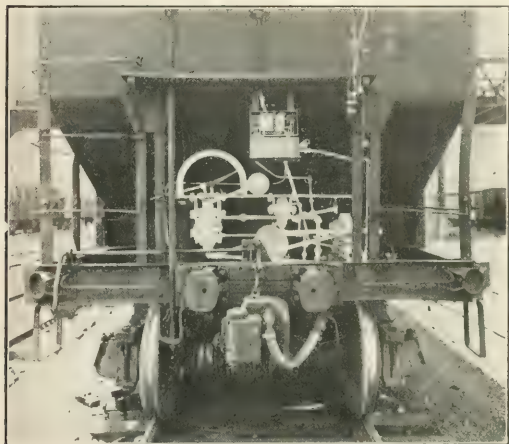
pressure on the hundredth car varied up and down between 10 and 30 lb. and with a few exceptions of short duration, the speed variations were between 14 and 21 miles an hour.

During the run ending with the stop at Kellysville, pyrometer readings of wheel temperatures on the one-hundredth car showed a maximum temperature of 280 deg. F. in the rim, 190 deg. in the plate and no rise in temperature in the hub of the wheel; the maximum temperature of the brake shoe was 670 deg. F. These maximums were reached as the train stopped at Kellysville. Examination of the wheels on the rear half of the train indicated a high degree of uniformity in temperature. That the same condition ap-

plotted generally throughout the train is well indicated by the average cylinder pressures maintained during the run from Ingleside to Kellysville. Following the test, the trainograph records of cars 1, 25, 50, 75 and 100 were removed and the average cylinder pressures obtained by planimeter measurements. These averages were: Car 1, 24.88 lb.; car 25, 24.4 lb.; car 50, 21.36 lb.; car 75, 25.84 lb., and car 100, 16.56 lb., an average of 21.81 lb.

At Kellysville the brakes on the last 50 cars were changed from graduated to quick release, under which conditions the train ran down the four-mile .8 per cent grade. Twice during this part of the run the train broke in two, in both cases immediately following the release of the brakes after service applications. In the first instance a knuckle pin was sheared and in the second a knuckle was broken. The broken section of the knuckle, while largely a new break, showed a flaw in the casting which may have contributed to its failure. It is worthy of note, however, that in neither case was the parting of the train preceded by a shock of any severity. In both cases the train was brought to a smooth stop.

The run over the last half of the Second division was made with the first 25 A. S. A. cars in graduated release and the



The Rear End of the One-Hundredth Car, Showing the A. S. A. Brake Equipment and the Trainograph

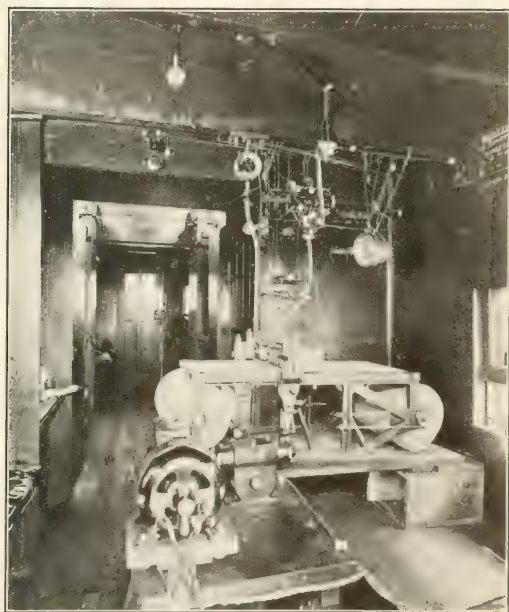
At Roanoke the A. S. A. brake equipments were replaced with the Westinghouse K-2 triple valves on one-half of the cars in the train. Following the completion of this work, on July 8 a run was made over the Second division from Roanoke to Victoria, Va., with 49 A. S. A. cars at the head end of the train, followed by 50 Westinghouse cars and one A. S. A. car at the rear of the train. The A. S. A. equipment was operated in graduated release.

The Second division is characterized by a gradually descending profile for the first half of the distance, the maximum grade being .6 per cent descending eastbound. The

Test with Mixed Brakes

At Roanoke the A. S. A. brake equipments were replaced with the Westinghouse K-2 triple valves on one-half of the cars in the train. Following the completion of this work, on July 8 a run was made over the Second division from Roanoke to Victoria, Va., with 49 A. S. A. cars at the head end of the train, followed by 50 Westinghouse cars and one A. S. A. car at the rear of the train. The A. S. A. equipment was operated in graduated release.

The Second division is characterized by a gradually descending profile for the first half of the distance, the maximum grade being .6 per cent descending eastbound. The



Interior of the Chronograph Car

remainder in quick release, the brakes being manipulated in the usual manner. Following this change in the operation of equipment, two water stops were made without shock at the rear end of the train.

At Victoria the 50 Westinghouse cars were placed at the head of the train, with the 50 Automatic Straight Air Brake cars at the rear, all being placed in quick release. On July 9 the train was run from Victoria to Sewalls Point, Va., over the First division, a distance of 120 miles.

This division is characterized by light rolling grades with an aggregate eastbound descent of about 500 ft. in the first

63 miles. Although the maximum grade is .6 per cent, considerable difficulty has been experienced in properly controlling the speed of long trains because of the broken nature of the grades. In the operation of 100-car loaded trains, which are regularly handled over this division, practically no braking is done to control the speed of the train. In order to insure the application and release of all brakes in the train, such a heavy brake pipe reduction is required that it is practically impossible to make an application without bringing the train to a full stop. It is the practice to let the trains run, which at many points results in the attainment of undesirably high speeds before the speed is checked by a change in the grade.

During the test run several brake applications were made to control the speed of the train, the reductions ranging from 5 lb. to 14 lb. In every case the brakes applied on the one-hundredth car and the smoothness with which the train was handled indicated a uniformity of brake application throughout the train. In one case a break-in-two resulted from an attempt to release without sufficient time in full release position, the brake valve being returned to running position after a period of only nine seconds in release. Following the customary practice of brake valve manipulation, however, in which the valve is maintained in full release position for not less than 25 seconds, no difficulty was experienced in releasing the brakes throughout the train.

The release on the one-hundredth car was obtained in 35 seconds from the time the brake valve was placed in release position, following a 5-lb. train pipe reduction. In fact, there appeared to be no appreciable difference in the time required to effect the release of the brakes on the last car, irrespective of the extent of the train pipe reduction.

Increasing Flexibility of Train Control

It seems evident that the Automatic Straight Air Brake, even when operating with other equipment in the same train, offers the possibility of materially increasing the flexibility of train control.

Undoubtedly the most important consideration in estimating the value of any device having to do with train control is the degree of safety of train operation attending its use. A braking system to be highly successful, must be capable of retaining the train constantly under a control which not only provides against the loss of life, but also protects the equipment and lading in the train from damage, in the face of any situation which reasonably may be expected to arise. The value of the Automatic Straight Air Brake in this respect was demonstrated several times during the 100-car tests.

The attainment of emergency applications of the brakes and smooth stops of this long train when operating at slow speeds, ranging from 11 to 14 miles an hour, in one case immediately following a brake pipe reduction and in another immediately following a release of the brakes, demonstrate the value of the reserve emergency braking power which is always available with the Automatic Straight Air Brake equipment. The lack of control immediately following a release from a service application is a frequent cause of accidents under such conditions, for instance, as entering a yard in a fog, or an unexpected change in signal indications.

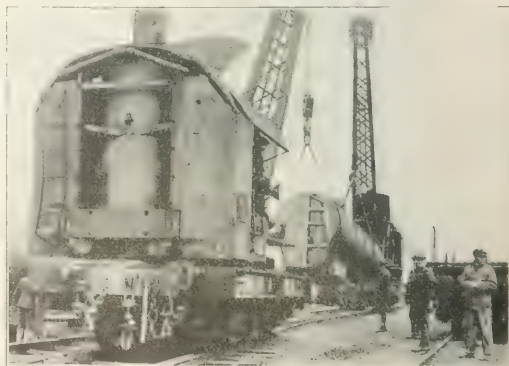
Only secondary to the human aspect of safety of train operation is the limitation often imposed on transportation capacity by the inability under all conditions safely to control the maximum trains which might otherwise be operated.

One of the serious difficulties encountered in the operation of heavy trains down long steep gradients is the excessive temperatures produced in the wheels and brake shoes. This is due to two causes: first, the inequality of braking efforts obtained throughout the length of a long train, resulting in

the conversion of an excessive amount of energy at the wheels of the cars toward the front of the train and, second, due to the comparatively short time available for the conversion and dissipation of the heat generated under the cycling method of brake operation. It is evident that given the same weight of train and average rate of speed, the aggregate amount of energy which must be converted into heat and dissipated remains the same, irrespective of the method of brake manipulation. The nearer uniform the speed remains, however, the lower will be the maximum rate of heat conversion and, therefore, the lower the temperature maintained in the wheels and brake shoes. Brake burned wheel treads and excessive brake shoe wear are always prolific sources of waste.

Another matter of less far-reaching importance than safety and the effect upon transportation capacity, but none the less worthy of careful consideration, is the demands of the brake system on the air pump. With the long trains now operated the quantity of free air which must be compressed is enormous under the best of conditions and the air pump draws heavily on the coal pile. The saving of air effected by the method of braking demonstrated on Kellysville hill is evident. The pump was required to furnish only the air required to maintain the desired cylinder pressure against train line and cylinder leakage and the comparatively small amount released from the cylinders when reductions of brake cylinder pressure were necessary. This is obviously much less than is required to repeatedly recharge the system following full releases of brake cylinder pressure at from two to three minute intervals with the cycling method of brake operation. When operating in quick release this advantage is lost, and the saving in air consumption with the A. S. A. brakes is not so pronounced. That there is a saving, however, is evident from a comparison of the volumes which must be recharged following full release after a service application. The service reservoir, which, together with the train line, supplies the brake cylinder, has a volume of 2,100 cu. in. for 10-in. equipment, as compared with 2,800 cu. in. in the auxiliary reservoir, the air in which is not drawn upon during service applications. This difference in volume indicates the extent to which air from the train line is utilized in the brake cylinder.

After a careful analysis of the events of the 100-car test trips it seems evident that the Automatic Straight Air Brake performs the functions for which it was designed and may be expected to do so under everyday service conditions. The economic application of these functions it would be difficult to overestimate.



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Unloading a Locomotive Boiler Overseas

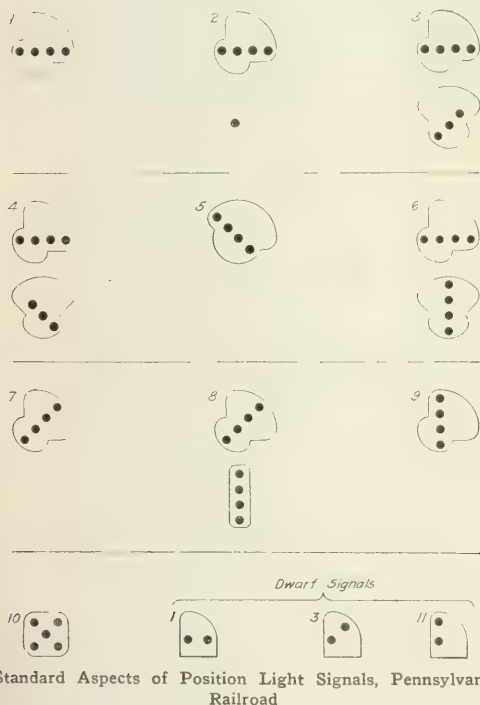
Position-Light Signals on Pennsylvania Railroad

Use of This Type Being Extended; Simplified Aspects; Reduction in Costs of Maintenance

POSITION-LIGHT SIGNALS, both automatic, and man-controlled interlocking, are now used on the Pennsylvania Railroad quite extensively, as is shown by the data printed in connection with our annual review of the signaling field on January 4 last, page 73; and the signals have been described in these columns from time to time, particularly in the issues of February 23, 1917, page 324, and July 21, 1916, page 117. Important changes in the apparatus and arrangement, tending to simplification and increased efficiency, which have been made during the past year are described by Signal Engineer A. H. Rudd, in an article which has been prepared for the Railway Signal

been eliminated. The aspects now adopted as standard are shown in Figs. 1 to 11 inclusive, the figure numbers corresponding to the numbers assigned to the aspects by Mr. Rudd. The names of the aspects are:

1. Stop.
 2. Stop and proceed (Rule 504).
 3. Proceed at low speed, prepared to stop.
 4. Proceed at low speed, prepared to stop short of train or obstruction (permissive).
 5. Proceed with caution, prepared to stop short of train or obstruction (permissive).
 6. Proceed at medium speed.
 7. Proceed, prepared to stop at next signal.
 8. Proceed, prepared to pass next signal at medium speed.
 9. Proceed.
 10. Take siding.
 11. Proceed at low speed.
- Medium speed means not over 30 miles an hour, and low speed means not over 15 miles an hour.



Standard Aspects of Position Light Signals, Pennsylvania Railroad

Association. From this article we take the substance of what follows:

The recent adoption of the two-arm interlocking home signal as standard, in place of the three-arm, has greatly simplified the construction of the light signal by the elimination of several aspects and, consequently, of various shapes of backgrounds. Signals on bridges have been lowered into the bridge chords, thus doing away with ladders and platforms and permitting the use of R. S. A. standard masts for nearly all signals.

All of these features have tended to reduce the first cost, but in addition to these changes, it has been found that a background is unnecessary for the signal light that is used as a distinctive mark of the automatic signal, and it has

The background of the signal is adjustable so that it can be used for all of the three-position aspects displayed, so that for roads not using a distinctive permissive signal the two backgrounds shown in Fig. 8 are all that are needed. The way in which the background may be turned is shown in Fig. 6. For signals showing four positions, the background shown in Fig. 5 is used. Including No. 10 there are four backgrounds for this system, with only two in general use.

The arms that support the light units are now removable from the grids, so that changes can be made without changing the grids.

With the aspects shown the use of the same voltage day and night has been found entirely satisfactory. This saves the cost of the wires, relays and switches formerly used for changing the voltage, while the use of the "light-out" relay makes it possible to safely use a single horizontal row for "stop"; and the rows in the bottom signal unit are displayed only when necessary. The practice of displaying aspect 2 on an interlocking signal instead of aspect 3, when it is desired to admit a train to an occupied track within interlocking limits in automatic block territory, is being made universal on the Pennsylvania where position-light signals are used, and considerably expedites operation, as recent instructions on the road require a stop before such a movement is made. The interlocking signal is equipped with a marker light for this purpose.

It was originally thought that "tipless" bulbs must be employed to prevent sun glare, but three years' experience has shown that this was unnecessary. The bulbs with tips are a commercial product. They have, therefore, been adopted, resulting in better base sealing, more permanent vacuum, longer life, and reduced cost.

The lamp, especially the filament, has been materially improved. With the low candle power used, proper location of the filament in relation to the lens is absolutely necessary and is obtained by proper rebasing. Care in this one particular is most important. Lack of care results in "spotty" lights. Rebasing is done in the shop and usually by one man specially skilled.

Records show that on the 20-mile section of four-track road with 1,879 high signal light units there were, in 1917, a total of 1,453 renewals of lamps, an average effective life of 14½ months. These signals had two rows burning constantly at 11-volts or 6-volts, so that practically one-half the lamps were in service at all times, with an actual life of 7¼ months, or 5,220 hours. Therefore, the lamp renewals on a three-position unit and bottom row amount to a little over 12 lamps per year, at a cost for lamps and labor of rebasing, of about five dollars a year.

By the elimination of the lower row in the new aspects, this is reduced to 8 lights at about \$4; while by the use of the bulb with tip this is further reduced to about \$3.20, where lamps are burned at 11 and 6 volts. This cost will, in turn, be slightly increased where the lamps are burned at about 11-volts constantly; but the average cost is conservatively figured at \$3.50 yearly.

The 13-volt 9 candle-power lamps, burning at $9\frac{1}{2}$ volts, now being tried are found to give a brighter light than the standard rated 12-volts 5 candle-power lamps burning at 11-volts, but are not as efficient, consuming forty per cent more current, although this increase is almost negligible where power is available.

The problem is, of course, to so balance the cost of current and the lamp renewals as to obtain the most economical proposition, which in its last analysis means saving a few cents on each light, which in the aggregate will amount to a considerable sum, as the use of this type is extended. Data at present available point to the use of a helical coil for battery-fed lamps and a V-shape filament where power is available.

With dwarf signals the cost of lamp renewals is greater. With 117 units, 305 lamps of 16 candle-power have been renewed. Two-thirds of the lamps are burning constantly, so that while the effective life of the lamps is $4\frac{1}{2}$ months, the actual life is 3 months, and renewals per year per lamp cost \$5, or, with the tip bulb, \$3.75. These lamps do not require careful adjustment, and their development is along the line of lower voltage with same wattage, but burning considerably under the rated capacity; and as the current for only one lamp is broken through the relay contacts, a modified automobile lamp is well within the possibilities; this, with its rugged filament, should last a long time.

The visibility of the signal is entirely satisfactory and its use is being steadily extended. The records show no false clear failures during the year cited in this installation; and none during the three years they have been in service which were chargeable to the signal. No errors are made in reading at close range, as the aspects are clearly visible up to the signal, while in fog the angle of the light beam can be seen before the lamps themselves are distinguishable.

Government Purchasing Policies

THE COMMITTEE of the Railway Business Association appointed to consider government purchasing policies has sent the following letter entitled "A Standard of Wise Prices" to the members of the association:

Under what purchasing policy can the Railroad Administration best determine upon prices wise in the public interest? How can manufacturers co-operate with the authorities in developing a wise price standard?

These questions were discussed for several hours on June 10 by the Railway Business Association's committee on government purchasing policies. It was decided that as soon as the requisite study can be made and a draft written outlining a tentative definition of price policy, such draft is to be placed in the hands of all members of the association with request for assistance in its improvement.

Concerning prices the point of view prevailed that it was necessary to put one's self in the place of the purchasing authorities and try to understand the problem as it presents itself to them, since only by doing this can the manufacturers make available contributions to the formulation of policy. It was pointed out that various commodities are produced and sold under conditions so diverse as to present extreme difficulty in applying any rule to all alike. It was also recognized that wide differences exist in the conditions under which a single commodity is produced and sold by various

establishments. The question of what should be included in costs and on what basis is moreover so complex and has so recently come under general and governmental discussion that specific recommendations at this stage are not easy to frame.

Other aspects mentioned were those of giving weight to quality, character and reliability of dealers; of insuring that the several roads obtain the particular goods which experience may have shown to be best adapted to local conditions; of affording these industries sufficient margin so that they may thrive and grow, performing for the country a service in progress as well as a service in current provision of facilities upon present standards; of whether it is more prudent for the government to tax excess profits or to seek to prevent them.

The committee unanimously concurred in the conclusion that the proposed statement concerning price and profit standards should deal with the general attitude which the authorities may be assisted in developing and that the application of such an attitude to specific instances would always lie largely in the discretion of the administrators to whom the director general delegates the working out of his policies.

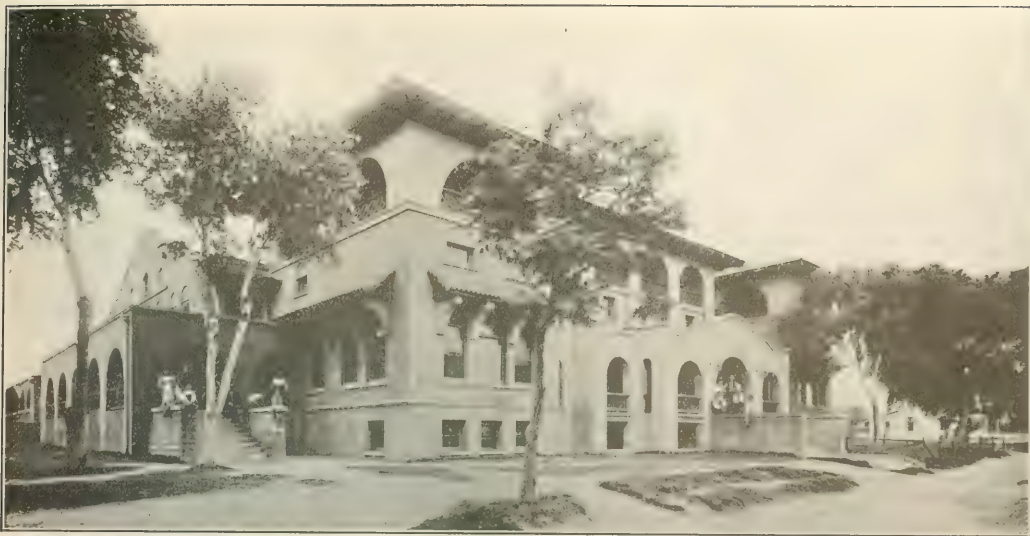
Commercial Ethics.—Progress in elevating the plane of relations between buyer and seller was discussed by the committee, which decided to recommend to the general executive committee that the association favor a measure along the lines suggested in a recent report of the Federal Trade Commission to penalize commercial bribery. By those in position to make comparison it is known that the railway supply industry has made more rapid progress than most if not all other groups in the attainment of higher standards of commercial ethics. The railway supply guild as a whole condemns any known departures from commercial negotiations based otherwise than on the merit and price of the goods and the reliability of makers. It was felt to be fitting in every respect that our association ally itself actively with those who seek some such legislation as that proposed.

Remittances.—Prompter payment for goods delivered to railroads was found still a subject of complaint in some quarters. The division of public service and accounts of the railroad administration has organized an accounting committee of which the chairman is A. H. Plant, comptroller of the Southern Railway. The association is exchanging information with that committee with a view to establishing a basis of co-operation toward closing out old accounts and expediting settlements on current transactions.

Materials for Railway Contracts.—Difficulty in obtaining material and fuel for use in completing contracts for delivery to railroads having been complained of, it was stated that some members had dealt satisfactorily in this respect with the procurement section of the division of finance and purchases, of which the manager is H. C. Pearce, general purchasing agent of the Seaboard Air Line, Interstate Commerce Building, Washington.

The committee consists of A. L. Humphrey, chairman; Samuel G. Allen, Irving T. Hartz, Robert F. Carr, Charles K. Knickerbocker, Andrew Fletcher, J. M. Hansen, Howard A. Gray and A. H. Mullikin.

GERMAN RAILWAY CONDITION SERIOUS.—In a recent article in the Berlin Tageblatt a member of the Reichstag, Herr Goethen, expresses considerable concern regarding the condition of the rolling stock on the German railways. He asserts that on one out of every five of his railway journeys in the last two years his travel was interrupted by delays due to the breaking down of engines. He attributes this to the substitution of steel for important copper parts. The longer the war lasts the more serious the condition of the means of communication becomes, he asserts, and the war can only be won, he points out, if the means of communication do not fail.



New Reading Room at Nogales, Ariz.

Development of Santa Fe Reading Room System

Reasons for Its Establishment; Its Activities and the Good Results That Have Been Secured from It

By Charles E. Parks

Assistant Editor, the Santa Fe Magazine, Chicago.

ONE OF THE PROBLEMS that has confronted the railways of the West during the past 40 years, particularly those lines that traverse any great extent of desert or semi-arid country, has been their inability to secure and keep in service competent and dependable employees. Removed from all of the refining and restraining influences of the more populous sections of the country, lacking often what we have come to regard as the necessities of life, limited to a very narrow social life, which, at its best, was open to question and sometimes was even entirely lacking, it is not strange that employment on these western roads was not eagerly sought after, particularly by men of family or those who wished to remain permanently with a railroad. High wages proved no incentive, the great majority of those employed on many divisions regarding their employment merely as a temporary means of obtaining a living, or, because of the high wages, a quick way of acquiring a "stake," and they were ready at the first opportunity to throw up their jobs and return to "God's Country." The boomer was a respectable member of society because he was largely in the majority.

At the present time conditions have changed, and, while skilled labor—clerks, train and engine men and shop employees—is still somewhat migratory in some sections of the West, as a rule, the western roads find little difficulty in keeping their ranks filled with efficient and contented employees. While the marvelous growth and development of the western states during the past few years and the opportunities to be found there have had their influence on the increased stability of railroad employees, nevertheless this state

of affairs was also largely influenced by the efforts made by the railroads themselves to retain in their service dependable men.

One of the means adopted towards this end by the Atchison, Topeka & Santa Fe is its system of reading-rooms and club houses. Under this system are grouped the efforts made by the company to instruct, entertain, amuse and keep its employees in a contented state of mind. This is done by erecting at all important division headquarters and terminals reading-rooms, containing all the equipment of a modern clubhouse, by providing entertainments and lectures and by promoting the moral, social and intellectual life of its employees and their families in every way possible.

In this the Santa Fe differs from the majority of the large systems, who delegate this important work, if undertaken at all, to the Railroad Y. M. C. A. or a similar outside agency. The Railroad Y. M. C. A. operates at some of the larger division points on the system, such as Topeka, and Argentine, Kan., Temple and Cleburne, Tex., and Albuquerque, N. M., and the company has assisted in building and contributes liberally in maintaining the Railroad Y. M. C. A. buildings, which come under the inspection of the reading-room department. However, most of the work of this nature is done by the company direct.

The reason for this lies in the peculiar conditions existing on the Santa Fe lines. When the road was first projected through the West, it passed through what was practically uninhabited territory. There were no large cities and the towns and villages were few and far between, so that when a division point or terminal was decided upon,

it was necessary to stake out a townsite on the desert or prairie adjacent to the roundhouse. It was at these localities that a reading-room or clubhouse was most essential. Had the company waited for an outside organization to erect a club and maintain it, it is problematical whether a single building would have been put up.

Illustrative of this is the case of the town of Albuquerque, N. M. This is one of the oldest towns in the United States and is not in the strict sense of the word a railroad town. Nevertheless, it is only within the past two years that sufficient funds were collected to enable Albuquerque to boast of a suitable building for the Railroad Y. M. C. A. Meanwhile, towns like Winslow and Seligman, Ariz., Barstow and Needles, Cal., have been long enjoying all the benefits of the reading-room system.

The reading-room system was first undertaken by the Santa Fe as an experiment, and as such it was unique. No other railroad in the country possessed anything of a similar nature, but after a 20 year test it has conclusively proved its success as a necessary factor in successful railroad operation. It was inaugurated on November 1, 1898, with the appointment of S. E. Busser as superintendent of reading-rooms. Previous to that time, and in fact from the time the road was built, the necessity for clubhouses for employees at desert division points had been recognized and some attempt had been made to provide them, but the buildings were few, little more than shacks, badly situated and poorly lighted and furnished. The efforts of the superintendent have been backed heartily by the management, and particularly by President Ripley, whose interest in the welfare of his employees and good business foresight impelled him to authorize the experiment.

The superintendent of reading-rooms is responsible for the operation and maintenance of the reading-room system, which is operated as a separate department of the road. He reports directly to the president. Statistical reports covering attendance, expenses, etc., are submitted also to all general managers and general superintendents for their information. It is his duty to suggest and plan buildings, to supervise their location, to employ librarians and attendants, to oversee all requirements for supplies, including books



The Barstow, Cal., Reading Room Building

and periodicals, to make all bookings for entertainments, to audit and pay all bills relative to reading-room operation and to exercise a general personal supervision of the work.

Reading-Rooms

Reading-room activities are centered about a reading-room or clubhouse. There are 26 of these buildings on the Santa Fe, representing an investment of over \$450,000. The average cost of the buildings now being erected is approximately \$30,000, while the one at Needles, Cal., the finest on the system, is valued at \$75,000. These buildings are divided into two classes: reading-rooms and clubhouses, although they are all generally known as reading-rooms. Clubhouses differ from the reading-rooms in that they are

provided with sleeping-rooms and in a few cases restaurants.

In erecting the new reading-rooms a standard type of structure is being adhered to whenever possible. This standard is a concrete pebble-dash structure, two stories in height with a basement, and fronted with a wide portico. This portico produces a mission-style effect in the architecture. The building is usually surrounded by a well-kept lawn, flower-beds and trees, which give it a very home-like and cozy appearance. No definite architectural plan was followed in the earlier buildings and some of them are large frame buildings, while others are built of brick, three or four stories in height.

In a general way each clubhouse has from 10 to 30 sleeping-rooms, furnished with all the conveniences of a me-



Old Type of Reading Room at Needles, Cal.

dium priced hotel. These rooms are occupied by employees for the nominal sum of 25 cents and the demand for rooms is much greater than the supply, a single room often being occupied three times during the twenty-four hours. At some points it is the custom for the dispatchers' office to give the librarian a lineup of the arrival and departure of trains in order that provisions may be made for taking care of train and engine crews. These sleeping-rooms are located on the top floor of the buildings.

On the main floor are placed the billiard and pool tables; the reading-room proper, containing the newspapers, periodicals and library; the card and writing rooms; the restaurant, when one is maintained (Fred Harvey maintains restaurants for employees at all division points and terminals); the auditorium and office, also the cigar counter and sometimes a soft-drink fountain. In the basement are the toilet facilities; lockers; baths, including showers and often a swimming pool; the gymnasium and bowling alley. Some of the older buildings do not contain all of these facilities, but the newer ones do. The librarian and his family usually have a suite of rooms in the reading-room.

Various considerations govern the location of these reading-rooms. The physical conditions existing in the territory through which the road ran was one of the first factors consulted in choosing a location. At many points on the Santa Fe, particularly on the lines west of Albuquerque, conditions of life are hard and the privileges of civilization are few and far away. As men with families could not be persuaded to remain permanently in these localities, notwithstanding the inducement of high wages, the company had to depend upon the labor of men not of the highest character and ability to maintain and operate the most difficult sections of the line. The operation of a railroad over a mountainous district or desert requires a greater watchfulness, a finer knowledge of the details of railroading and a truer sense of responsibility than in the older sections of the country and the company could not afford to entrust this work to inferior men, if the standard of operating efficiency was to be maintained. In such sections a reading-room was particularly desirable.

Stations where operating employees were given their longest layover away from home was another reason for locating a reading-room, partly in order to offset the vicious in-

fluences which were not lacking in any railroad or mining town in the west during the early days. It also has been deemed advisable to bring to bear some influences for good in communities which were not strictly railroad towns. Anything that tended to uplift the moral and social character of a mining town that sheltered a goodly number of railroad employees would be a distinct advantage to the company. So reading-rooms were located in several of these localities and what were once open towns on the Santa Fe are now the best communities along the line from a business and moral standpoint.

From 200 to 600 employees visit each reading-room on the system daily, depending on the location. Desert towns which have few counter attractions furnish the best attendance, although it is not a problem of the reading-rooms to persuade the employees to attend, but rather to furnish

Santa Fe reading-rooms are self-supporting. The revenue is derived from the rent of rooms, the use of baths and the pool and billiard receipts. However, only a nominal charge is made for the use of these facilities as there is no idea of profit involved. The cost of operating the reading-room department apart from renewals, but including books, periodicals, salaries, is approximately \$60,000 a year. The yearly charge for newspapers and magazines is about \$3,000, while the same amount is expended for books.

In the libraries of the reading-rooms are approximately 25,000 volumes, 40 per cent being fiction, 20 per cent history, 15 per cent biography, 15 per cent technical and the balance miscellaneous. An average of 500 books are drawn each day, while the buildings are visited by nearly 9,000 employees daily. This is approximately one-ninth of the total number of employees on the system. These figures



Reading Room at Winslow, Ariz.
Seligman, Ariz., Pool Room

Reading Room at Needles, Cal.
Lower Promenade of the Barstow,
Cal., Reading Room

The Court of the Barstow, Cal.,
Reading Room
The Reading Room Building at
Winslow, Ariz.

ample facilities to take care of the number of those who wish to take advantage of the attractions offered.

The popularity of the reading-rooms is not confined solely to the employees, but extends to their families. It is often the center of the social life of the community; it is the meeting place of the women's social and literary clubs. In many reading-rooms dances are given weekly, the music being provided by the employees, although a piano is a part of the equipment of every reading-room. Where the best reading-rooms are located the library is the only circulating library in the town and liberal use is made of it by the employees and their families. The auditorium is the common meeting-place of all division, information and safety meetings and the fact that such meetings are held in a suitable hall owned and maintained by the company lends somewhat of a family atmosphere to such gatherings. The wide porticos of the reading-rooms are the stamping-grounds for employees during the summer months, at which time they are alive with the hum and gossip of railroad life.

In respect to ordinary maintenance expenses, many of the

vary, depending upon the rush of business, a large attendance indicating that business is dull, while the employees have little time for recreation or amusement when business is brisk. At such times the sleeping-rooms are in demand.

Entertainments

The Bureau of Entertainments is operated as a part of the reading-room system and is under the supervision of the superintendent of reading-rooms. The Santa Fe employs annually about 30 groups of entertainers, each group consisting of from 1 to 50 persons whose duties are to instruct, entertain and amuse the railroad's employees at the various reading-room centers. Each company gives an average of 10 entertainments during the season; some towns are visited by as many as 16 different companies and others by only one or two, the average being ten. The number of entertainments allotted to a town depends largely upon the absence of other forms of amusement in the section during the winter months.

Different forms of entertainments are given, ranging

from an illustrated lecture on Enoch Arden by an eminent divine to sleight-of-hand work by a professional magician. Musical entertainments constitute about one-half the annual program and some of the best known concert companies in the United States have made the Santa Fe reading-room circuit, as well as many singers and musicians of note. Dentists and physicians give talks on personal and social hygiene, while readers, impersonators and dancers are especially welcome. One of the most popular forms of entertainments sent out is the college glee clubs, while a band usually makes the round each season. Entertainers also are sent out whose special duty is to meet and talk with the wives and dependents of employees and advise them on domestic and social matters.

Practically every company which is sent over the line is



The Railroad Y. M. C. A. Building at Albuquerque, N. M.

received with enthusiasm by the employees and their families. In but very few towns is there a hall large enough to accommodate the numbers seeking admission, which is free, and nearly every entertainment witnesses a large number turned away.

While the high-class nature of these entertainments insures their success, the personal relation which the superintendent of reading-rooms promotes between the entertainers and the employees as representatives of the railroad is a contributing factor. He not only wishes them to be entertained but he desires them to entertain. He seeks to have the entertainers, especially if a group of college students, regarded as guests of the company. It is for this reason, as well as

on account of the mutual enjoyment obtained, that every glee club is given a dance at nearly every town in which it gives an entertainment, and every concert usually is succeeded by a dance. Employees are urged to show the entertainers around the various points of interest and make them feel at home while on the line.

Results

That the purpose of the Santa Fe reading-room system has been attained is evidenced by the continuation and expansion of the work from year to year. It has always been a policy of the present management that the successful operation of a railroad depends largely on the quality of character and the standard of efficiency of its employees, and it is towards this end that the reading-rooms are operated. The company is not unselfish in the matter; it does not consider the reading-rooms charitable institutions to which everything is given and nothing received, nor is it conducting a campaign against the saloon and the gambling hall. Its object is very clearly indicated in the motto of the reading-room system:

"Give a man a bath, a book and an entertainment that appeals to his mind and hopes by music and knowledge, and you have enlarged, extended and adorned his life; and, as he becomes more faithful to himself, he is more valuable to the company."

The work of the reading-rooms is measured by sound business principles; there is nothing Utopian about it. The company invests and expects results, and while there is no visible financial return from the investment, there is much evidence that the investment is earning more than a normal dividend.

Call boys go first to the reading-room in search of train and engine men; garnishments for gambling and other improper debts is a thing of the past, and it is claimed by some that the reading-rooms constitute the best prohibitory system of temperance in the towns in which they are located. Encouraging the wives and children of employees to make use of the reading-rooms has a refining effect on the men. They dress better, act better and use better language, which result has its effect in the more courteous treatment of passengers and shippers. It is only those who have experienced the barrenness and deadly lack of interest in a small desert town during the long winter evening who can realize what these reading rooms and entertainments mean to the contentment and satisfaction of those whom circumstances compel to reside there.



French Tanks on Their Way to the Firing Line

French Tanks on Their Way to the Firing Line

The Proper Basis for A Prosperous Foreign Trade

Some Interesting Views Told by a Man Who Has
Spent Several Years in Asiatic Countries

By John L. Harrison

DURING THE PAST 50 years the United States has been so busy with internal improvements that there has been comparatively little consideration of the conditions which have made our internal progress possible, even less consideration of the conditions which must be fostered and developed if internal prosperity is to continue, and almost no thought at all of the fact that this prosperity may be entirely lost. But the present war has set men to thinking and they are beginning to realize that keeping 100,000,000 human beings housed and clothed and fed on the advanced standard which prevails in this country really involves enormous problems hardly so much as thought of heretofore.

In a brief discussion of this nature many of these problems must be hastily touched on or passed over entirely, but there are three closely related factors in the situation which must be clearly recognized by all classes of the community—from the richest to the poorest—if the situation is to be dealt with intelligently.

The first of these facts is that modern civilization is absolutely dependent on the ability of certain members of the community to produce a surplus—in common every day language—to live on less than they make. This surplus, being deposited in the banking institutions of the country, becomes available for business efforts of one sort or another and is ultimately invested in fixed assets such as buildings, factories, railroads, etc. Americans are so accustomed to the idea that there should be a margin between income and outgo that they very generally overlook the fact that there are vast areas of the earth's surface inhabited by uncounted millions of people, who have never been able to create a surplus, and who, as might therefore be expected, have never been able to develop living conditions at all comparable with those to which we are accustomed.

The inability of these races to create a surplus is so extreme that it is no uncommon thing to find whole districts inhabited by millions of people, where banks, except those established by foreigners and operated on foreign capital, are practically unknown. Thus, even in the Philippine Islands, where the American regime has greatly improved economic conditions, there are any number of cities with populations up to from 20,000 to 30,000 which not only have no banks except a small and almost unused agency for the Postal Savings Bank but which literally have no money to place in a bank were one established. Within the last few years the Insular government has endeavored to establish a banking system based on deposits made by the Filipinos, but the fact that even under the altruistic guidance of the United States such a course has only been attempted within the last few years speaks volumes for the smallness of the surplus which is produced by the 10,000,000 people who inhabit these islands.

Nor is this condition exceptional. Similar conditions prevail throughout Asia, in much of Africa and in large parts of South America and are even to be observed as close to our own borders as in Mexico, Central America and Haiti.

This lack of a surplus in these countries has been mentioned at some length because, besides its effect on the internal development of the races involved, it has a very important bearing on the establishment of commercial rela-

tions with countries which are in this condition—a bearing which has been very little discussed in this country.

The second factor in the situation is that the facilities which are built out of a nation's surplus—the machines, the tools, the factories, the transportation facilities, etc.—make it possible for a man to produce a great deal more than he could produce with his bare hands. The Chinese coolie lives in a cold hut, wears a few rags, a rice straw hat and a pair of wooden shoes, and eats a little musty rice and stale fish, while the American laborer lives in a warm house, is well clothed and liberally fed, because the Chinaman never has been able to develop enough of a surplus to enable him to secure the tools he needs to work with. He gets a few cents a day because, when competing with his bare hands against a race which works with mechanical power and intricate machines, his producing power is ridiculously low.

The converse of this proposition is that with a growing population and a growing efficiency in mechanical devices there is for us the ever-present prospect of producing more than can be consumed. And this leads to the third phase of the problem which may be expressed by saying that the prosperity which the United States has enjoyed depends on keeping the whole population employed. If, then, conditions arise which make it evident that keeping the workmen at work will result in over production there are two options—to cut down production by throwing a large part of the population out of work, or to develop foreign markets in which to dispose of the surplus. In the past the danger of over production has been small but it has been an increasing danger. Now it is generally recognized to be a well-nigh constant menace and, in fact, it is admitted by thoughtful men that the five years just preceding the war were years in which the world's capacity for the production of manufactured goods exceeded the demand for them. Just what the world conditions in this respect will be after the war remains to be seen, but, no matter what they are, the United States with its increasing industrial population and its comparatively stable agricultural production faces the stern necessity of either entering the foreign market with its surpluse of industrial production or suffering a decline in internal prosperity.

How Can Foreign Trade Be Gained

If these tenets are accepted, as they usually are by men who have had the privilege of enough foreign residence to broaden their perspective, there immediately arises the question as to how foreign trade can be gained and how it can be held.

In reaching for a solution of this question it is natural to expect that the American will endeavor to find it in the business methods with which he is familiar. Therefore one often reads that foreigners gain their hold over the business which they control by courtesy, tact, a knowledge of local languages, and customs, by offering a better or cheaper product, by more care in packing and shipping. It does, of course, seem reasonable to suppose, for instance, that courtesy ought to have an influence on business, but as a matter of fact it may be practically disregarded. The Englishman is a notably successful foreign trader but, on the other hand, notoriously discourteous to all classes of for-

eigners with whom he deals. Similarly a knowledge of the local language and local customs may be dismissed as of secondary importance. These and similar matters have some influence on business but this influence has been greatly over-emphasized in most discussions of this subject.

To the ordinary American manufacturer it usually seems even more preposterous to assert that the price of goods offered has only a secondary influence on the demand for them. Price and quality are, in the markets in which he deals, considerations of first importance. Why not in the foreign market also?

A Question of Terms

The answer brings us back to the first proposition set down in this discussion and namely that in very large parts of the world there is not enough local money to permit of the purchasing of goods which are offered except under terms which will permit of the payment for them out of profits to be derived from their use. Thus, if a Chinaman wants a sugar mill or a rice mill or a few miles of railroad, he cannot buy them outright because he does not have the necessary money. Neither has he a local bank as the American in a similar need has, from which to secure the necessary credit. To obtain the machine which he desires he must, therefore, go to some one who not only can sell him the machine but can also extend the credit which he must have. Under such conditions the buyer must, of necessity, be more interested in terms than he is in price. Thus, if he can secure a good sugar mill, of the type he wants, for \$10,000 in cash; a fair one for \$12,000, one third cash, one third at the end of a year, and the balance at the end of two years, and a poor sugar mill of about the same type, for \$15,000, \$1,000 down and \$2,000 a year thereafter until paid for, he will have to take the poor mill in nine cases out of ten because that is the only one which is offered on terms which he can meet.

We therefore arrive at the first principle underlying successful foreign business, which is credit. Where equipment is to be sold it must be sold on credit or, for the most part, it will not be sold at all and the nearer the terms approach to permitting payment out of the profits to be derived from the use of the equipment, the more fully the market can be controlled and developed.

The second step in the development of a successful foreign business, a step almost equally at variance with established American custom, but equally important, is the control of the business done by creditors. Standards of business ethics differ in different parts of the world, but money loaned or credits extended must always be protected. Therefore, it is customary and, in fact, reasonable to impose on the purchaser of the sugar mill above referred to a lien on all crops with the double proviso that during the period of his indebtedness he must dispose of all of the mill's product through the agency dictated by the firm to which he is indebted and that he may not extend his liabilities without permission from this firm. The first of these provisos is imposed to insure enough control of the product of the mill to enable the seller to be sure of making his collections, the second to protect the seller from the natural tendency of ambitious men to overdevelop their business. These are the theoretical justifications for these impositions. The actual reason for entering these requirements is that they insure the control of the marketing of the product and insure a control of any future business either in enlargements or in repairs. By this procedure not only is the original sale made to yield an eventual profit but the business of handling the product of the machines which are sold is made to yield a further and an even more important profit as well as to develop other business and freight for the support of the necessary shipping companies.

The ramifications of such a system when once it is well

established are many, but when once established, they are very powerful. The machinery company enters a community and begins to sell machines on long time credit. The men who buy these machines contract to do their business through an export and import house which is located there for that purpose. To take this product to the foreign market for sale, ships are sent out and to make the trip pay they carry out cotton goods, notions, etc., which are sold to local merchants, also on long time credit, with the proviso that these merchants will do business with no other firm as long as credit is extended. In this way, every bit of business done is made to yield other business, and all of it is made to find a market for the industrial production of the homeland and to return valuable products to the homeland. Courtesy, tact, and knowledge of local customs, even quality, have little or nothing to do with the success of the venture, for there is little or no competition. The firm which can extend the credit can control the business, and none of these other factors begin to count until there is competition in the extension of credit, a condition until recently practically unknown and one not likely to prevail after the war.

Importance of Banking Facilities

And over all of this organization stands the local branch of the great home bank. The bank gives the credit which these firms must extend and looks after the soundness of these business transactions. In short, as well as acting as banker for the business colony, the banker really acts as auditor and confidential representative of the home office of all of the locally represented business houses.

But beside the function of extending credit, with which Americans are pretty familiar, and with the business of selling exchange which is less understood and the work of keeping a watchful eye over the activities of all of the representatives of the home companies which deal through it, such banks have the general supervision of the development of trade with the homeland. It must be borne in mind that such banks do not exist for the good of the country in which they are located but for the good of the country whose business interests they represent. Therefore, they do not lend money for the general development of the country in which they are located. They extend credit to their own nationals as it is needed in order to carry on business in the region where they are located but not to the foreigner or to the native for any purpose whatsoever. To what extent this is true may be judged from the following. Some years ago, in order to develop his automobile sales business, one of the largest American dealers in Manila tried to secure a line of credit from a British bank there located. His business did not compete with any British business there established, or about to be established, yet the credit was promptly denied on the ground that British foreign banks existed for the sole purpose of stimulating British business and that this man's business did not in any way help British business. The matter was finally said to have been adjusted by an agreement between the manufacturer of one of the cars for which this man was the local representative and the bank, the manufacturer agreeing to keep on deposit in the New York branch of this British bank an amount of money equal to the credit extended to the Manila representative!

Beside this the foreign bank has another function which it ought always to exercise with judgment and with great care—namely, the function of stimulating business with the homeland without stimulating ultimate destructive competition with the homeland. It has been pointed out that for lack of a surplus the Chinaman and similarly situated races cannot buy the tools which they must have in order to compete with us. They lack railroads, they lack factories and shops, they lack iron foundries and steel mills—in short, they lack all sorts of modern industrial equipment. But many of these races do not at all lack brains and if the

wealth and the productive power of a nation such as our own is set to work in the unrestricted development of such things for these races, these races will shortly be in a position to produce surplus wealth and then to dispute with us the economic advantage which we now hold. So the banker in the foreign branch sits in his office and surveying the local field weighs in his mind the problem as to whether this or that or the other will be too profitable to the purchasers. Whether it will be a step toward the loss of future business because it will tend to abolish the need for future business. Whether, in short, it is more in the interest of the region in which he resides or the race which he represents and if, in his mind, the advantage is against his own people he promptly stops the business.

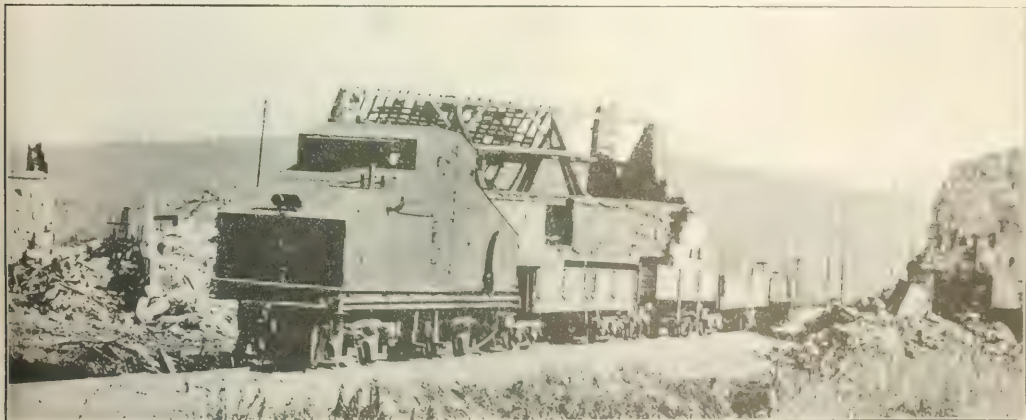
All this may seem cold and harsh. It is cold and harsh—but looking after the interests of 100,000,000 people is a cold, unsympathetic proposition and if approached from any other standpoint some of that 100,000,000 will most surely suffer. That foreign trade must be developed, there can be no doubt. That it may be developed and held by the methods here outlined is demonstrated by the history of the nations most experienced in foreign trade. But that it is a dangerous matter to develop the business of a foreign nation to a point where it will threaten the life of our own should be self-evident. So the banker sits in his office and stops those sales out of which dangerous progress may result, and aids in the development of the business which will dispose of the products of the homeland without developing conditions which may eventually prove a menace. Such a course is arbitrary and not pleasant to contemplate—but the final result of any policy of unrestrictedly developing for-

is a safe rule—and go nowhere else! Accept their dictation as to the limits on business—there hasn't been much dictation by American banks but there will be more—and remember that by so doing some of the business of today may be lost, but that tomorrow must be protected as well as today!

The Use of Light Military Railways

THE DEFEAT OF GERMANY depends to a large extent upon the skill and the efficient manner in which the light military railroads at the front are operated by our military forces. No army can exist without its light railroads today. They are an immediate and necessary adjunct just to the rear of the trenches where they support the fighting front. They are easily operated and quickly laid. In 1914, while all military authorities realized that transportation must be the backbone of any campaign, it was thought that the standard-gage road, supplemented by the usual strategic railways would fulfill all requirements, both in the rear and at the front. It was soon found this would not work. The "front" was far too temporary for the cumbersome and permanent works of peace-time railroading. So the standard broad gage system retreated from the trenches, to make way for the nimble and more serviceable light railways.

Back of the entire allied battle line, there is a zone from four to five miles wide within which a perfect net of light railways, running over two foot tracks, performs almost the entire function of transportation. The broad gage trains bring their freight, food, equipment, munitions and men to the beginning of the light railroads, just outside of the or-



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An Armored Locomotive for Light Railway Work

foreign markets, especially Asiatic markets, is nothing short of unmentionable.

As a final word the writer wishes to point out that a firm desiring to enter the foreign market should do so only where and when it can secure adequate banking facilities. It is practically useless to try to establish selling agencies until the proper credit is available. Don't try to establish a foreign business in the way that a home business is established. It can't be done! If those who are ambitious to try will remember that foreign business, especially in markets like the Asiatic markets, is conducted in the interest of the selling nation—not at all or at best only secondarily in the interest of the buying nation—one of the vital reasons for the difficulties which will be encountered, may become apparent. Go where there are established American banks

and distribute their load practically into the trenches themselves.

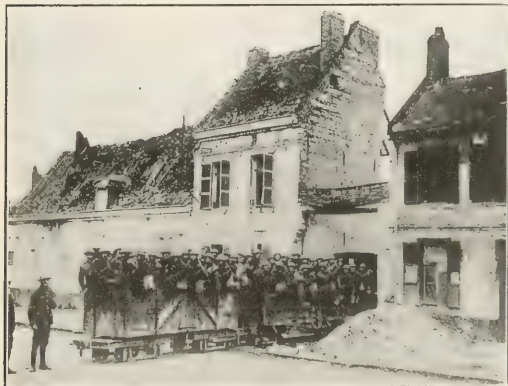
The United States is not a pioneer in military light railroading. Our system is borrowed very largely from the French and British. Here and there, however, we have incorporated well-tested ideas, developed in our own railroad or engineering experience. We are using the French 60 centimeter tracks, and in the main we have not indulged in "new fangled notions." Our light engines are American built, consisting of three sizes and two types—the gasoline engine, which operates over the tracks in the daylight when coal smoke would attract the attention of the enemy; and the heavier steam locomotive, which is used at night. One of these steam engines weighs about 23,100 lbs. on its

driving wheels. The gas engines are geared to a locomotive drive. The 30 hp. size weighs 4 tons and the 50 hp. size 7 tons.

The track for the light railways can be laid fast enough to enable our forces to pursue a retreating army. This has actually been accomplished both by the British and the Germans. With sufficient forces and under highly favorable conditions the claim for track laying is 10 miles per day. Obviously, track laying under shell fire is difficult work. The construction of five hundred feet across a certain exposed stretch may be a more creditable day's work than 5 miles in a quieter zone. Camp Humphreys, the big new engineers camp in Virginia, was built by light railways, during the severe storms of last winter. New railway regiments there were considered to have done well with half a mile of track per day. Under ordinary circumstances a mile or so a day can be called a fair average.

The light railways are always busy moving up supplies, carting back the debris from fresh trenches and in general making the fighting front "right." Sometimes a whole train will be blown away by a direct hit from the enemy. If the tracks are damaged they are soon repaired and shortly another train will be jogging along at an uninterrupted rate of 6 miles an hour. They can speed up if necessary. At the testing grounds in New Jersey they have made as much as 30 miles per hour. In any event these light railroads are subject to all the conditions met with on a standard railroad. Their collisions, however, are not as serious, and their wrecks are quickly righted. The motive power falls short on heavy grades, but the trains are so light they can be hoisted up an incline and coupled to a waiting engine above.

The light railways are camouflaged; about everything at the front works under camouflage, but they are neither noiseless nor without vibration, and they can't leave their rails with any satisfaction. They must keep at work almost wholly without protection, save that from our own artillery,



British Official Photo. Copyright by Underwood & Underwood, N. Y.

It Takes a Light Railway to Make Short Cuts Like This

though when necessary the engines can be armored against rifle and machine gun fire. So the light railway regiments of the engineers, of the construction, operating and shop branches, have all the dangers of battle without many compensating chances for the return of favors.

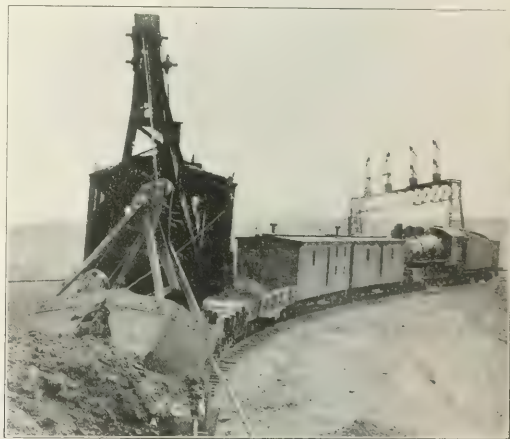
There are two main means of transportation at the front; the light railways and the trucks. When the ground is so torn by hurricane fire that the railways can no longer operate, the big motor trucks come into action. The trucks at the firing line are for emergency transportation. In wet weather

they slip and slide. They clutter up the line of march and they tear their own roadbeds to pieces in almost no time. The light railway does none of these things. It stays where it is placed, it makes and conserves its own roadbed, and even the gas engine, running over the 25-lb. rails develops greater power than the best truck.

The value of the light military railroad may be gaged from the fact that it is far too valuable for use anywhere except right at the front. The technique of operation is highly finished now, though the tactical use of these railways will doubtless be modified and specialized. As the war itself develops transportation looms ever larger as one of the great determining factors.

A Grab Bucket for a Ditcher

CONSIDERABLE USE is being made of grab or clam-shell buckets as auxiliary equipment on railroad ditching machines. These buckets do not supplant the regular dipper supplied with this equipment, but they serve as alternative tools to be used where they serve the purpose more efficiently. In tough, stiff excavation the steam shovel dipper is, of



Ditcher with Grab Bucket Placed Between Two Dirt Cars for Rapid Unloading

course, much more effective than a clam-shell bucket, but for rehandling material as in unloading cars or in picking up material stored in piles, the clam-shell is far superior to the dipper. In general cleaning up work clam shells are also more rapid than the steam shovel dipper.

The clam-shell bucket equipment enables the ditcher to coal locomotive tenders from hopper cars. It also makes it possible to use the ditcher for handling material at any distance below the level of the track whereas the dipper can only be used within a limited distance below the rail level. The photograph shows the ditcher equipped with the clam-shell bucket placed between two flat cars for use in unloading material alongside the track. The dipper used in this case is the 34-yard Blaw "Speedster" type bucket, manufactured by the Blaw-Knox Company, Pittsburgh, Pa.

GERMAN RAILWAY TRAFFIC among the Rhine towns is greatly disorganized owing to the number of wounded arriving daily from the French front in hospital trains. Press despatches state that trains from Germany are arriving at the Swiss frontier many hours late.

General News Department

The airplane mail arrived at Belmont Park, New York City, on Tuesday, July 16, in two hours, ten minutes, from Washington. The distance is about 230 miles, making the average speed about 106 miles an hour.

President Wilson, by executive order, has suspended the provisions of the eight-hour law as applying to mechanics and laborers on contracts in connection with the construction and maintenance of the Alaska railroad.

The Consolidated Ticket Office of the United States Railroad Administration at Salt Lake City, was opened for business on July 8. It is in the old ticket office of the Union Pacific and the Oregon Short Line in the Hotel Utah. All other ticket offices in that city have been closed.

The Brotherhood of Railroad Trainmen, according to an announcement made this week by the president, W. G. Lee, now has in the army and navy 11,533 of its members. More than 2,200 of these men entered the service during the month of June. The brotherhood's insurance department carries paid up policies for these members.

Sugar bowls are to be banished from the tables of dining cars and passengers will receive not more than two half lumps or one teaspoonful per meal. This information is given out by B. S. Harvey, of Chicago, chairman of the administrative committee of Dining Car Superintendents which was formed to co-operate with the Food Administration.

Representatives of short line railroads throughout the country will hold a meeting in Washington on August 7, at the call of Bird M. Robinson, president of the American Short Line Railroad Association, to take steps to secure a reconsideration by the Director General of Railroads of the status of the short lines, most of which were relinquished from federal control before July 1.

Employees of the American Railway Express Company, at Richmond, Va., resumed work on July 20, following a brief strike, in which they complained of their wages. A mediator from Washington visited Richmond, and it is said that these express employees are to have the eight-hour day, the other improvements in their conditions, similar to what has been ordered by the Administration for employees of the railroads.

The pensioners retired from service by the Grand Trunk Railway of Canada during the past ten years have numbered 1,277, and the company's expenditure in pension payments during that time have amounted to \$2,000,000. On the Grand Trunk, all officers and employees are retired at 65 years, though in special cases, under certain conditions, after 20 years' service, at the age of 60. The minimum pension is \$200 yearly. The basis of the pension, one per cent for each year of continuous service, is calculated on the highest average rate of earnings during any ten consecutive years.

Schools for Ticket Sellers

Under the direction of three passenger traffic committees of the United States Railroad Administration, schools are to be started to educate men and women, and particularly women, to become competent ticket sellers and information clerks at the consolidated Railroad Administration ticket offices and at stations, particularly at union stations. There will be no tuition charge and a nominal compensation will probably be allowed to cover necessary expenses. Except by the fact that there is a shortage of help for this work, no student at any of these schools will be assured of a position. Students who are appointed to positions will have to start at from \$75 to \$85 a month. As they become more experienced they will be advanced, and the maximum rate will be \$150 or

\$160 a month. Traffic men will be detailed from the several railways, from time to time, to take turns as instructors of the classes. It is supposed that from 10 to 50 students can be taken care of at one school.

Freight Car Thieves

Freight car thieves do not always steal from freight cars; they take the goods before the shipper gets them into the hands of the railroad. Before a court in Philadelphia on July 18, five men and one woman were held in large bail for robbery of goods by misdelivery. According to the reports, the teamsters carrying freight from a yarn factory, to be delivered at a railroad station, were in league with thieves who got them to deliver the freight at a place fixed up to resemble a freight station, where a forged bill-of-lading was given, and whence the goods were taken to a "fence." The reports say that about \$32,000 worth of goods have been stolen.

Telegraph and Telephone Lines Taken by Government

All telegraph and telephone systems within the jurisdiction of the United States, including their equipment, materials and supplies, etc., are to be taken over by the government on August 1, in accordance with a proclamation issued by the President on Tuesday, July 23, under the authority of the joint resolution recently passed by Congress, for the period of the war. The proclamation directed that the supervision, possession, control and operation of these systems shall be exercised by the Postmaster General, A. S. Burleson, through the present owners and organizations, so long and to such extent and in such manner as he shall determine.

Mr. Burleson issued a statement in which he said that it was his intention to move slowly and consult freely with the present managements. It is his intention to disturb conditions as little as possible. There would be no chance affecting press wire service, he said, except where it might be improved.

Because of questions of foreign ownership involved, no immediate action will be taken concerning cables and radio telegraphs. The Navy Department now exercises a strict censorship over the cable and wireless systems.

While there are but two important telegraph systems in the United States, it is said that there are about 9,000 telephone companies. The operation or control of what are commonly called farmers' telephone lines will be interfered with only for the purpose of facilitating their connections with the longer lines.

Joint Operations on the Pacific Coast

In a statement authorized by W. G. McAdoo, director general of railroads, at San Francisco a few days ago, information was made public relative to changes in operating methods which are being introduced on Western lines. The lines of the Southern Pacific and the Western Pacific will be used as a double track for a distance of 180 miles in Nevada. The Southern Pacific line has heavier freight eastbound as a rule than westbound, whereas the Western Pacific has much lighter traffic eastbound than westbound. Common use of the two makes it practical to partly balance the tonnage. It was also decided that the Western Pacific would be used so far as possible for business between the Coast and Salt Lake, which avoids hauling freight through Ogden to get to or from Salt Lake. In California, the Western Pacific freight is now floated across San Francisco Bay, but in the future it will move over the Southern Pacific Dumbarton bridge across the lower end of the bay and will be taken by rail to and from San Francisco in the same manner as the freight moving over

the Southern Pacific lines, dispensing with the use of the Western Pacific's boats.

The Santa Fe, the Western Pacific and the Southern Pacific will use jointly the Southern Pacific's facilities at Oakland Pier. The one-day ferry line will serve for the three companies' passenger business. This will do away with the Santa Fe boat service between Point Richmond and San Francisco, and the Western Pacific's boats between Oakland and San Francisco.

A study is being made of the situation in Southern California. It is the desire of the city of Los Angeles that freight business be taken off Alameda street if possible. There is a tendency to congestion on the Southern Pacific lines between Yuma and El Paso, which it is proposed to relieve by using the El Paso & Southwestern and the Southern Pacific as double track line for 40 miles east of Tucson.

The Reorganization of Railway Business Association

Secretary Frank W. Noxon of the Railway Business Association has sent a letter to the members concerning the recent meeting of that body at which its reorganization was effected and new officers were elected, in which he says:

"Reorganization of the Railway Business Association to meet the new conditions was accomplished by the general executive committee at the regular quarterly meeting in New York, June 19. This was pursuant to a resolution adopted by the association at its annual meeting in Chicago, April 8, giving the general executive committee power to act upon recommendations of the committee on nominations and organization. President Alba B. Johnson, whose election became effective May 27, presided.

"The committee on nominations and organization, J. S. Coffin, chairman, brought in the detailed revision of the by-laws. The aim of the changes is to distribute work hitherto largely performed by the president by establishing a system of committees and enlarging the responsibilities of the secretary. The number of appointive executive members is increased from 24 to 27. Four committees were authorized—'finance and administration' (to supervise internal association management), 'government purchasing policies,' 'railways after the war,' and 'action'—the last to promote results along the line of policies when adopted.

"One of the provisions of the new by-laws is that the president upon retirement becomes a permanent honorary vice-president.

"President Johnson announced that the following appointive members of the general executive committee had resigned or declined re-appointment because of government service: Lieut-Col. Robert P. Lamont, assistant to chief of ordnance procurement; Waldo H. Marshall, assistant to chief of ordnance production; J. L. Replogle, director of steel purchases, War Industries Board; Geo. T. Smith, treasurer, Emergency Fleet Corporation.

"The roster of officers elected and of appointive officers and committees, so far as announced, is shown below.

"Mr. Post was re-elected national counselor in the Chamber of Commerce of the United States. It was announced that Mr. Post has become chairman of the railroad committee of the national chamber.

"Written and oral suggestions by members of the association for improvement of methods in the buying department of the railroad administration were referred to the committee on government purchasing policies. Additional communications can be addressed to the secretary at the association office, 30 Church street, New York."

OFFICERS AND PURCHASING COMMITTEES

President: Alba B. Johnson, Philadelphia, president of the Baltimore & Annapolis Works.

Honorary vice-president: George A. Post, New York, president of the Standard and Cooper Co.

Vice-presidents: Walter H. Correll, Cleveland; W. B. Leach, Boston; F. B. Leach, Chicago; J. C. Bradley, Buffalo; Robert E. Carr, Chicago; A. L. Humphrey, Pittsburgh; and G. W. Simpson, St. Louis.

Executive members—S. P. Bush, Columbus; W. E. Clow, Chicago; J. S. Coffin, New York; S. M. Conner, Philadelphia; Otis H. Cutler, New York; Henry Elliot, East St. Louis; Andrew Fletcher, New York; Howard A. Gray, Chicago; James T. Hartz, Chicago; J. F. Heibel, Chicago; Minneapolis; H. H. Hewitt, New York; J. M. Hodkins, Chicago; Eugene Kretschmer, Dayton; Charles K. Knickerbocker, Chicago; Frank L. Latham, Pittsburgh; Stephen C. Mason, Pittsburgh; A. H. Mulliken, Chicago; Randolph Orman, Chicago; W. G. Pearce, New York; J. A. Post, Chicago; S. F. Prevot, New York; W. W. Salmon, Rochester; H. H. Westinghouse, New York; and W. W. Wilkes, Chicago.

Secretary, Frank W. Noxon; treasurer, M. S. Clayton; executive assistant, J. A. Post.

Committee on finance and administration—H. H. Westinghouse, New York, chairman; J. S. Coffin, New York; H. H. Hewitt, New York.

Committee on government purchasing policies: A. L. Humphrey, Pittsburgh, chairman; A. H. Mulliken, Chicago; Samuel G. Allen, New York; Robert E. Carr, Chicago; Andrew Fletcher, New York; Howard A. Gray, Chicago; Irving T. Hartz, Chicago; and Charles K. Knickerbocker, Chicago.

Committee on railways after the war—W. W. Salmon, Rochester, chairman; A. H. Mulliken, Chicago; J. C. Bradley, Buffalo; E. B. Leigh, Chicago; Stephen C. Mason, Pittsburgh; W. G. Pearce, New York; and H. H. Westinghouse, New York.

Committee on action—A. H. Mulliken, chairman; A. L. Humphrey, and W. W. Salmon.

Traveling Engineers' Association

In connection with the annual meeting of the Traveling Engineers' Association to be held at the Hotel Sherman, Chicago, September 10 to 13, the Railway Equipment Manufacturers will have an exhibit. Applications for space are being sent out this week by C. W. Floyd Coffin, of the Franklin Railway Supply Company, 30 Church street, New York, who is secretary of the supply men's body. In his letter to the supply men, Mr. Coffin says: "The Traveling Engineers' Association expects its convention this year to be the largest in attendance it has ever held, and I believe it is equally important that the various supply companies will be well represented at this time, as this is the first opportunity afforded them to present their material to the many representatives of the United States Railroad Administration who are sure to be in attendance."

Suppression of Freight Thieves

Philip J. Doherty, manager of the Property protection section of the law division of the Railroad Administration, following a conference with railroad officers in New York City on Tuesday last, has organized a local New York police district. The plan calls for the placing of the head of the police bureaus in constant touch with the Department of Justice, all local detective agencies and the chief of police, in New York and Jersey City.

A local committee was appointed to supervise police and detective work, consisting of Joshua B. Gray of the Central of New Jersey, William A. Humphreys of the New York Central, J. R. McMahon of the New Haven, H. L. Denton of the Baltimore & Ohio, J. H. Lambertson of the Erie, Edward Beattie of the Lackawanna and George Spender of the Pennsylvania. Mr. Doherty in addressing the conference said that the numerous crimes now reported were due to the acceptance of undesirable employees by the railroads last winter owing to the labor shortage.

"Well into the summer there was an unparalleled volume of thefts of large shipments by professionals and gunmen sent out by crooked receivers and 'fences' to rob cars. . . . It was almost impossible to catch the criminals. Many times, by connivance with railroad employees, cars with valuable loads were placed at isolated points, the better to aid the robbery."

Mr. Doherty plans to accomplish numerous reforms: the strengthening of railroad police agencies where offences are recurrent; packing shipments so that any tampering will be shown at once; printed warnings on every package that ten years penalty may follow its theft; more adequate fastenings and seal records by carriers; a close and accurate checking of conditions of shipments at receiving, transfer and terminal points; publicity to show the extent of Government interest in prosecutions; general vigilance in co-operation with municipal police, and stimulation of patriotic interest on the part of the people in apprehending offenders.

There is a proposal that truckmen employ as drivers only such men as are willing to work under bond. Much of the actual losses sustained by the companies came from the method, seemingly quite prevalent, whereby railroad thieves and truck drivers enter into a partnership to steal goods from freight yards.

Referring to the laxity of local magistrates, whose imposition of very mild penalties has thwarted the railroad police in many places, Mr. Doherty said:

"Some of these crimes have an extremely prejudicial influence upon the community. Because a large percentage of their crimes are participated in by railroad employees, local branches and officers of labor organizations in some instances have aided in the defense of criminals of this class. Even since Government control of railroads, strikes have been threatened unless thieves

caught red-handed were released from arrest and reinstated in railroad employ. A strike to assist criminals is an unspeakable monstrosity at any time, or against any employer. But think of such a strike aimed at the coercion of the Government! Such action is a direct affront to the best friend of labor and humanity that this country has ever entrusted with its destinies, the present President of the United States, now operating the railroads of the Nation.

Association of Railway Claim Agents

The annual meeting of the Association of Railway Claim Agents will be held at the La Salle Hotel, Chicago, on July 30.

Railway Returns for May

The net operating income of the railways of the United States for May was \$73,526,125, a decrease as compared with May, 1917, of \$19,000,000, according to the Interstate Commerce Commission's monthly bulletin. While all items of revenue except mail showed increases, the expenses continue to show a larger increase. For five months of the calendar year the net operating income was \$217,018,333, as compared with \$345,905,368 in 1917.

This summary covers only roads having operating revenues above \$1,000,000 for the year ended December 31, 1917. [Includes 180 Class I roads and 15 switching and Terminal companies.]

SUMMARY OF MONTHLY REPORTS OF LARGE ROADS FOR THE MONTH OF MAY, 1918

UNITED STATES

Item	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....	233,029.13	231,801.46			59,380.07	59,072.47		
Revenues:								
2. Freight.....	362,767,800	\$251,929,055	\$1,198	\$1,100	\$123,027,244	\$111,918,294	\$2,072	\$1,897
3. Passenger.....	79,181,733	61,288,774	340	264	34,323,025	27,052,296	579	466
4. Mail.....	4,562,564	4,994,881	19	21	1,780,481	1,956,284	30	33
5. Express.....	10,232,560	8,878,007	44	38	4,405,393	3,895,393	74	65
6. All other transportation.....	10,331,665	9,979,850	44	43	6,007,764	5,699,156	103	99
7. Incidental.....	10,824,500	8,611,010	46	37	6,139,925	5,000,000	105	86
8. Joint facility—Cr.....	491,220	349,598	2	1	252,502	176,037	4	3
9. Joint facility—Dr.....	152,634	126,887	1	1	85,262	75,381	1	1
10. Railway operating revenues.....	378,242,104	345,904,288	1,623	1,492	176,382,111	155,892,963	2,952	2,632
Expenses:								
11. Maintenance of way and structures.....	49,310,046	41,060,849	21	177	20,114,991	16,716,095	339	283
12. Maintenance of equipment.....	74,704,753	57,877,093	32	25	36,913,227	27,798,248	589	471
13. Traffic.....	4,027,961	5,453,759	17	24	1,910,026	2,036,889	31	35
14. Transportation.....	146,488,732	124,180,933	629	536	71,553,601	61,409,895	1,189	1,054
15. Miscellaneous operations.....	3,111,318	2,721,831	13	1	1,496,512	1,268,128	25	21
16. General.....	8,470,987	7,965,578	36	34	3,763,969	3,494,694	61	61
17. Transportation for investment—Cr.....	501,494	573,097	2	2	54,897	54,507	1	1
18. Railway operating expenses.....	238,686,946	238,686,946	1,025	1,025	135,697,429	112,669,412	2,285	1,908
19. Net revenue from railway operations.....	92,719,801	107,217,344	398	467	40,684,682	43,223,551	684	724
20. Railway tax accruals (excluding "War Taxes").....	15,309,971	14,361,659	65	62	6,319,186	5,795,431	106	99
21. Uncollectible railway revenues.....	39,880	50,353	1	1	17,227	15,569	0	0
22. Railway operating income.....	76,978,941	92,555,118	333	405	34,358,275	32,412,551	578	525
23. Equipment rents.....	7,063,095	7,088,894	30	31	3,155,935	3,155,935	53	54
24. Joint facility rent (Dr. Bal.).....	847,718	1,000,514	4	4	381,110	430,110	6	7
25. Net of items 22, 23 and 24.....	73,526,125	92,567,508	315	370	29,802,478	34,332,820	500	526
26. Ratio of operating expenses to operating revs. %	75.49	69.00			76.93	72.27		

SOUTHERN DISTRICT

WESTERN DISTRICT

Item	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....	42,957.26	42,738.33			130,691.80	129,990.66		
Revenues:								
2. Freight.....	141,340,275	\$38,019,452	\$962	\$890	\$98,400,287	\$101,991,309	\$752	\$785
3. Passenger.....	14,066,865	8,600,621	327	205	30,794,533	25,635,857	235	197
4. Mail.....	722,514	748,710	17	18	2,059,569	2,289,887	16	18
5. Express.....	1,286,850	1,211,087	30	28	4,009,548	3,361,527	30	26
6. All other transportation.....	817,966	741,075	19	18	3,505,935	3,539,619	27	27
7. Incidental.....	1,383,318	952,110	32	22	3,301,257	2,798,016	25	21
8. Joint facility—Cr.....	127,345	76,916	3	1	111,373	96,643	1	1
9. Joint facility—Dr.....	14,954	23,397	1	1	52,418	28,109	0	0
10. Railway operating revenues.....	59,729,909	50,326,574	1,395	1,178	142,130,084	139,684,751	1,085	1,075
Expenses:								
11. Maintenance of way and structures.....	7,091,390	5,751,263	165	135	25,999,853	18,593,491	199	140
12. Maintenance of equipment.....	11,791,623	9,706,143	275	225	17,999,853	15,297,700	138	118
13. Traffic.....	681,861	1,036,334	16	24	1,426,734	2,380,466	11	18
14. Transportation.....	21,926,378	16,881,185	510	395	53,908,753	45,889,853	404	353
15. Miscellaneous operations.....	76,036	250,505	2	6	1,335,790	1,203,193	10	9
16. General.....	1,303,380	1,182,267	30	28	3,404,638	3,288,617	26	26
17. Transportation for investment—Cr.....	47,367	120,982	1	3	489,230	1,000,000	4	8
18. Railway operating expenses.....	43,034,671	34,688,347	1,002	742	100,844,218	88,178,367	772	678
19. Net revenue from railway operations.....	16,695,238	15,638,227	388	436	41,285,866	51,506,384	313	397
20. Railway tax accruals (excluding "War Taxes").....	9,727	1,188,467	2	28	4,155,935	4,155,935	32	32
21. Uncollectible railway revenues.....	7,725	9,947	0	0	0	0	0	0
22. Railway operating income.....	14,431,266	13,441,347	336	315	37,129,931	47,350,449	281	365
23. Equipment rents.....	263,183	1,054,467	6	40	1,281,277	\$1,528,256	10	12
24. Joint facility rent (Dr. Bal.).....	600,716	148,344	1	3	0	0	0	0
25. Net of items 22, 23 and 24.....	14,464,503	14,987,463	337	318	35,848,654	45,822,193	271	353
26. Ratio of operating expenses to operating revs. %	72.05	68.92			70.15	63.21		

July 17, 1918. *Debit item. \$Excludes figures for Colorado Midland Ry., Mo. & N. O. Ry., and St. Louis & San Francisco Ry.

Note—The average railway operating income corresponding to item No. 22 was \$351 per mile of line for the United States.

Traffic News

The Georgia peach crop ripened this year earlier than usual, and up to June 26 the number of carloads sent northward was 3,581.

Automobile freight service has been established between Albany, N. Y., and Utica, about 96 miles. The proprietor proposes to run through in one day and to leave and take freight in at least 14 intermediate towns.

Twenty thousand is the estimated number of passengers who went from Philadelphia to Atlantic City and other seashore resorts last Sunday. This was a very hot day, and the fare had just been reduced to \$1.35 (including the war tax) for the round trip.

Freight cars are now taken to Port Borden, Prince Edward Island by car ferry, 11 miles, and the transfer of freight from these cars, standard gage, to the narrow gage freight cars of the Prince Edward Island Railway is made at the dock. The car ferryboat carries twelve cars at a time.

The United States Railroad Administration announces the opening of a barge line for the transportation of freight between Philadelphia and New York City by the Delaware & Raritan canal. The Philadelphia terminal is at Pier 24, North Wharves, and the New York terminal at Pier 5, East River.

At Freeport, L. I., one day recently, over 100 monthly commutation tickets, which had been wrongfully used on the Long Island Railroad, were seized by government agents. It is said that a secret service man bought a dozen of these tickets from one dealer who had been making money for a long time by supplying them to his friends for use at less than the regular one way fares.

The round trip fare between New York City (Hudson terminal) and Newark, N. J., nine miles, has been reduced from 54 cents to 33 cents. The single fare remains 27 cents. On this line, operated jointly by the Pennsylvania and the Hudson & Manhattan, and traversed frequently by electric trains all day, the fare formerly was very low, but on June 10 was advanced to three cents a mile.

The summer meeting of the National Industrial Traffic League will be held at the Hotel Lafayette, Buffalo, N. Y., on Thursday and Friday, August 29 and 30, in accordance with Circular No. 71 of the Traffic League, which states that it has been found necessary to change the time and place of the summer meeting, as previously announced. The docket for the meeting will be issued about August 15.

The Fuel Administrator for the State of Pennsylvania announces that coal mines which can dispose of their product by wagon delivery, within moderate distances, will no longer be supplied with cars for the transportation of coal by railroad. It is said that many of these mines, delivering coal by wagon to the railroads, have detained cars as much as three days each, for the purpose of loading.

The transportation of heavy freight by street car lines for a distance of 17 miles is being planned at Pittsburgh, Pa. The Pittsburgh Railways Company is preparing to establish this service for the transportation of machinery and other heavy freight from the Westinghouse Electric & Manufacturing Company's shops at East Pittsburgh to the gun factory which is being established at Neville Island. This will relieve the railroads in one of the most congested districts.

The movement of anthracite to New England is now in satisfactory volume. For the months of April, May and June, shipments amounted to approximately $3\frac{1}{4}$ million gross tons. The total anthracite allotment for the New England states for the year amounts to 10,331,000 gross tons. If the present rate continues until November 1, eight months' shipping will have been accomplished within seven months. The Fuel Administration aims to send the bulk of the New Eng-

land coal through the railroad gateways, during the open season, without strict attention to the exact apportionment between communities. New York City received during April, May and June slightly more than its allotment for the three months.

Between Cleveland, Ohio, and Akron, about 40 miles, the amount of freight carried recently in a single week was 8,145 tons, and of this total, 39 per cent (3,175 tons) was carried by motor truck on the highway. These figures are reported by the B. F. Goodrich Company as the result of a tally made by it. In addition to this there was a total of 1,639 tons of freight carried over the same highways by motor truck destined to points other than Cleveland or Akron; also 883 new automobiles (passenger) and 471 new automobile trucks on the way from factories to buyers. Of the automobile trucks (in service) observed in this count, only about one-third were empty, whereas in a similar observation a year ago, nearly half of the trucks were empty.

Coal Production in Illinois-Indiana District

To those who are unfamiliar with the comparative statistics of the coal traffic during the past three years, the difficulty in handling the amount required this year often seems inexplicable. The statistics showing the number of cars loaded in the Illinois, Indiana and western Kentucky district during 1916, 1917 and 1918 show that the railroads have made a fine record in handling increased tonnage since this country entered the war. In this district there are approximately 750 mines. The comparative production was as follows:

Month.	Number of Cars of Coal Loaded.		
	1916	1917	1918
May	63,156	121,157	198,447
June	69,006	172,453	194,343
July 1 to July 13 .....	.....	67,856	80,380

The movement during May, 1918, was 16 per cent greater than during May, 1917, and 109 per cent greater than in May, 1916. The movement in June, 1918, represented an increase of 12.5 per cent over 1917 and 96 per cent over 1916. During the first 13 days in July, 18 per cent more cars were moved than during the corresponding period in 1917. The number of cars available has increased very little since 1916. The increased traffic, therefore, reflects greater efficiency in utilizing the car supply, due in part to the zone system of coal production and partly to increased transportation efficiency.

The high production of coal at this time affords an opportunity for storing considerable quantities for use this winter. In spite of the high production that has been maintained, the Fuel Administration estimates that the supply of coal will be inadequate to meet the demand next winter, and the railroads are called upon to take advantage of the present situation. By storing coal at this time they can assure an ample supply and minimize the shortage of cars that is anticipated in a few months.

Seashore Excursions for the Public Benefit

C. H. Markham, regional director, announced last week that round trip excursion tickets between Philadelphia and Atlantic City, and other seashore resorts will henceforth be sold at \$1.25 plus the war tax. This rate will be available both by the Pennsylvania and the Reading lines. For many years the rate was only \$1.00, having been raised recently to \$1.75. Mr. Markham says, in his announcement:

"The \$1.25 rate, which is now to be resumed, is an extremely low one, especially under the present war conditions, but it is felt to be justified by the special circumstances surrounding the travel affected. The people of Philadelphia and its suburbs are dependent, in an unusual degree, upon the seashore resorts of south Jersey for their opportunities of healthful outdoor recreation, and the preservation of public health and welfare is a war necessity.

"Moreover, the large investments in these various seashore resorts must be fairly considered. Owing to their relation to public health, they cannot be regarded as non-essentials, and many of them are in a very large measure dependent upon the one-day travel for revenue sufficient to warrant their continued operation.

"It would be a great calamity to Philadelphians if any

general financial distress should overtake these enterprises. * * * The Reading will continue to operate one-day excursions daily and Sundays to all south Jersey points from Atlantic City to Cape May, inclusive, with the exception of Sea Isle City and Stone Harbor. The Pennsylvania will provide similar service to all points daily with the exception of Cape May, Ocean City and Corsons Inlet, but will also provide one-day excursion service to Corsons Inlet on Sundays."

Coal Production and Transportation Breaking Records

A record breaking production of bituminous coal marked the week of July 13, according to the weekly report of the Geological Survey. The output, including lignite and coal made into coke, is estimated at 13,243,000 tons, an increase over the week of July 6 (five working days) of 2,987,000 net tons or 29 per cent, and over the current week of last year of 1,497,000 net tons or 12.5 per cent. The average production per working day is estimated at 2,207,000 net tons as against 2,051,000 net tons during the week of July 6, or an increase of 7.6 per cent, and as compared with the average production per working day of 1,961,000 net tons during the week of July 13, 1917.

The output during the week of 13,243,000 net tons is approximately 1,031,000 net tons or 8 per cent above the average weekly requirements of 12,211,501 net tons, established by the United States Fuel Administration. However, the average weekly production for the coal year to date is estimated at 11,568,000 net tons or 5.3 per cent behind the weekly requirements. In order to make up the deficit for the coal year from April 1 to date of 643,000 net tons per week or 9,651,000 net tons, it will be necessary to have approximately ten more weeks of production equivalent to that of the week of July 13, or a production of 12,472,000 net tons during each of 37 remaining weeks in the coal year ended March 30, 1919, a figure only twice attained—the week ended June 15 and the current week.

During the week ending July 6, according to the report, the percentage of full time output lost on account of car shortage was only 3.6 per cent.

During the first 16 days of July, 118,368 cars of bituminous coal were loaded on cars in the eastern region, an increase of 20,021 cars, or more than 20 per cent as compared with the corresponding period of last year. From June 1 to July 19, 213,362 cars were ordered by anthracite mines for loading in the eastern region and 223,274 cars were placed by the railroads, while the actual loading was 169,382 cars, or only 76 per cent, due to failure to load at the mines.

DUTCH RUBBER SMUGGLING.—The Amsterdam correspondent of the London Times reports that as a train was recently leaving Enschede for Gronau officers boarded the locomotive for the purpose of making a search, and the engineer immediately opened various steam escapes in order, in the confusion thereby created, to be able to throw a large quantity of rubber into the fire. He was only partly successful, however. One piece of rubber fell outside the engine. Two arrests followed.

S. O. S.—No, this signal is not a call for help or a new Standard Oil Company, but one of the numerous abbreviations used by the army "Over There." S. O. S. stand for Service of Supplies. This is a new department which works behind the lines. Its function is to supply the boys in the trenches with all necessities from food to shells. The department is comprised of men taken from the Quartermaster's Corps, the Transportation Department and the Department of Railroad Transportation Officers.—*Wall Street Journal*.

THE FRENCH EQUIPMENT PROBLEM.—Of the 376,000 cars available on the French railways in August, 1914, 55,000 were lost to the railways, presumably as the result of enemy occupation of territory, says an article in a recent issue of the *Industrial et Commercial Français*. Even with the addition of the vehicles provided by the British authorities, an assistance which is described as invaluable, the total rolling-stock available has been inadequate to meet all demands, and with the utmost relief which can be obtained by the utilization of highways and inland navigations, it is held that the traffic needs the construction of more than the 33,000 cars being provided for.

Commission and Court News

Court News

Telegrams as Interstate Commerce

The Arkansas Supreme Court holds that a telegram delivered to an interstate carrier of messages in Indiana for delivery in Arkansas over a railroad's Arkansas telegraph line came within Interstate Commerce Rulings, Division C, Bulletin 7, p. 94, providing that if two or more lines are connected so that a message is transmitted directly from a point within a state to a point without it, the transmission constitutes interstate commerce, and brings all the participating lines within the purview of the Interstate Commerce Act, so that transmission of the interstate message was interstate commerce; and a suit by the sendee to recover for mental anguish caused by failure to deliver the message after it was received at the place of delivery, as authorized by the Arkansas statute, was not maintainable.—*La Cost v. Rock Island* (Ark.), 203 S. W., 586. Decided May 6, 1918.

Federal Employers' Liability Act Decisions

The Wisconsin Supreme Court holds that in leaving the railroad's yard at the close of his day's work the employee is but discharging a duty of his employment, and if he was employed in interstate commerce while actually at work, he was, in legal contemplation, so engaged while leaving the yard when the actual work was ended.—*Ewig v. Chicago, M. & St. P. (Wis.)*, 167 N. W., 442. Decided April 30, 1918.

The Oregon Supreme Court holds that a trackman who was required to begin work at 7 o'clock (on an interstate railroad) and who arrived at his place of work a few minutes before that hour, and before 7 o'clock was struck and killed by a work train, was engaged in interstate commerce within the act.—*Stool v. Southern Pacific (Ore.)*, 172 Pac., 101. Decided April 9, 1918.

The California Supreme Court holds that a servant injured while working on a main power line carrying alternating current to substations, which converted it to direct current for operating cars in interstate commerce, was not injured in interstate commerce, his employment being too remote.—*Southern Pacific v. Commission (Cal.)*, 171 Pac., 1071. Decided April 24, 1918.

Stop, Look and Listen Rule—Space Between Tracks

The Pennsylvania rule is that where a traveler approaches a grade crossing and stops, looks and listens, then enters on the tracks, he must continue to watch until over the crossing, and if there be any intervening space between the tracks where he can have better opportunities for seeing and hearing, he is bound to stop, look and listen quite as much as he was bound to stop before entering on the first track. The driver of an automobile looked and listened, at a crossing at night, then drove at the rate of about eight miles an hour over four tracks, when he came to an intervening space of fifty feet. He continued at the same rate without further stop, and was hit by an engine on the next track. If he had stopped at a point 18½ feet from the track he would have seen the engine. The engine, which was running at eight miles an hour, gave proper signals. In suit against the railroad the Pennsylvania Superior Court sustained a judgment for the defendant notwithstanding verdict for the plaintiff.—*Siegel v. N. Y. Central*, 67 Pa. Superior Ct., 307. Decided July 13, 1917.

The same court says that the rule is not a rule of evidence, but a rule of law, peremptory, absolute and unbending, and the jury can never be permitted to ignore it, to evade it, or to pare it away by distinction and exception. That failure to stop is not merely evidence of negligence but negligence per se has been frequently declared by both appellate courts.—*Aiken v. Pennsylvania*, 130 Pa., 380; *Ritzmann v. Philadelphia & Reading*, 187 Pa., 337. *Atlantic Refining Co. v. New York, Chicago & St. Louis*, 67 Pa. Superior Ct., 320.

Equipment and Supplies

Government Car and Locomotive Orders

The Railroad Administration has ordered 15 additional locomotives from the Lima Locomotive Corporation.

The Central Advisory Purchasing Committee, of the Railroad Administration, has awarded the orders for brick arches for the 1,415 locomotives recently ordered to the American Arch Company. The orders for specialties originally placed for the order of 1,025 locomotives have been extended proportionally for the 390 ordered later. Of the latter order, which included 130 light Mikado locomotives from the American Locomotive Company, 50 have been changed to the heavy Mikado type. The 3-point suspension and supports for brakebeams for the locomotives and the 100,000 freight cars have been ordered from the Chicago Railway Equipment Company. All of the specialties for both cars and locomotives have now been ordered.

The 50 heavy Mikado locomotives which are to be substituted for the light Mikado originally ordered are to be delivered to the Chicago, Milwaukee & St. Paul, which desired the change. Otherwise the distribution of the locomotives to the various railroads is as shown in the table published in the *Railway Age* of June 28, page 1558.

Passenger Cars

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, desires to purchase a second-hand coach having a baggage compartment in the center, about 17 ft. long, and with passenger compartments at either end seating 16 and 24 persons each respectively.

Machinery and Tools

THE CHESAPEAKE & OHIO ordered about 15 large tools from a Pittsburgh concern.

Signaling

THE BALTIMORE & OHIO has ordered from the Federal Signal Company a 100-lever, Style A, interlocking machine, to be installed at Chicago Ridge, Ill.

THE NEW YORK CENTRAL has ordered a 28-lever Saxby & Farmer interlocking machine from the Federal Signal Company, to be used in connection with the rebuilding of the mechanical interlocking plant at the Grand Rapids & Indiana crossing at Kendallville, Ind. This road has also ordered from the same company a 36-lever Saxby & Farmer interlocking machine, to be installed at Yost's, N. Y.

THE PHILADELPHIA & READING has awarded a contract to the Union Switch & Signal Company for the material and installation of an electro-mechanical interlocking plant at its crossing with the Pennsylvania Railroad at Sunbury, Pa. The mechanical machine will be of the Saxby & Farmer type, having 13 working levers and 3 spare spaces. The electric unit will be the "P5" type, having 19 working levers and 12 spare spaces. The signals on the Reading will be Union "T2," operating on alternating current, while those on the Pennsylvania will be the position-light type.

THE PHILADELPHIA & READING has placed a contract with the Federal Signal Company for the installation of two electro-mechanical interlocking plants at Philadelphia, Pa., to be installed at the north and south entrances to the Erie Ave. yard. The machine at the south end consists of a 24-lever Saxby & Farmer mechanical frame, with 11 working and 2 spare levers, and a 21-working-lever electric unit. The machine at the north end consists of a 20-lever Saxby & Farmer mechanical machine with 5 working and 1 spare levers, and a 17-working-lever electric unit. All material and labor will be furnished by the signal company in accordance with the railroad company's standard specifications.

Supply Trade News

Howard K. Moore, office manager of the Whitaker-Glessner Company, Portsmouth, Ohio, has been appointed assistant to the president.

Frank C. Hasse, district superintendent of the Oxweld Railroad Service Company, with headquarters at Chicago, has been commissioned a captain in the quartermasters corps of the National Army.

The Lagonda Manufacturing Company, of Springfield, Ohio, has moved its Kansas City office from 314 Dwight building to 306 Elmhurst building. F. H. Penberthy is in charge as district sales manager.

The Austin Company, Cleveland, Ohio, has opened a new branch office at Chicago. This new office is the direct result of an increased volume of business from the middle west section. The location is 437 Peoples Gas building.

A. H. Told, eastern representative of the Positive Rail Anchor Company of Marion, Indiana, has been appointed general manager of this company, succeeding Frank M. Robbins, who has resigned to go with another company.

The Ralston Steel Car Company, Columbus, Ohio, has abolished its Chicago office in the Peoples Gas Bldg. Ford S. Clark who has been the representative at Chicago, has been appointed sales representative of the same company, at Philadelphia, Pa.

Charles W. Burrows, formerly chief of the magnetic section, of the National Bureau of Standards, has established a laboratory, at Grasmere, Borough of Richmond, New York, in which he will continue his scientific investigation on the properties of magnetic materials and on the performance of magnetic devices.

The sinking of the steamship Napoli in the Mediterranean, on its way from the United States to Italy, carried down \$100,000 worth of Berry Brothers aeroplane varnishes, destined for the Italian Government. The Napoli, a China steamer requisitioned by the Italian Government, left the United States about June 15.

The trunking and capping business formerly conducted by Edward J. Clark has been incorporated under the name of E. J. Clark Lumber Company, with office and mills at Fargo, Ga. The headquarters were formerly at Philadelphia, Pa. The new company has acquired large tracts of cypress timber bordering on the Suwannee River, Georgia, and is now installing saw mills at various locations on the property. It is also erecting a complete finishing mill at Fargo.

The property of the Orenstein-Arthur Koppel Company will be sold to the highest bidder at public sale at the office of that company at Koppel, Pa., on August 15, 1918, by the alien property custodian. The property, which will be offered for sale in one parcel, will include the manufacturing shops of that company, a town site and buildings, the Beaver Connecting Railroad and other interests of this corporation in the United States. This company manufactures portable track and industrial railway materials.

Trade Publications

TIMBER HIGHWAY BRIDGES.—The National Lumber Manufacturers' Association, Chicago, has issued Engineering Bulletin No. 3 with the above title, which is an 80-page treatise on the application of timber to highway structures. The purpose is to show by example, plans and exposition the proper method of utilizing timber for this purpose. Detailed plans of standard designs for trestles and truss bridges obtained from various highway commissions illustrate how this may be done. Separate chapters are devoted to the types of framing, floors, character of the timber used, its preservation, etc.

Financial and Construction

Railway Financial News

BUFFALO & SUSQUEHANNA.—This company has declared a dividend of $1\frac{1}{4}$ per cent on the common stock, payable July 27 to holders of record of voting trust certificates July 20. The corporation applied to the Railroad Administration for approval of payment of dividends on its common stock at the rate of 7 per cent per annum and received in response to this application a telegram stating that there is no objection to the declaration at this time of a dividend of $1\frac{1}{4}$ per cent, "this rate, however, not to be taken as a criterion for future disbursement." In February a dividend of $1\frac{1}{4}$ per cent was declared on Buffalo & Susquehanna common, with last November $1\frac{1}{4}$ per cent and 2 per cent extra was declared.

INTERBOROUGH RAPID TRANSIT.—The New York Public Service Commission has granted the application of this company to issue \$39,416,000 7 per cent notes, dated July 1, 1918, and maturing July 1, 1921. The notes are to be issued at not less than 95½ and on maturity are convertible into 5 per cent bonds of the company at 87½ per cent of their face value. The money received by the sale of the notes will be used by the Interborough to finance its subway and elevated construction and its equipment obligations. The Public Service Commission has also authorized the issue of \$61,596,500 of bonds, which will be the collateral for the notes. It is expected that the War Finance Corporation will assist in the sale of the new notes.

PENNSYLVANIA.—This company has declared the regular quarterly dividend of $1\frac{1}{2}$ per cent, payable August 31 to stock of record August 1.

Railway Construction

BALTIMORE & OHIO.—A contract has been given to Westinghouse, Church, Kerr & Co., New York, and work has been started on the construction of large machine shops and additional oil houses adjoining the present roundhouse and shops at Cumberland, Md. The building will be 500 feet long and 250 feet wide.

The Baltimore & Ohio is building a new classification yard with engine facilities between Elsmere and Landenberg Junctions, two miles west of Wilmington, Del. The work now under construction provides for a yard of 900 cars capacity, with necessary water and coaling facilities. It is ultimately planned to increase the capacity to 2,000 cars. The Empire Engineering Company, Inc., Baltimore, Md., are the general contractors for roadbed and track; Frannie Brothers & Haigley, Baltimore, are building the engine-house and facilities, and the contract for the coaling station has been let to the Ogle Construction Company, Chicago.

CANADIAN NORTHERN.—The Dominion government has given its consent to an extension of the Canadian Northern from Victoria, B. C., north along the coast for 70 miles. The line is graded, and the provincial government which owns the rails offers them to the Canadian Northern so that work will be resumed at once. The provincial government will supply about 40 acres in Victoria for terminals.

CENTRAL OF GEORGIA.—A contract has been given to the Ogle Construction Company, Chicago, for a 300-ton concrete coal chute, to be located at Good Water, Ala.

CHICAGO, BURLINGTON & QUINCY.—A contract has been given by this road to Ralph Sollitt & Sons, Chicago, for the labor in connection with the building of an 8,000-ton extension to the ice house at Morton Park, Ill. A contract has also been awarded to the Rust Engineering Company, of Pittsburgh, Pa., for the construction of a 150-ft. concrete smoke stack, 6 ft. 6 in. internal diameter at the top, for a power plant at St. Joseph, Mo.

The Chicago, Burlington & Quincy has awarded contracts to the Ogle Construction Company, of Chicago, for six 150-ton steel

coal chutes, to be located at Seneca, Neb., and at Echeta, Orin Junction, Lysite, Powder River, and Clayton, Wyo.

CHICAGO & EASTERN ILLINOIS.—Contracts have been given by this company to the Ogle Construction Company, Chicago, for a 300-ton timber coal chute, to be located at Jackson, Ind., and a 200-ton timber coal chute at Mokence, Ill.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company has given a contract to the Ogle Construction Company, Chicago, for a 200-ton wood coal chute, to be located at Indianapolis, Ind.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—This company has awarded a contract to the Ogle Construction Company, Chicago, for a 150-ton wooden coal chute to be located at Omaha, Neb.

COLORADO & SOUTHERN.—This company has awarded contracts to the Ogle Construction Company, Chicago, for five 150-ton wood coal chutes, to be located at Fort Collins, Colo.; Cheyenne, Wyo., and Amarillo, Wichita Falls and Childress, Tex.

ELGIN, JOLIET & EASTERN.—A contract has been given to the Ogle Construction Company, Chicago, for two 100-ton concrete coal chutes to be located at South Chicago and Gary, Ind.

HOCKING VALLEY.—This road has given a contract to the Austin Company, Cleveland, Ohio, for the erection of a 10-stall roundhouse at Nelsonville, Ohio, to be completed in 75 working days.

ILLINOIS CENTRAL.—This company has awarded a contract to the Ogle Construction Company, Chicago, for a 200-ton timber coal chute, to be located at Carbondale, Ill.

MISSOURI, OKLAHOMA & GULF.—This company has awarded a contract to the Ogle Construction Company, Chicago, for a 100-ton steel coal chute to be located at Henryetta, Okla.

NEW YORK CENTRAL.—This company has awarded a contract to the Ogle Construction Company, Chicago, for a 200-ton steel coal chute, to be located at Minerva, Ohio.

PACIFIC GREAT EASTERN.—The province of British Columbia has issued orders for the building of a 36-mile addition to this line.

WASHINGTON RAILROADS.—To provide transportation for the product of a vast spruce region on the Olympic peninsula, the United States Railroad Administration has authorized the construction of about 50 miles of railroad, together with 30 miles of short branches, or 80 miles of track in all. The outlet of the proposed lines will be at Deep Creek near Port Crescent, Wash., on the Chicago, Milwaukee & St. Paul, about 80 miles west of Port Townsend.

SUMMER HOLIDAY RESTRICTIONS.—The Executive Committee of England has given notice that the published time-tables of passenger train services on the various railway companies' lines will not be augmented for the conveyance of holiday traffic during the summer months. The public is warned that accommodation on the trains cannot be guaranteed. It may be found necessary drastically to restrict the issue of tickets between certain points.

TRAVEL TO IRELAND FURTHER RESTRICTED.—The Defence of the Realm Regulation, which places restrictions on traveling to or from Ireland, has been extended to enable a Secretary of State to prescribe the ports at which passengers from Great Britain to Ireland or from Ireland to Great Britain may embark, and the routes by which they may travel. Where a person embarks at a port in contravention of this regulation, the master of the vessel in which he embarks shall be deemed to have aided and abetted the offence, "unless he proves to the contrary."

It is necessary to call public attention to the fact that under a law passed last April no person leaving France is allowed, without special permission from the Finance Minister, to transport more than the value of \$200 in cash, notes, or securities of any kind. Travelers on whom more than this sum is found are compelled to deposit the same in a French bank and leave it behind. The law does not affect letters of credit, but persons bringing money or securities into France are prohibited from taking away at one departure more than 1,000 francs (\$200).

Railway Officers

Executive, Financial, Legal and Accounting

Frank E. Haff, secretary of the Long Island, with office at New York, has been appointed local treasurer.

F. M. Snyder, auditor of freight traffic of the Central of New Jersey, has been appointed general auditor, with office at Jersey City, N. J.

A. J. Moran, assistant auditor of freight accounts of the Erie at New York, has been appointed auditor of freight accounts, vice **C. E. Hildum**, resigned to accept service with the United States Railroad Administration, Washington, D. C.

T. H. Niles has been appointed auditor of the Midland Valley, with headquarters at Muskogee, Okla., effective July 10, succeeding **A. W. Lefeber**, who has resigned. Mr. Lefeber's appointment to that position was announced in the *Railway Age* of July 12.

E. Deschenes, auditor of the Central Vermont, at St. Albans, Vt., has been appointed general auditor; **J. W. Redmond**, counsel at Newport, has been appointed general solicitor, and **W. H. Chaffee**, treasurer at St. Albans has been appointed local treasurer.

J. H. Edward has been appointed local treasurer and paymaster of the Grand Trunk Lines in New England; **A. E. Plant** has been appointed general auditor and freight claim agent, and **H. P. Sweetser** has been appointed general solicitor; all with headquarters at Portland, Me.

G. H. Bacon, freight and passenger accountant of the Kansas City Southern, at Kansas City, Mo., has been appointed assistant auditor, vice **P. E. Wooley**, resigned; **W. G. Buechner**, freight claim agent at Kansas City, succeeds Mr. Bacon, and **C. E. Bingham** succeeds Mr. Buechner.

C. K. Dunlap, traffic manager of the Southern Pacific, Texas lines, with office at Houston, Tex., has been elected president of the Southern Pacific, Texas and Louisiana lines, to succeed **W. B. Scott**, who resigned to become federal manager under the United States Railroad Administration.

Claude Waller, general counsel of the Nashville, Chattanooga & St. Louis, has been appointed general solicitor, with headquarters at Nashville, Tenn. The following officers of the Nashville, Chattanooga & St. Louis, have had their authority extended over the Tennessee Central; **A. P. Ottarson**, controller, and **J. H. Ambrose**, treasurer; all with headquarters at Nashville, Tenn.

M. H. Smith, president of the Louisville & Nashville, with headquarters at Louisville, Ky., has been elected president also of the Atlanta & West Point and the Western of Alabama to succeed **Charles A. Wickersham**, resigned to accept service with the United States Railroad Administration; and **J. A. Higgins**, general passenger agent, has been elected secretary and treasurer of the same roads to succeed **W. H. Bruce**, resigned to accept service with the United States Railroad Administration.

W. H. White, controller of the Philadelphia & Reading, at Philadelphia, Pa., has been appointed general auditor; **J. S. Sneyd**, assistant treasurer, at Philadelphia, has been appointed local treasurer of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City, and the Port Reading; **W. L. Kinter**, assistant general solicitor of the Philadelphia & Reading, has been appointed general solicitor, and **C. K. Klink**, real estate agent, has been appointed real estate agent of all the above roads, with headquarters at Philadelphia.

Charles E. Perkins has been elected president of the Chicago, Burlington & Quincy, succeeding **Hale Holden**, who

was recently appointed regional director of the central western region. Mr. Perkins will have his headquarters at Chicago. **Ralph Budd**, executive vice-president of the Great Northern at St. Paul, has been elected chairman of the executive committee of the Burlington. **T. S. Howland**, vice president, secretary and treasurer of the Burlington, at Chicago, was elected a director to succeed Mr. Holden. **T. W. Bunn**, of St. Paul, was elected a member of the executive committee.

Operating

W. H. Bunney has been appointed general superintendent of the Montana, Wyoming & Southern, with office at Belfry, Mont.

William Cotter, superintendent of the St. Louis & O'Fallon, has resigned, and that position has been abolished, effective July 18.

M. McKernan has been appointed superintendent of safety of the Missouri Pacific System, with headquarters at St. Louis, Mo.

O. S. York has been appointed assistant trainmaster of the Stockton division of the Southern Pacific, with headquarters at Tracy, Cal.

W. H. Fogg, general superintendent of the Chicago, Indianapolis & Louisville, transferred his headquarters from Chicago to Lafayette, Ind., effective July 18.

W. P. Bruce, federal general manager of the Nashville, Chattanooga & St. Louis, has been appointed federal general manager also of the Tennessee Central, with headquarters at Nashville, Tenn.

W. J. Harahan, federal manager of the Seaboard Air Line, and the Macon, Dublin & Savannah, with headquarters at Norfolk, Va., has been appointed federal manager also of the Durham & Southern.

W. S. Palmer, president and general manager of the Northwestern Pacific, with headquarters at San Francisco, Cal., has been appointed general manager of the same road with the same headquarters, effective July 19.

E. H. Coapman, federal manager of the Southern Railway and the roads mentioned in our issue of July 19, page 153, has been appointed federal manager also of the Piedmont & Northern, with headquarters at Washington, D. C.

H. L. Bell, assistant superintendent of the Union Pacific at Ogden, Utah, has been appointed acting superintendent of the Ogden Union Railway & Depot Company, succeeding **J. H. Dodds**, who has been granted a leave of absence, effective July 10.

J. C. Simpson, assistant to vice-president of the Gulf & Ship Island, at Hattiesburg, Miss., has been appointed assistant to the general manager of the Gulf & Ship Island, the Mississippi Central and the New Orleans Great Northern, with office at Hattiesburg, Miss.

Robert Rice, general superintendent of the Missouri district of the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., has been appointed federal general manager of the Colorado & Southern, with headquarters at Denver, Colo., effective July 15.

F. M. Falck, general manager of the Philadelphia & Reading, at Philadelphia, Pa., has been appointed federal general manager of that road, and also of the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at Philadelphia, Pa.

The authority of **George W. Stevens**, federal manager of the Chesapeake & Ohio east of Louisville, Ky., Columbus and Cincinnati, Ohio, including the Chesapeake & Ohio Northern, with office at Richmond, Va., has been extended over the Ashland Coal & Iron Railway.

J. W. Farrell, trainmaster of the Grand Trunk at Richmond, Que., has been appointed superintendent of the Grand Trunk Lines in New England; **E. W. Williams** has been appointed superintendent of car service, and **W. Cooper** has been appointed trainmaster and road foreman of engines, all with headquarters at Portland, Me.

E. E. Dildine, assistant superintendent of telegraph of the Northern Pacific, with headquarters at Tacoma, Wash., has been appointed superintendent of telegraph, with headquarters at St. Paul, Minn., succeeding **M. H. Clapp**. **E. L. Mackenroth**, has been promoted to assistant superintendent of telegraph, succeeding Mr. Dildine.

H. M. Sloan, assistant to the president of the Chicago, Rock Island & Pacific, with headquarters at Chicago, Ill., has been appointed assistant to the federal manager of the Chicago, Rock Island & Pacific and the Chicago, Rock Island & Gulf, in the central western and the southwestern regions, with headquarters at Chicago, Ill., effective July 1.

J. F. Patterson, superintendent on the St. Louis system of the Pennsylvania Western Lines, with headquarters at Logansport, Ind., has been transferred to Akron, Ohio, on the Central system, succeeding **P. W. Sullivan**, promoted. **W. L. Ekin**, superintendent at Decatur, Ill., on the St. Louis system, succeeds Mr. Patterson. **A. J. Dawson**, trainmaster on the northwest system, at Cleveland, Ohio, has been promoted to superintendent, succeeding Mr. Ekin. **O. C. Wright**, master mechanic on the southwest system, with headquarters at Logansport, Ind., has been promoted to superintendent on the Central system, with headquarters at Cambridge, Ohio, succeeding **H. K. Brady**, who has been appointed superintendent of the Wage Bureau, at Pittsburgh, Pa.

Several federal managers in the Southwestern region, whose appointments have previously been announced have had additional roads added to their jurisdiction as follows: **A. Robertson**, headquarters at St. Louis, Mo., the Southern Illinois & Missouri bridge; **L. Kramer**, headquarters at St. Louis, Mo., the Oklahoma Belt and the West Tulsa Belt. **J. A. Edson**, headquarters at Kansas City, Mo., the Kansas City, Mexico & Orient and the Joplin Union Depot. **J. L. Lancaster**, headquarters at Dallas, Tex., the Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Terminal. **J. S. Pyeatt**, headquarters at Dallas, Tex., the Abilene & Southern, the Ft. Worth Belt, the Ft. Worth Union Passenger Station, the Houston Belt & Terminal and the Union Terminal at Dallas. **W. B. Scott**, headquarters at Houston, Tex., the San Antonio, Uvalde & Gulf.

Traffic

G. L. Nelson has been appointed traffic manager of the Grand Trunk Lines in New England, with headquarters at Portland, Me.

H. F. Smith, traffic manager of the Nashville, Chattanooga & St. Louis, has been appointed traffic manager also of the Tennessee Central, with headquarters at Nashville, Tenn.

R. L. McKellar, freight traffic manager in charge of foreign traffic of the Southern Railway, has been appointed secretary of the Exports Control Committee, with office at Washington, D. C.

M. J. Mahon, traffic manager of the New Orleans Great Northern, with office at New Orleans, La., has been appointed traffic manager also of the Mississippi Central and the Gulf & Ship Island, with headquarters at Hattiesburg, Miss.

W. C. Hope, general passenger agent of the Central of New Jersey, at New York, has been appointed passenger traffic manager of that road, also of the Philadelphia & Reading, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at New York.

L. L. Grabill, assistant general baggage agent, of the Grand Trunk, with office at Toronto, Ont., has been appointed general baggage agent, succeeding **J. E. Quick**, who will retire on July 31, under the company's pension rules, after a continuous service of 47 years with lines of the Grand Trunk.

J. F. Auch, vice-president and freight traffic manager of the Philadelphia & Reading, with office at Philadelphia, Pa., has been appointed freight traffic manager of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading; **E. J. Weeks**, general passenger agent of the Philadelphia & Reading, at Philadelphia, has been appointed general passenger agent of all the above roads, both with headquarters at Philadelphia.

Engineering and Rolling Stock

J. Hay has been appointed master mechanic of the Grand Trunk Lines in New England, with office at Portland, Me.

P. D. Fitzpatrick, valuation engineer and general roadmaster, of the Central Vermont at St. Albans, Vt., has been appointed chief engineer.

J. C. Garden, master mechanic of the Grand Trunk at Battle Creek (Mich.) shops, has been appointed master mechanic of Stratford (Ont.) shops in place of **C. Kelso**, assigned to other duties.

W. A. James, whose appointment as assistant chief engineer of the Canadian Pacific, with headquarters at Winnipeg, Man., was announced in the *Railway Age* on July 12, was



W. A. James

born in 1864, and entered railway service with the Burlington & Missouri River as a flagman in an engineering party in 1883. From that date to 1895, he served in various positions on railway location and construction in several western states. In 1898 he went to Canada in the position of assistant engineer with the Canadian Pacific and has since been continuously employed with that road to the present time. He subsequently served successively as locating engineer, resident engineer and

division engineer. In 1906 he was promoted to engineer of construction, since which time he has been in charge of a large portion of the construction and improvement work in progress on the western lines of the Canadian Pacific. The last important work of this kind, carried on under his immediate direction, was the construction of the Connaught tunnel.

W. C. Cushing, whose appointment as chief engineer maintenance of way, of the Pennsylvania Lines West, including the northwest, the central, the southwest and the St. Louis systems, with headquarters at Pittsburgh, Pa., was announced in the *Railway Age* on July 12, was born at St. John, N. B., on March 18, 1863. Mr. Cushing was educated at the University of New Brunswick and the Massachusetts Institute of Technology. He entered the service of the Pennsylvania in 1887 as



W. C. Cushing

engineering corps on that road, and was subsequently known as the Louisville division. On January 27, 1889, he was promoted to engineer maintenance of way of the Cincinnati & Muskingum Valley, which is now the Zanesville division, where he remained a year, becoming division engineer of the Indianapolis division in 1890. On June 1, 1894, he was transferred to the Pittsburgh division as division engineer, becoming superintendent of this division in 1901. On January 1, 1902, he was transferred to the eastern division as superintendent, and on January 11, 1903, he was made chief engineer maintenance of way of the southwest system, which position he held at the time of his appointment as noted above.

R. E. Smith, general superintendent of motive power of the Atlantic Coast Line, with office at Wilmington, N. C., has been appointed also general superintendent motive power of the Winston-Salem Southbound.

A. B. Truman has been appointed division engineer of the New Mexico division, of the Atchison, Topeka & Santa Fe, with headquarters at Las Vegas, N. Mex., succeeding **J. A. Roach**, who has entered army service, effective July 10.

F. V. McDonnell, master mechanic of the Pennsylvania Lines West of Pittsburgh, Northwest system, at Pittsburgh, Pa., has been appointed master mechanic, with office at Ft. Wayne, Ind., succeeding **E. E. Griest**, resigned; effective July 16.

R. B. Ball, engineer, grand division of the Atchison, Topeka & Santa Fe, Coast lines, with headquarters at Los Angeles, Cal., has been promoted to chief engineer, at Los Angeles, succeeding **G. W. Harris**, transferred to the staff of the president, effective July 18.

F. D. Underwood, president of the Erie Railroad Company, announces that **Robert C. Falconer**, assistant chief engineer at New York, has been appointed chief engineer of the Erie, the Chicago & Erie, the New York, Susquehanna & Western, the New Jersey & New York, and the Bath & Hammondsport.

Victor King Hendricks, whose appointment as chief engineer of the St. Louis-San Francisco and the Missouri, Kansas & Texas, with headquarters at St. Louis, Mo., was announced in the *Railway Age* on July 12, was born on May 28, 1869. Mr. Hendricks graduated from the Rose Polytechnic Institute in June, 1889. The following year he entered the service of the Fairhaven & Southern as a rodman. He remained with that road until January, 1892, in the meantime having become draftsman and transitman on construction. On this date he went to the Bellingham Bay & Eastern as assistant engineer in charge of construction. Later in the same year he became a draftsman for the Indiana & Lafayette Bridge Works, where he remained but a few months, returning to railway service as an assistant engineer for the Terre Haute & Indianapolis. In January, 1894, he was made engineer maintenance of way of the Logansport division of that road, and in December, 1898, he was promoted to engineer maintenance of way of the Terre Haute & Logansport. Mr. Hendricks entered the service of the Baltimore & Ohio in June, 1902, as assistant to the engineer maintenance of way, and three years later he was appointed division engineer at Baltimore. He resigned this position in January, 1907, to become assistant engineer maintenance of way of the St. Louis & San Francisco lines. From February, 1910, to October, 1911, he was an office engineer of those lines, following which he was promoted to principal assistant engineer in charge of timber preservation of the St. Louis & San Francisco and the Chicago & Eastern Illinois. In 1913, he was appointed assistant chief engineer, which position he held when appointed chief engineer as noted above.

J. E. Mechling, master mechanic on the St. Louis System of the Pennsylvania Western Lines, with headquarters at Terre Haute, Ind., has been promoted to superintendent of motive power of the same system and with the same headquarters, succeeding **W. C. Arp**, retired. **R. H. Flinn**, assistant engineer of motive power of the Central system, with headquarters at Toledo, Ohio, succeeds Mr. Mechling. **C. W.**

Kinnear, assistant master mechanic on the Southwest system, with headquarters at Dennison, Ohio, succeeds Mr. Flinn.

Purchasing

M. W. Stevens has been appointed purchasing agent and storekeeper of the Grand Trunk Lines in New England, with office at Portland, Me.

Ralph P. Moore, purchasing agent of the Duluth & Iron Range, with headquarters at Duluth, Minn., has had his jurisdiction extended over the Duluth, Missabe & Northern, effective July 19.

F. H. Fechtig, purchasing agent of the Atlantic Coast Line and the Charleston & Western Carolina, with office at Wilmington, N. C., has been appointed also purchasing agent of the Winston-Salem Southbound.

Harvey De Camp, purchasing agent of the Gulf & Ship Island, with office at Gulfport, Miss., has been appointed purchasing agent also of the Mississippi Central and the New Orleans Great Northern, with office at Hattiesburg, Miss.

C. B. Williams, purchasing agent of the Central of New Jersey, at New York, has been appointed purchasing agent of that road, also of the Philadelphia & Reading, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at Philadelphia, Pa.

The Western Regional Purchasing Committee has been dissolved and replaced by three separate committees, one for each of the three regions which formerly constituted the Western region. The committees appointed are as follows: **Charles A. How**, general purchasing agent of the Missouri Pacific at St. Louis, Mo., and chairman of the Western Regional Purchasing Committee, has been appointed chairman of the Regional Purchasing Committee for the Southwestern Region, with headquarters at St. Louis. **J. L. Cowan**, purchasing agent of the San Antonio & Aransas Pass at San Antonio, Tex., has also been made a member of this committee. **L. S. Carroll**, general purchasing agent of the Chicago & North Western at Chicago, and a member of the Western Regional Purchasing Committee, has been appointed chairman of the Regional Purchasing Committee for the Northwestern Region, with headquarters at Chicago. **F. A. Bushnell**, purchasing agent of the Great Northern at St. Paul, Minn., and a member of the Western Regional Purchasing Committee, has also been appointed a member of this committee, with headquarters at Chicago. **L. N. Hopkins**, purchasing agent of the Chicago, Burlington & Quincy at Chicago, has been appointed chairman of the Regional Purchasing Committee for the Central Western Region, with headquarters at Chicago. **M. J. Collins**, general purchasing agent of the Atchison, Topeka & Santa Fe at Chicago, has been appointed a member of this committee, with headquarters at Chicago. All instructions and circulars heretofore issued by the Western Regional Purchasing Committee will remain in effect until further notice.

Railway Officers in Government Service

The authority of **B. L. Swearingen**, supervisor of oil traffic, western territory, with headquarters at Kansas City, Mo., has been extended over the entire Southwestern Region.

John H. Howard, general claim agent of the Chicago & Alton, has been appointed general freight claim supervisor in the division of law of the Railroad Administration at Washington.

H. W. Tremaine, assistant engineer of the Northern Pacific, has been appointed assistant engineer of the Northwest region under the United States Railroad Administration, with headquarters at St. Paul, Minn.

Obituary

Walter Morcom, formerly, from 1914 to 1917, general manager of the Mexican Railway, and also from February, 1908, to December, 1917, chairman, Mexico board, Vera Cruz Terminal Company, died in Mexico City on July 12, 1918 at the age of 63.



V. K. Hendricks

EDITORIAL

Railway Age

EDITORIAL

It is reported that the brotherhoods of train employees and the shop men's organizations are displaying a more active interest in safety first work since the Railroad Administration took charge of it through the organization of a Safety Section, with H. W. Belnap as manager. The activities of the labor organizations formerly were largely directed toward efforts to secure safety appliance legislation and there have been many indications of an attitude of suspicion toward the safety first work carried on by the companies, which was largely directed toward the elimination of carelessness and unsafe practices. Now that the Railroad Administration has taken over the work, however, and the Safety Section is requiring the establishment of safety committees on all roads, the labor organizations on some roads are displaying a greater degree of co-operation in the campaign. For example, the general chairmen of the train service brotherhoods on both the Great Northern and Northern Pacific have recently issued circulars to their members calling their attention to the importance of the safety first work and urging them to take an active part in it by seeking opportunity to be placed on safety committees. We have also heard of a similar manifestation of interest on other roads which has been welcomed by the managements, some of which have appointed representatives of the organizations on their general committees. The circular also suggested that the discussion of safety be made a part of the routine business at lodge meetings of the various organizations. This is a spirit that should be encouraged and contains large possibilities for good results.

New Interest in Safety Work

Organizations formerly were largely directed toward efforts to secure safety appliance legislation and there have been many indications of an attitude of suspicion toward the safety first work carried on by the companies, which was largely directed toward the elimination of carelessness and unsafe practices. Now that the Railroad Administration has taken over the work, however, and the Safety Section is requiring the establishment of safety committees on all roads, the labor organizations on some roads are displaying a greater degree of co-operation in the campaign. For example, the general chairmen of the train service brotherhoods on both the Great Northern and Northern Pacific have recently issued circulars to their members calling their attention to the importance of the safety first work and urging them to take an active part in it by seeking opportunity to be placed on safety committees. We have also heard of a similar manifestation of interest on other roads which has been welcomed by the managements, some of which have appointed representatives of the organizations on their general committees. The circular also suggested that the discussion of safety be made a part of the routine business at lodge meetings of the various organizations. This is a spirit that should be encouraged and contains large possibilities for good results.

The Interstate Commerce Commission recently issued a report by H. W. Belnap, chief of the bureau of safety, and James E. Howard, engineer-physicist, on a rail failure resulting in a passenger train accident on the Central of Georgia near Juniper, Ga., in October, 1917. The failure of the rail resulted from transverse fissures and Mr. Howard's deduction, following the reasoning of his earlier reports on similar failures, confirmed his previous conclusions, that while the initial cause is unknown, "service conditions undoubtedly cause the progressive development of the transverse fissures."

The Shoe Is Now on the Other Foot

The inference is that while the manufacture may or may not be at fault, the over-stressing and "cold rolling" of the rails in service are important contributory causes. In other words, the use of heavier rails would reduce the possibility of such failures. Commenting on these conclusions in the summary, Mr. Belnap states that "Remedial efforts have not been inaugurated and no adequate protection has been provided against the recurrence of this serious type of fracture. This is a disquieting condition that should be ameliorated." While in the past it has been incumbent on the railroads to profit by and act upon these reports, this duty now falls upon the Railroad Administration and it will be interesting to observe in what way, if any, these findings will affect the government orders for rails. To equip tracks generally with heavier rails implies their renewal at an increased rate, while the substitution of more rigid specifications for manufacture involves premiums on the prices to be paid for them. Activities of the Railroad Administration

with respect to the rail program seem thus far to have been limited primarily to a determination of the minimum tonnage of new rail required, the possibility of the substitution of Bessemer for open hearth rails and, in the recent negotiations, the procurement of the lowest possible price on the rails to be purchased.

The attendance of members, and the exhibit given by the railway equipment companies, at the convention of the Traveling Engineers' Association in Chicago in September ought to be the largest in the history of this association. Those who compose the association are men who are directly concerned with the operation of locomotives. They are a high-grade, intelligent, thoughtful, hard-working class of men; and their work, especially under present conditions, is of the greatest importance to the railways and to the country. The discussions at their conventions always have been highly earnest and instructive. Their meeting this year, and also the holding of an exhibit of railway devices and materials in connection with it, have been given the endorsement of Frank McManamy, the head of the locomotive department of the Railroad Administration, who, we believe, has acted very wisely in taking this action. It is probable that the attendance will be large, but the convention will not result in all the good it should unless the railway equipment and supply concerns make a large and representative exhibit of their products. An appeal to them to make such an exhibit has been sent out by C. W. Floyd Coffin, secretary of the Railway Equipment Manufacturers' Association and already a large number of reservations of space have been made. The number of reservations ought, however, to be greatly increased, and this should be done as early as possible. Mr. Coffin's address is 30 Church Street, New York. Every concern making any device or material in which the members of the Traveling Engineers' Association will be interested ought to get into communication with him at once and prepare to make an exhibit that will be of real value.

Should be a Big Convention and Exhibit

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The government has now assumed operation of the telegraph and telephone lines as well as the railways. The first steps taken in the reorganization of the telegraph and telephone lines bear a striking contrast to what has been done by Mr. McAdoo in reorganizing the railroads. The operation of the telegraph and telephone lines has been turned over to Postmaster General Burleson. He has turned it over principally to a man named David J. Lewis. Who is Mr. Lewis? Well, he is a former coal miner, who studied law, practiced in Cumberland, Md., was elected to Congress, ran for the Senate and was beaten, and was opposed to the Tariff Commission. While in Congress he wrote a series of speeches and articles advocating government ownership of telegraphs, telephones, railroads and other public utilities. These articles and speeches disclosed the fact that he knew more things about the railways of the world that were not so than almost any other man living. If, as apparently is the case, he knows as

Politics in Telegraph and Telephone Service

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little about the telephone and telegraph business as he does about the railroad business, he is an utter misfit in his new job. In other words, his appointment is a typical political one, and should be regarded as would be the appointment of Senator La Follette or Clifford Thorne as director-general of railroads. Mr. McAdoo, in reorganizing the railroads, has put experienced railroad men in the most important positions; and if he does not get good results it will be because it is impossible to make a success of government operation, even in time of war. When the railway officers, employees and security owners consider what the appointment of Mr. Lewis means they may well thank their stars that Mr. McAdoo and not Mr. Burleson is running the railroads. It cannot be too strongly emphasized, however, that under government operation of railways in time of peace, there almost certainly would be more politicians and theorists like Lewis than experienced and able railway men appointed to important railway positions. It is Mr. Burleson, and not Mr. McAdoo, who, in this matter is running true to the politician's usual form.

An Indefensible Contract Warranty

AN EXTRAORDINARY warranty provision, which is adapted to destroy many legitimate business concerns, is being inserted in the contracts the government is requiring to be signed by concerns from which it is buying railway equipment and supplies. The provision is as follows:

"The contractor expressly warrants that he has employed no third person to solicit or obtain this contract in his behalf, or to cause or procure the same to be obtained upon compensation in any contingent, in whole or in part, upon such procurement; and that he has not paid, or promised or agreed to pay, to any third person, in consideration of such procurement, or in compensation for services in connection therewith, any brokerage, commission or percentage upon the amount receivable by him hereunder; and that he has not, in estimating the contract price demanded by him, included any sum by reason of any such brokerage commission or percentage; and that all moneys payable to him hereunder are free from obligation to any person for services rendered, in the procurement of this contract. He further agrees that any breach of this warranty shall constitute adequate cause for annulment of this contract by the United States, and that the United States may retain to its own use from any sum due or to become due thereunder an amount equal to any brokerage, commission or percentage so paid, or agreed to be paid.

"And no person shall be received as a contractor who is not a manufacturer or of regular dealer in the articles which he offers to supply."

The intent and effect of this provision apparently are absolutely to prevent any individual or concern from selling materials to any railway under government control and receiving a commission as compensation for doing so. The last sentence permits a "regular dealer," as distinguished from a manufacturer to be "received as a contractor"; but what is a "regular dealer"? Apparently, the language implies one who actually buys articles and resells them. On this interpretation, one who sells goods strictly on commission is not a "regular dealer."

It is evident that this provision is being inserted in the contracts to stop some form or forms of abuse, instances of which have come to the notice of government officers. Certainly, if abuses which are occurring at the expense of the government have been discovered, effective measures should be adopted to stop them. Perhaps it has been learned that professional lobbyists in Washington have been using real or pretended political pull to get business from the government on commission. If so, this should be stopped. Possibly it has been found that some railway supply companies have been paying graft in the form of commissions to railway men to get them business. Unfortunately, such things have been done, and they may be being done now, although those familiar with the facts know that even before government control was adopted, grafting in the railway business had been reduced to very small proportions. If government officers suspect that there is grafting relations between supply companies and railway officers, they ought to leave no stone unturned to learn the facts and expose and punish the guilty.

If, however, the purpose of this provision is to stop lobbying or grafting, it is manifestly not adapted to accomplish its purpose. Lobbyists and grafters, by virtue of the very nature of their callings, are not controlled either by what is put into or by what is left out of written contracts. They always try to keep their transactions secret; they usually succeed in doing so; and the only effect of trying to circumvent them by such contract provisions as the foregoing is to make them more wary and secret in their operations.

While, however, this contract provision will not apparently abolish any abuse, it will have important effects on many business concerns. There are illegitimate commissions and legitimate commissions. A commission paid by a railway supply company to a railway officer to induce him to purchase goods for his railway from the supply company is a bribe. Suppose, however, that a manufacturer of some railway specialty in New York desires to sell his device to a railway on the Pacific Coast. His business on the Pacific Coast is not large enough to justify him in opening a separate office and employing a salaried agent in San Francisco. He, therefore, looks around and finds another railway supply manufacturer in New York who is similarly situated; and they together get a man, who is not in any way connected with the railway business, to open an office in San Francisco and sell the goods of both of them on a commission basis. Innumerable specific examples of business handled in this way could be cited.

Is there anything dishonest or otherwise culpable about this? Manifestly not; and yet it is prohibited by the contract provision which the Railroad Administration is making the railway equipment and supply companies sign. Manufacturers must either put all their representatives on salary or quit selling goods to railways at places where they have not salaried representatives. Why, it may be asked, should they not pay them salaries instead of commissions? Because the commissions of an agent representing more than one concern automatically adjust themselves to the relative values of the services rendered to the different concerns, while they could not so divide his salary between them as to make the part paid by each bear an exactly fair proportion to the service he rendered it.

How could advantage possibly result to the Railroad Administration if the agent in this case were put on a salary instead of a commission basis? In no way, unless his total salary were made less than his total commissions had been; and there is no good reason for anticipating that this would generally be the case. On the contrary, the experience of business men is that men working on commission usually place more orders in proportion to the amount of compensation paid them than men working on salaries.

One of the worst features of this contract provision is that it makes a direct and obvious discrimination in favor of large railway supply concerns at the expense of small concerns. The large concern can afford to maintain offices and salaried representatives in all parts of the country, while its smaller competitor, in order to secure equally widespread representation, must join with other concerns in maintaining joint offices and joint agents on a commission basis. Deprived of the right to pay commissions, many small concerns will be forced to abandon great parts of the field to their large competitors.

The contract provision quoted bears the appearance of having been suggested by some exceptionally exaggerated case of abuse and to have been drafted by somebody to stop that particular form of abuse without due regard to the effects it would have upon numerous concerns doing business in a perfectly legitimate way. It is so sweeping, so drastic, and so unfair, and is adapted to do such a trifling amount of good and such a great amount of harm, that we are confident Director General McAdoo will not long allow it to continue to be used.

Proposed Amalgamation of Railway Associations

THERE ARE IN THIS COUNTRY today about 40 important railway associations of a national character, each of which gives attention to investigating and studying some special phase or field of railway activity and in recommending constructive measures for improving railway practices. Each of these organizations has been called into existence and developed to fill a real need, some of them dating from shortly after the Civil War. That the different associations have been important—yes, vital—factors in bringing the roads to their present high state of development cannot be questioned. Undoubtedly, it was because of this that the director general of railroads suggested, shortly after the railroads were taken under federal control, that the several associations amalgamate so as to form one congress of associations to whom he could look for recommendations on various subjects as representing the findings of the best talent in the railway world. Such recommendations could then be made mandatory by the Railway Administration rather than merely recommended practice.

It is understood that the officers of the American Railway Association and seven other organizations have had several conferences to determine what steps should be taken to meet the wishes of the director general. What consideration is to be given to the 30 or more other associations, several of which can be classed almost with some of those which were represented in the conferences so far as importance in a large way is concerned, is not quite clear. Possibly this is because many of these organizations consider such highly specialized and intricate subjects that they are followed and appreciated by but few of the higher executive and operating officers. The Traveling Engineers' Association, the Air Brake Association and American Bridge and Building Association are typical organizations. This is exceedingly unfortunate, because final action which may put some of them out of existence and put a damper on their activities is in the hands of these higher executive officers.

The *Railway Age* and its associated publications have followed the work of practically all of these organizations closely for years—far more closely than the executive officers of the railways. This paper in the past frequently has made suggestions as to how the different organizations might co-operate in order to cut out duplication of effort and get better results; in one or two instances it has even suggested consolidation of organizations that in the course of development had become intimately associated. It never has and does not now view with favor any measure that will destroy the initiative or enthusiasm of any of these organizations. It does believe that most of them should be given official backing and encouragement; it emphatically believes that the work which they are doing should be co-ordinated, that their recommendations should pass upward through the proper channels and receive recognition on the part of the railroads as a whole and that specific assignments should be made by the American Railway Association or the Railroad Administration to the individual associations on subjects on which recommendations or advice are desired. These things, however, can all be done and with full and hearty co-operation on the part of all of the organizations without interfering to any extent with their form of organization or their individuality.

It must not be forgotten that these organizations have a two-fold object. In the first place through study, scientific investigation, and exchange of experiences they decide upon standards or recommended practices. This is important and is highly constructive. It is greatly to be regretted, however, that in the case of some of the minor organizations the findings do not receive more official recognition, but are confined largely to those roads which have representation in the

membership and whose men attend and take part in the conventions. The railway press has helped to overcome this handicap by publishing accounts of more important findings of these associations.

The second object is, if possible, more important than the first, and yet it is in danger of being largely overlooked by the higher executive officers and the Railroad Administration. It is the educational and inspirational effect produced by the association meetings. Officers, foremen and others, including the younger men, have come to the meetings, sometimes downhearted and oppressed with their peculiar difficulties; they have gone away with bigger and broader views, with a renewed zest for the work. They have often obtained information—in the meetings or out of them, when chatting with men from other roads—that has enabled them to go back home and revolutionize practices on their own roads and save thousands of dollars. Cases of this kind can be cited by the hundreds by those who have followed the work of the different associations and attended their meetings. Can the railroads of this country afford to restrict or dampen activities of this nature?

Amalgamating, consolidating, even co-ordinating these associations, is a matter that cannot be handled mechanically or theoretically. It is too big for that; it requires an intimate knowledge of the aims and workings of each organization; more than that it requires an appreciation of human nature that threatens to be lost sight of in railway operation today and that never was appreciated as it should be. What is Schwab doing today in the ship building industry? Is he trying to standardize practices in ship construction? Is he attempting to unify operation and stifle individual initiative? Not for a minute! He is trying—and is succeeding—in getting the men in that industry (and by men we mean everyone from the helper and apprentice up to the chief executive of each plant) to feel that they are important factors in a big game—and a real game. He is trying to make that game just as real as a Yale-Harvard football game or a World's Series. What the railroads need today is more of this spirit and it will be greatly helped by recognizing all of the voluntary associations which have been working to perfect the railroad industry. The keen interest that the men have in their associations is indicated by the fact that, in many cases, the members have paid their own dues and expenses when attending the meetings.

It is hinted that the expenses of carrying on the different associations can be reduced by amalgamating them. Possibly, but will it pay? Would it not be far better to increase the expenses by sending more of the men to the meetings, and by seeing that their expenses are paid while on such assignments? There seems to be an impression that some of these meetings are in the nature of big "joy rides" or excursions. To any officer in that state of mind, we recommend disguising himself and attending the first meeting that opportunity offers—the Travelling Engineers' meeting at Chicago next September, for instance. He will have the surprise of his life. Inspiration and enthusiasm cannot be bought over the counter; they must be cultivated and they surely need lots of cultivation on the railroads in these trying times. The tendency today is away from rather than toward what Schwab is doing so well among the ship builders.

There is another danger that must be guarded against. Many railway associations have enrolled among their members and have actively working on their committees experts from colleges, universities or railway supply companies. Some of the most valuable contributions in the way of reports and individual papers come from these men. If instead of made up only of representative members from the various railroads, what will become of the invaluable services that the intention to push them thoughtlessly aside!

The *Railway Age* believes in making the best use of everyone of the railway organizations. It believes in coordinating their activities in order to prevent duplication of work and effort, but in such a way as to preserve the individuality of each organization and to encourage it to greater efforts. It believes that the American Railway Association or the Railroad Administration should be in a position to command the energies and resources of these organizations to investigate certain problems and report upon them; conversely the American Railway Association or Railroad Administration should stand back of and encourage these associations, thus inspiring them to do a bigger and better work. The *Railway Age* believes that these associations, most of which have been developed by voluntary effort and have been partly or wholly financed by individuals, should be encouraged to play their part as in a big game, thus strengthening and upbuilding them. The human factor is the really big factor for consideration whether in increasing railway operating results or in winning the war, and too much emphasis cannot be placed in keeping it ever in the foreground.

Increased Supervision for Maintenance of Way

MAINTENANCE OF WAY and maintenance of equipment bear a vital, inter-related influence on the conduct of railway transportation. Neither can be neglected without serious results. A scrupulous attention to one will not compensate for a neglect of the other. It is, therefore, inconsistent, that in the organization of the central administration for the government operation of the railroads, there is no officer or committee charged with responsibility for maintenance of way work, although a special body has been provided to look after the maintenance of equipment.

The importance of the proper upkeep of railway tracks and structures is generally recognized. Maintenance of way accounts for nearly one-fifth of all operating expenditures, and on most roads a staff of special officers has the work in charge. The serious obstacles which attend the proper conduct of this work under existing conditions, and the prospect of a seriously deteriorated condition of the tracks with the advent of winter, have been dwelt upon previously in these columns. Reports from various parts of the country indicate that the present progress of the work holds little hope for a completion of the schedules outlined. It is true that expenditures for the first five months of this year are much larger than for the corresponding period of 1917—twenty-three per cent larger in fact—but in view of the greater cost of both labor and material, there is no practicable way of ascertaining what the relative performance has been, in units of work completed. However, it is definitely known that rail and tie renewals are positively in arrears.

The problems of the maintenance of way officers have become increasingly difficult with the progress of the war, particularly since our own participation therein. The degree of success attending the work on various roads has been dependent largely on the degree of beforehandness exercised in the competition for materials and labor. Consequently the roads in best condition today are those which have made the greatest efforts in the past to secure efficient labor and adequate supplies of rails and ties either in stock or under order. It is these roads that are making the best progress with this season's work, for the control which the Railway Administration now exercises over the purchase of rails and ties, necessary as it may be in the face of a shortage, has tended to retard rather than accelerate the accumulation of an adequate supply.

It is clear, therefore, that conditions will be much more

serious as these stocks of track materials now held by the railroads are diminished—as we approach the condition now existing in Canada. With the roads becoming more and more dependent upon the centralized agencies for the supply of both materials and labor there will be an increased need for an authority, centralized to the same degree as the purchases, that is competent to distribute supplies in proportion to the needs of the several railroads and is also in a position to make representations to those in control of expenditures so that maintenance of way work as a whole will be allotted an adequate share of the disbursements for operation. Such central or regional maintenance officers or committees need not be concerned with the maintenance standards or methods of doing work on the various roads; their prime duty would be rather to see that maintenance of way is not neglected in the face of other pressing demands on the time and energies of the central and regional officers.

Southern Pacific

FOR MANY YEARS in commenting on the annual reports of the Southern Pacific the *Railway Age* has pointed out that earnings have been plowed back into the property to an unusual extent. It was pointed out that the Southern Pacific, like the Great Northern, had never gone through a receivership and consequently had never been starved in an attempt to avert bankruptcy. At times it may have seemed to officers of other railroad companies that this reiteration was liable to exaggerate the importance of the fact, but if justification were needed for this reiteration it is amply supplied in the annual report of the company for the calendar year 1917. This annual report was given out to the public on the afternoon of Monday of this week. It is in some ways one of the most remarkable statements that any large American railroad company has made.

As Julius Kruttschnitt, who has been the guiding genius of the operation of the Southern Pacific under one title or another since about 1895, says: "The assumption of control and operation of the railroads of the United States by the government on December 28, 1917, marked an epoch in their history." Mr. Kruttschnitt also says: "The year 1917 closed with the *esprit de corps* and discipline of working organization, the physical condition of the property and the safety and other results of operation at a higher standard than ever before had been attained." The word higher standard quite inadequately expresses the extent of the achievement of the Southern Pacific organization in 1917.

Whether we express it in dollars and cents, or in units of service rendered, or in statistics of operation, the results obtained in 1917 are amazingly good. The company earned \$193,971,000, or about \$30,500,000 more than in 1916, while operating expenses amounted to \$120,602,000, or only about \$17,513,000 more than in 1916. There was an increase of \$14,960,000 in the price per unit paid for fuel, labor and materials, so that the actual increase in cost of handling nearly 25 per cent more freight and a little over 25 per cent more passenger business, excluding the increase in cost per unit of labor and materials, was about \$2,500,000. After paying expenses, interest charges, etc., there was \$49,129,000 available for dividends in 1917 as compared with \$35,423,000 in 1916. The regular six per cent dividends were paid, of course, in both years, but the amount earned was equivalent in 1917 to 17.65 per cent, and in 1916 to 12.63 per cent.

A most striking comparison is made in the 1917 report between the operations of that year and the first year of the Southern Pacific's corporate existence—1886. Freight revenue had increased in this period from \$18,668,000 to \$132,608,000, or about 610 per cent, while the average receipts for carrying a ton of freight one mile had decreased

from 1.297 cents to 0.923 cents, or nearly 29 per cent. Gross income, after paying expenses and taxes and after the receipt of interest, dividends, etc., on investments, amounted to \$74,837,000 in 1917, as against \$13,224,000 in 1886, an increase of 466 per cent. It might be mentioned that the mileage of road operated in 1886 was 4,846 and in 1917 11,137 miles, an increase of about 130 per cent. The interest on the funded debt of the company in 1917 was \$24,219,000, comparing with \$8,755,000 in 1886, an increase of 177 per cent. Only if there were some adequate way of bringing before the reader a comprehensive picture of the additions and betterments which have been made to the Southern Pacific since 1886, would it be possible to give the statement its proper importance, that interest on funded debt had increased only one and three-fourths times, while additional mileage alone had increased one and a third times.

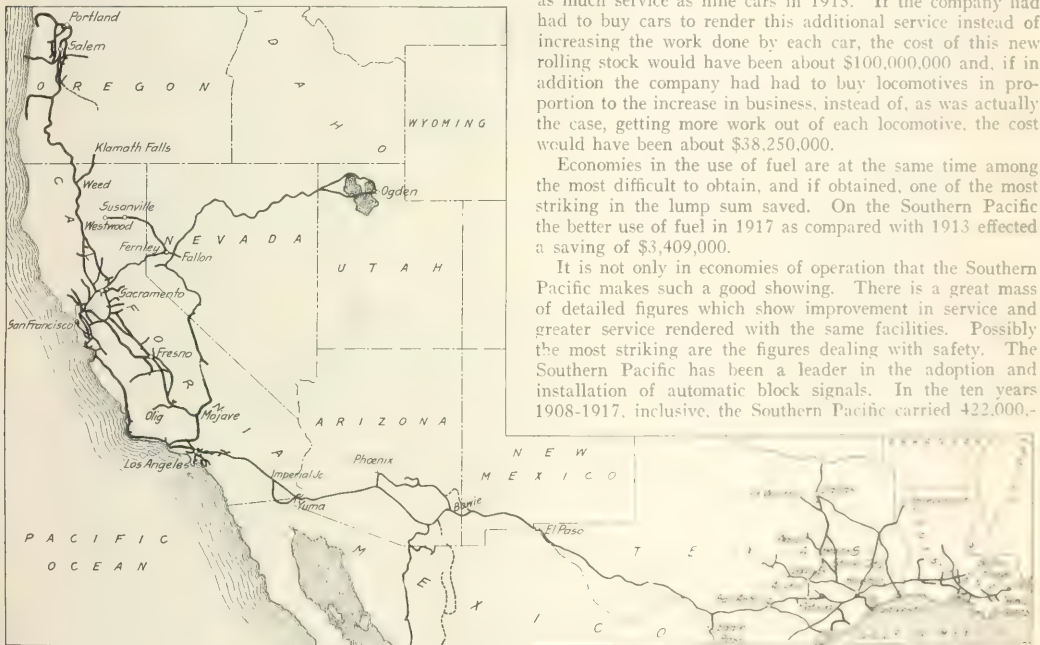
At the end of 1917 the total assets of the Southern Pacific amounted to \$1,685,000,000. This is \$303,000,000 greater

in earlier years and the magnificent organization which has been built up and developed with ever increasing success. The ton-mileage of revenue freight carried in 1917 amounted to 13,419,000,000, an increase of 24.49 per cent over 1916, and of 78.58 per cent over 1915. The freight train mileage, on the other hand, amounted to 22,884,000, an increase over 1916 of only 14.32 per cent and over 1915 of about 53 per cent. The average tonnage of freight per train was 603 tons in 1917, an increase of 8.92 per cent over 1916 and of 25.08 per cent over 1915. In 1917 four trains moved as much tonnage as five trains moved in 1915.

The average carload in 1917 was 25.34 tons, an increase of 7.24 per cent over 1916 and of 17.30 per cent over 1915. The average mileage made by each freight car was 43.30 in 1916, an increase of 10.60 per cent over 1916 and of 43.61 per cent over 1915. The ton-mileage of revenue freight moved, per freight car on the line, increased nearly 80 per cent in 1917 over 1915, so that five cars in 1917 rendered as much service as nine cars in 1915. If the company had had to buy cars to render this additional service instead of increasing the work done by each car, the cost of this new rolling stock would have been about \$100,000,000 and, if in addition the company had had to buy locomotives in proportion to the increase in business, instead of, as was actually the case, getting more work out of each locomotive, the cost would have been about \$38,250,000.

Economies in the use of fuel are at the same time among the most difficult to obtain, and if obtained, one of the most striking in the lump sum saved. On the Southern Pacific the better use of fuel in 1917 as compared with 1913 effected a saving of \$3,409,000.

It is not only in economies of operation that the Southern Pacific makes such a good showing. There is a great mass of detailed figures which show improvement in service and greater service rendered with the same facilities. Possibly the most striking are the figures dealing with safety. The Southern Pacific has been a leader in the adoption and installation of automatic block signals. In the ten years 1908-1917, inclusive, the Southern Pacific carried 422,000,-



The Southern Pacific

than all the debts, including the total outstanding stock of the Southern Pacific. After allowing \$52,000,000 for accrued depreciation, there is an invested surplus equal to 92 cents on each dollar of par value of outstanding stock. In addition and not included as an asset, there are nearly 11,000,000 acres of unsold land belonging to the subsidiaries of the Southern Pacific.

To the general public, these figures of earnings and expenses, assets and debts, are more easily understood than are the statistics of operation and the growth in the number of units of service, and for this reason the figures for earnings and for growth in assets may be used in a demagogic attack on capitalists in general and the railroads in particular. To one who understands them, however, the operating statistics are even more remarkable than the financial statement and are irrefutable evidence of the fact that in recent years the financial strength of the Southern Pacific has been based on the wise development of the property

000 passengers and had but one death of a passenger in a train accident.

The Southern Pacific has made special efforts to reduce the number of rail failures and thus reduce the number of derailments and other accidents due to this cause. The number of rail failures per hundred miles of track, equated as to traffic carried, has been reduced 35 per cent in the last eight years and is only one-fourth as great as the rail failures per hundred miles of track, equated for traffic, for the United States and Canada.

Most of the increase in operating expenses was in transportation expenses (the out-of-pocket cost of moving the business). Maintenance of way cost \$17,522,000, a decrease of \$527,000 as compared with the previous year, and maintenance of equipment cost \$24,262,000, an increase of \$682,000. Transportation expenses were \$68,778,000, an increase of \$16,390,000 over the previous year. Notwithstanding the smaller amount spent for maintenance of way,

Mr. Kruttschnitt says that the annual maintenance of way inspection made late in 1917 showed about as high a rating as in 1916. It is interesting to note that only 4.6 per cent of the freight cars in service at the end of 1917 were in bad order. Even under ordinary circumstances this would be a low percentage, and under present conditions it is extraordinarily low. During the year the company placed orders with outside equipment companies for 57 locomotives, 41 passenger train cars and 718 freight train cars. These are for delivery in 1918, and in addition, the company is building at its own shops 56 locomotives and 3,808 freight train cars. The cost of this equipment will be about \$16,550,000.

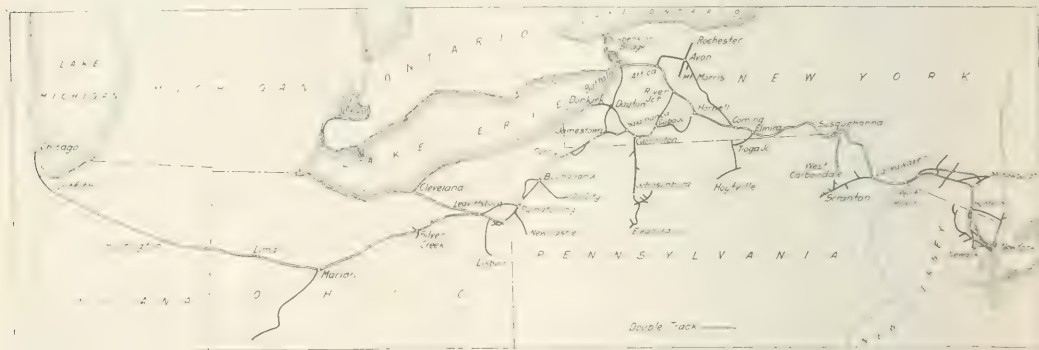
Notwithstanding the high cost of materials, the Southern Pacific has gone ahead on its program of additions and betterments, and in 1917 spent a net amount on road and equipment, chargeable to capital account, of \$30,198,000. At the end of the year the company had on hand \$11,733,000 cash and \$20,000,000 on deposit. There were no loans and bills payable. One of the most important pieces of new work which the Southern Pacific is doing is the building of the San Diego & Arizona, a line which is to run from San Diego, Cal., to El Centro in the Imperial valley, Arizona. Only about 12 miles of this road remained to be completed in May and when the line is completed the distance from the Imperial valley to San Diego by rail will be reduced from the present 339 miles, via Los Angeles, to 147 miles.

The Southern Pacific owns the Southern Pacific Railroad of Mexico with its 1,241 miles of line in the Republic of Mexico. In 1917 partial operation was undertaken of this Mexican property; the average mileage operated was about 1,000 miles. It is estimated that the cost of the property of

Operating income	65,078,811	52,008,200
Gross income	75,856,844	63,644,316
Net income	49,129,417	35,422,514
Sinking funds, etc.	978,097	957,186
Dividends	16,369,400	16,360,632
Surplus	31,781,920	18,104,696

Erie

THE COST OF RUNNING a train a hundred miles on the Erie increased in 1917 to a rather astonishing extent. The total mileage of all trains run on the Erie in 1917 was 23,048,000, which was 5.71 per cent less than the mileage run by trains in 1916. This of itself is a very creditable showing, because the ton mileage moved was 7.36 per cent greater in 1917 than in 1916 and the number of passengers carried one mile was 3.17 per cent greater, but the cost of fuel for train locomotives alone (excluding switching locomotives) was \$8,534,000, or \$3,612,000 more than in 1916, an increase of 73 per cent. Total transportation expenses, including fuel, increased over 31 per cent. Beside the increase in cost of materials there were increases in rates of pay all along the line and, in some departments at least, it is probable that labor was considerably less efficient in 1917 even than in 1916. There was an average of 44,796 employees in service in 1917 as against 38,332 in 1916, an increase of 17 per cent. With a decrease in train mileage it ought to have been possible to hold down the number of employees in train service, but, on the other hand, the Erie spent more for additions and betterments and for mainten-



The Erie Railroad

the Southern Pacific of Mexico destroyed since the beginning of the Madero revolution in 1910 was about \$2,462,000.

The Southern Pacific figures that if the United States government takes over all of the mileage which the company has been operating the rental which the government would pay will approximate \$48,000,000. The dividend requirements of the company to continue its regular six per cent dividends amount to \$16,369,000 and in 1917 the non-operating income alone was only \$6,000,000 less than interest charges, so that it would appear as if the company will have an ample and safe margin over and above its fixed charges and dividend requirements from the government rental.

The following table shows the principal figures for operation in 1917, as compared with 1916:

	1917	1916
Mileage	11,164	11,096
Freight cars	\$132,608,207	\$112,460,567
Passenger cars	45,380,193	37,112,447
Total operating revenues	17,532,352	18,049,585
Net income of operating	24,261,507	23,579,907
Transportation	3,131,417	3,105,899
Total operating		\$2,388,289

ance work, so that possibly in these departments the number of employees would have had to be increased to some extent even if the standard of efficiency had remained the same.

The Erie has been having a hard time of it the last two or three years and the explanation is neither simple nor obvious. Before the great rush of business came, especially to the trunk lines and New England lines in 1915, the Erie had gotten its railroad into much the best physical shape that it had ever been in. Through saving every penny that was possible the company had been enabled to pay for a part of the very necessary additions and betterments through surplus income, and because of this and because of the good showing which the operating and traffic departments were making, the company was able to sell securities to pay for the remainder of these improvements. The road had become a fairly low grade, double track trunk line from New York to Chicago, with what appeared to be ample capacity to handle a much larger volume of business than was being handled on all divisions with the exception of the one on which the Pittsburgh district is located. There is no getting

away from the fact, however, that when business poured in in 1915, the Erie became pretty badly congested and operating costs ran up abnormally. A possible explanation, probably not by any means comprehensive, but at least tenable, is that during the long years of enforced bitterly drastic economies, the operating organization had been kept so weeded out as to have a very small margin of possible overload and that it may have been found almost impossibly difficult to expand this organization in 1915 and 1916, with the result that adequate supervision could not be maintained, and congestion followed. Of course, the Erie had the same difficulties as its competitors in disposing of freight at New York consigned to ocean carriers and any number of other difficulties to contend with peculiar to the last two years of railroading in trunk line territory; but on the other hand, at the beginning of the period of congestion it would have appeared that the physical capacity of the property was more nearly commensurate with the overload which was placed on it than was the physical capacity of other trunk lines.

In 1917 the Erie earned \$79,776,000, an increase of \$5,465,000. The average ton-mile rate and passenger mile rate were the same in 1916 and 1917, namely, 5.84 mills per ton per mile and 1.607 cents per passenger per mile, so that the increase in revenue measures the increase in business, although this increase in business in freight was an increase in average length of haul of each ton and not in the number of tons handled, the number of tons handled actually decreasing 1.45 per cent and totaling in 1917 43,717,000. The volume of merchandise freight and the tonnage of bituminous coal and coke considerably decreased, while the tonnage of anthracite coal carried was 21.61 per cent more in 1917 than in 1916.

Total operating expenses amounted to \$67,477,000 in 1917, an increase of \$14,023,000. This increase was largely accounted for by an increase of \$1,127,000 in maintenance of way expenses, the total in 1917 being \$7,496,000; in maintenance of equipment \$3,747,000, the total being \$18,757,000 in 1917, and \$8,955,000 in transportation expenses, the total in 1917 being \$37,571,000. It may be noted that the increase in transportation expenses is only about the same percentage as that shown by the Southern Pacific and yet, the Southern Pacific by every standard of measurement made a magnificent showing in 1917, while the fact of the matter is that the Erie was on the verge of bankruptcy when the government assumed control of operation and undertook the guarantee of rental. The explanation is obvious, but would involve more space than can be devoted to it here to be comprehensive. Suffice it to say that the operating ratio of the Erie in 1917 was 84.58 and of the Southern Pacific only a little over 62 per cent.

After paying operating expenses, taxes and interest charges, the Erie had \$1,848,000 left and of this a little over \$1,000,000 was required for sinking and other reserve funds, leaving about \$800,000, of which \$307,000 was appropriated for additions and betterments and the remaining \$540,000 credited to profit and loss. In addition to the amount charged to income for additions and betterments, the Erie charged \$4,076,000 to capital account for additions and betterments to road and \$11,415,000 for additions and betterments to equipment.

In April, the Erie had \$9,280,000 collateral notes maturing and refunded this, and raised additional working capital, through the issue of \$15,000,000 new notes, secured by the collateral under the old notes and a considerable amount of additional collateral. The company also sold \$5,000,000 prior lien bonds, \$3,000,000 general lien bonds and \$40,642,000 convertible bonds.

At the end of the year the Erie had \$5,953,000 cash on hand as compared with \$6,305,000 at the beginning of the year and had loans and bills payable in addition to the \$15,000,000 notes mentioned above of \$7,942,000, as compared

with \$1,100,000 loans and bills payable at the beginning of the year.

It is not surprising that the Erie directors should have expressed themselves in a thoroughly whole hearted way as being in full accord with the policy of government control for the term of the contract and for such other term as conditions demand." The Erie is one, and there are many others, of the roads that were in such shape financially as to make some form of government guarantee necessary, if the best interests of the whole country and especially the full utilization of the transportation facilities where they were most needed were to be obtained.

The following table shows the principal figures for operation in 1917, as compared with 1916:

	1917	1916
Mileage operated	2,259	2,257
Merchandise freight revenue	\$40,022,205	\$39,178,235
Coal freight revenue	21,238,964	17,926,667
Passenger revenue	10,117,358	10,300,392
Total operating revenues	71,378,527	67,405,294
Maintenance of way	7,496,000	6,369,000
Maintenance of equipment	18,757,335	15,009,919
Traffic	1,392,008	1,350,216
Transportation	37,570,428	28,615,887
General expenses	1,065,000	1,705,000
Total operating expenses	67,477,124	53,453,701
Taxes	2,686,847	2,220,393
Operating income	9,593,417	18,628,600
Gross income	18,280,653	22,382,830
Net income	1,847,998	6,027,664
Sinking funds	1,001,032	901,032
Additional investments	—	—
Surplus	540,110	4,631,912

New Books

Proceedings of the American Wood Preserving Association. 262 pages, illustrated, 5 in. by 9 in. Bound in cloth and paper. Published by the American Wood Preservers' Association, F. J. Augur, secretary-treasurer, Mt. Royal Station, Baltimore, Md. Price in cloth binding, \$3.50, paper, \$2.50.

This volume contains the proceedings of the thirteenth annual meeting, held at Chicago on January 13-14, 1918. Among the papers of special interest to millmen are those on labor conditions, conditions in the tie market and present sources of supplies; the relation between the average life of ties and the percentage of sawlogs; and the effects of the War on timber of various sizes and commercial species in the purchase and preservation of merchantable timber and the protection as applied to wood preserving plants.

Government Iron and Steel Prices. 6 in. by 8 in., 78 pages, bound in paper. Published by the Penton Publishing Company, Cleveland, Ohio. Price, \$1.

On September 24, 1917, President Wilson approved the first schedules of fixed prices for iron and steel products. Since that time several other new schedules have been issued and old ones revised, so that there is now an extensive system of fixed prices for iron and steel products and their finished products in this industry. Owing to the wide limits covered by the schedule of prices established, there has been a definite call for a clear and complete compilation of these prices in a workable form. This need is filled fully by the publication above described. Not only are all these prices given in a clear and concise manner, but information is presented concerning the history of the subject, the organization of the War Industries Board and the Iron and Steel Institute in the conduct of this work and a record of the announcements of the President and the Iron and Steel Institute. The price schedules cover 62 pages and are presented in a form that makes them really usable.

Letters to the Editor

Clifford Thorne Misquoted

CHICAGO.

TO THE EDITOR:

In your comment relative to the operating expense accounts of the carriers in your issue of July 5, 1918, I notice a statement that I presented an opposing argument "contending that the accounts should be recast to reduce the net operating income by amounts which should have been charged to maintenance." It is of no special importance, but I desire correction, if it meets with your approval. I have at no time contended that the operating accounts of the carriers should be recast as suggested. My sole position has been that the accounts should be compiled in accordance with the rules of the Interstate Commerce Commission. I further advocated correction in their accounting reports wherever substantial errors are found to have been made.

C. THORNE.

Importance of Personnel in Freight Train Operation

St. Louis, Mo.

TO THE EDITOR:

The subject of increasing the freight train load, which has been discussed in your columns from time to time by numerous operating officers, has not by any means been exhausted. Increasing the train load bears the most intimate relation to the net revenues. Every move, from that of the location and building, to the operation of the line, is, or should be, made with the end in view of hauling the maximum trainload.

On account of the diverging interests, all the way down from the staff of the executive to the man in the ranks, the maximum loading of trains meets with less co-operation and even more general opposition than any other one economy in railroad operation, and on this account constitutes a very large leak in the revenues. To attain the maximum ton miles there must be an executive who fully appreciates this truth. The spurs that create an impelling motive for local officers must come from the top. The superintendent has a difficult task in fusing the various interests under his jurisdiction on this proposition, and particularly so in securing the necessary co-operation on the part of the train and engine men on account of their method of compensation, the basis of which is the train mile, which is opposed to the end here sought, the maximum ton mile.

Why not change the method of compensation of these men from a mileage to an hourly or tonnage basis; or, in view of the seeming difficulties attending such a change, try the application of the bonus system to their compensation. For instance, after deciding on the rating of the engines on the several districts, pay a bonus of a stipulated amount for the gross ton miles per trip in excess of the stated rating, or a bonus of so much per hundred gross ton miles in the aggregate for the month, in relation, of course, to the power used, the matter to be worked out on a basis that will make for union in purpose between these men and the company.

As the matter now stands, the train and engine men being paid by the mile, most naturally any policy that tends to reduce miles per hour or day as the loading of trains does, will not elicit their hearty co-operation; in fact, it does meet with their opposition.

Self interest can usually be made to justify an attitude

not in the best interest of the common good; the train and engine men can easily convince themselves that the slower movement due to heavier loading decreases the car supply to an extent that more than offsets the saving otherwise, and they can easily convince a large per cent of the shippers, who are not only interested in the quick movement of their freight, but who may also probably be waiting for cars to load, that this premise is correct. The shippers are at once, therefore, a large factor in the opposition, and unless the local officers, the men who finally have to answer for the overtime, engine failures, etc., have the unlimited support of the management in the attempt to reach the maximum of efficiency in train loading they will fail to do so.

Where the train loading is left to the local officers to any great extent it is safe to assume that the engines are not loaded to their maximum economical capacity. The superintendent's advancement depends in a large degree on his general popularity, and not least on how he gets along with his men, and unless his convictions are the strongest, he will most likely take the line of easy resistance on the tonnage proposition, where, as he sees it, the risk in brooking such a solid opposition means not only considerable added work and annoyance, but probably failure in attaining his purpose.

Is it not just possible that general officers, like the superintendent, easily justify letting well enough alone? They reason that the engines are pulling more than ever before, and are getting over the road in good shape, and in this they are likely to be backed up by the mechanical officers, who express a fear that to increase the load will pull the engines to pieces. The mechanical man is not so vitally interested in the tonnage showing; on the other hand, his very position depends on the performance of his engines.

The trainmaster's and train dispatcher's success depends largely on getting the trains over the road. They are pulling as much tonnage as they did last month or last year, and those figures are the only check, and as the report this month shows up as well, or possibly a little better, than last month or the same month last year, all hands congratulate themselves and each other on the accomplishment, and "let well enough alone."

An engine is not loaded to its capacity unless it is given all it can pull over the ruling grade; provided, at the same time, an average of ten miles an hour (including all delays) can be made over the district. When an engine is so loaded there are points where, if a stop is made, the train can not always be started, necessitating a double; and sometimes when such a stop is made other trains are delayed, and there are many pretexts under which such a stop can be made where it is next to impossible to ascertain positively the true facts. The train men and engine men have the matter largely in their own hands, and unless they know that full loading is considered as of first importance by the management, the local officers are pretty sure to fail. The local officer himself knows this so well that he will not be at all anxious to get under the lash of the "cat-o-nine-tails" of criticism and possible discredit.

On a single track road, if the freight trains make little or no overtime, it is safe to assume that the engines are not hauling the maximum economical load, because delays aggregating three to five hours frequently occur, and when that much time is run off the engine is not properly loaded. An examination of the train sheets on such a division will disclose the fact that many of the trains make their hundred miles in five to seven hours; and this further indicates a loss in ton miles.

While it is desirable to get trains over the road in the quickest practicable time, it is equally important to make available the whole of the tractive effort at command, and to get full value for the services of the crew paid for. If a trip is made in six hours, payment is made for two hours

not actually earned, and care should be taken not to hammer trainmasters and chief dispatchers too hard on overtime or it will likely be a case of "save at the spigot and waste at the bung," in a reduction in tonnage per train.

The train and engine men do not want the overtime when they can increase miles per hour. It is the miles they want, with the highest speed per hour, since they are paid by the mile. Watch, therefore, the hours paid for that are not worked. Few roads keep an account of this unearned time, which increases as overtime decreases, and vice-versa.

Securing the maximum economical ton mile depends also on keeping the power in first class condition. Failure to do this leaves the tonnage rating of the different engines to the discretion of the local officers. One engine is loaded a few tons lighter than another on account of her condition, and then the conductors and engineers, on the least provocation, insist on cutting the rating of other engines. In short, when the power is not maintained in uniform and first class shape the tendency is, on account of lack of uniformity and system, and lack of means of a check, gradually and constantly to decrease the train load. Increasing the train load, and even maintaining it, requires constant systematic pulling against a very, very strong current of adverse influences.

An efficient fuel agent, who reports to the ranking operating executive, is an indispensable element in the campaign to increase the train load. He is vitally interested in the condition of the engines and sees to it that the proper authority is called upon to correct steam leaks and other defects which cause a waste of fuel and loss in tractive effort. His traveling representatives are continually riding the engine that is not up to standard in performance. These men, with the fuel agent, are thorns in the side of the roundhouse foreman, master mechanic and superintendent until defects in power are remedied.

Tightening up the schedules of fast freight trains and increasing the number of such trains, as well as passenger trains, bears a direct relation to the ton mile. Live stock, which always calls for reduced tonnage rating, must be confined to certain trains or as few trains as possible.

Finally, the superintendent must have conferences with all of the subordinates hereinbefore mentioned, singly and in groups, with sufficient frequency to keep all of the channels of communication constantly open. Troubles and losses charged to neglect or inefficiency ought many times to be charged to the laziness of the superintendent, in not getting his men together and making them give better and more detailed accounts of their stewardship.

M. G. S.

Automatic Train Control

PITTSFIELD, MASS.

TO THE EDITOR:

It is not surprising that the recent disastrous collisions at Ivanhoe on the Michigan Central, and at Harding on the Nashville, Chattanooga & St. Louis, should provoke a lively discussion as to their causes and as to the means to be adopted for the prevention in the future of accidents of the same character.

If past experience counts for anything, it is certain that the human element in train operation *cannot* be depended upon in every condition of service to secure safety for life and property, and it would be of little use here to inquire into the reasons why the engineman fails to heed the indications of the signals, why he forgets to act in accordance with his orders, or why he falls asleep at his post. At this late day all such inquiries may well be handed over to the psychologist for his amusement and entertainment, because his answers to these questions, when he gets them, whatever

they may be, cannot alter one iota the character of the action which every reasonable and conscientious person knows must be taken sometime or other—and which ought to be taken now—to prevent the repetition of these horrible fatalities, and the destruction of property.

It is practically agreed by all vitally concerned in these matters that a reliable, trustworthy, and unobtrusive automatic train control system, properly installed, would be the suitable means to adopt for prevention of similar catastrophes, and since such a system of control is now available there should be no further delay in commencing the installation of it somewhere at least, in actual train service. To put the matter off longer with the plea that no satisfactory device for reliable and safe train control is to be had would be utterly inexcusable, I might say criminal.

It seems to be the invariable fate of every new device which makes for greater improvement that is offered for trial or adoption, to meet with strong and unreasonable opposition, especially if such device bids fair to prove a marked innovation that is likely to unsettle long established practices; hence it would appear that the automatic train control device, like practically all other good devices that have fought their way to the front in the past and that are now considered indispensable because of the excellent service they are rendering in their particular field under present far more exacting conditions than obtained at the time of their introduction, is passing through an ordeal similar to that which they had to encounter before the recognition was accorded them which their merits entitled them to.

Automatic train control is surely coming for the reason that it offers reliable assurance of freedom from fatal and disastrous collisions and for the further reason that it will make possible substantial improvement over present methods of operating trains; this in turn will make for real economies in the business of transportation.

It is quite a mistake to suppose that the automatic train control is going to add, as a permanent thing, burdensome expense to the present cost of maintaining the signal system, and all prophecies with respect to this aspect of the matter might, I believe, better be withheld until some experience has been acquired from its actual performance in road service for a reasonable period of time.

Perhaps one of the things that has helped more than any other to retard the adoption of automatic train control is the widely entertained idea that an absolutely perfect device should be produced in the laboratory before any steps towards actual installation upon the road should be undertaken. Could there be anything more illogical than this idea?

If we take the trouble to examine the reports made by the I. C. C. Bureau of Safety, covering the fatal accidents which it has investigated during the past five years it will be seen that nearly every one of them might have been prevented by the operation of the simple elementary parts of the control device. This fact is well worth serious consideration; and the best answer that I can think of to your question "What Lessons Do Collisions Teach?" is, Install upon our railroads without unnecessary delay an efficient system of automatic train control.

JOHN P. KELLY.

GERMAN ELECTRIC RAILWAY PROJECT.—An extensive network of electric railways is planned for the industrial district of Merseburg, Germany, where recently very important industries have been established, including a large factory for ammonia for use in making artificial nitrates. The length of the railway lines is to be 68 kilometers (42 miles) and the cost of construction is estimated at 10,000,000 marks (\$2,400,000). The new company will be established with a capital of 2,500,000 marks (\$600,000) of which the Allgemeine Elektrizitäts Gesellschaft subscribes 1,000,000 marks (\$240,000) leaving it principally to the municipalities interested to raise the remainder.—*Commerce Reports.*



General view at Railroad Y. M. C. A. Buildings at Sheffield, Ala.

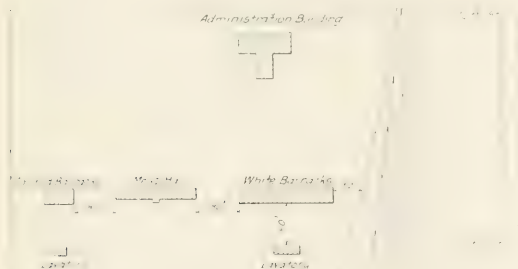
Remarkable Record Made by Southern at Sheffield

Population Trebles in Ten Months; Special Provision for Welfare of Largely Increased Forces

THE RECENT LOCATION of twelve government nitrate plants at Sheffield, Ala., caused that city and the surrounding district practically to treble in population within a few months. Sheffield is a division point on the Southern Railway and had a population of about 4,900; Tuscomb, a town which formerly had a population of about 3,400, is about two miles from Sheffield on the main

line of the Southern; while Florence, the county seat, with 6,700 people, is located a little more than two miles from Sheffield on a short branch which runs at right angles to the main line. The three cities, therefore, are practically one community; their joint population has jumped from about 15,000 to more than 40,000 within the past four or five months. The problem of taking care of this large influx of workers proved to be a most serious one.

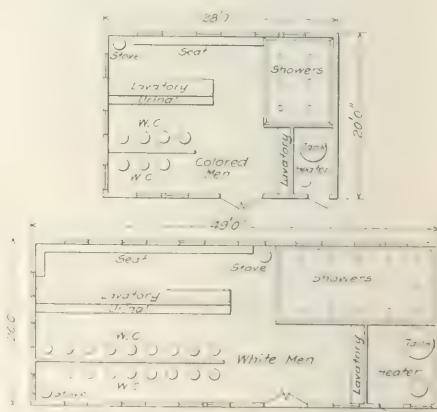
The railway was forced to enlarge its organization and facilities to handle the great amount of construction materials for the nitrate plants and the increased traffic due to the growth in population. Traffic will continue to be heavy after the new plants are in operation. It was almost impossible to hold the new railway employees because of the lack of facilities for housing and feeding them. In addition to the increase in trainmen and yard forces, there was a considerable addition to the shop and repair forces. The situation became so serious that the officers of the Southern decided that immediate and radical steps must be taken to improve conditions. The problem was further complicated



Arrangement of Railroad Y. M. C. A. Buildings at Sheffield

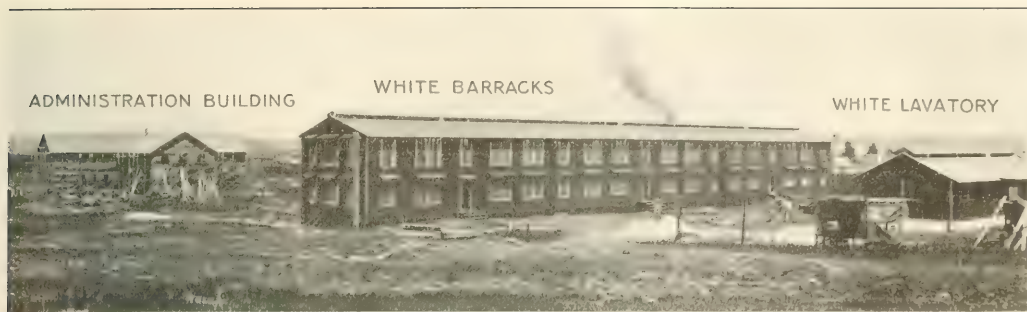
by the necessity for providing separate facilities for the white and the colored men.

President Fairfax Harrison had been greatly impressed by the arrangement of the buildings in the army cantonments that he had visited, and suggested that a similar plan be adopted in providing for the railroad employees at Sheffield. He had also been greatly attracted by the work of the Y. M. C. A. in the army camps and this suggested co-operation on the part of the Railroad Y. M. C. A. in planning for the facilities and plant and administering it after it was completed. To that end, G. K. Roper, Jr., Southeastern secretary of the Railroad Y. M. C. A., was asked to meet E. H. Coapman, vice-president of the Southern, at Wash-



Plans for Lavatory Buildings for White and Colored Men

ington on Monday, May 6. As a result of a conference of these two men with Thomas H. Gatlin, chief engineer, and H. W. Hesselbach, chief architect, of the Southern, plans were immediately drawn up for a two-story barracks building for white men, 29 ft. 6 in. by 190 ft. to accommodate 198 men; also a smaller building for the colored men to accommodate 66. Included in the plans was a mess hall, 20 ft. by



General View of Railroad Y. M. C. A. Buildings at Sheffield, Ala.

156 ft. 6 in., with one end 76 ft. 9 in. long for the white men; a middle section 35 ft. long for the kitchen; and an end section 44 ft. 5 in. long for the colored employees. One hundred and eighty men can be fed at one time. Located 80 ft. from each of the barracks buildings are lavatories



Administration Building in Course of Construction; Nitrate Plant in the Rear

with shower baths; the lavatory for the white men is 20 ft. by 49 ft. and the one for the colored men is 20 ft. by 28 ft.

A large two-story administration building completes the



Lavatory for Colored Men; Nitrate Plant in the Rear

group. This is 29 ft. 6 in. by 100 ft. 6 in. with a wing 29 ft. 6 in. wide and 48 ft. long. The wing is used as living quarters for the Y. M. C. A. employees. The first floor of the administration building proper has a large lobby with the office and check room at one end and reading and class

rooms at the other end. On the second floor of this building is an auditorium, 28 ft. 4 in. by 54 ft. with a stage; the seating capacity is between 300 and 400.

The rapidity with which the plant was constructed and equipped is indicated by the fact that 27 days after the conference on May 6, the Railroad Y. M. C. A. secretary who was to be in charge was on the ground and the plant was taking care of railroad men. Thirteen days after construction was actually started, men could have been housed in the barracks. The buildings are of wood, well built and painted; the administration building is of fairly permanent construction as it will continue in use indefinitely, although future developments may be such that the other buildings will not be required. The buildings are located convenient to the engine terminal and yards.

At one time it looked as if the lack of materials might



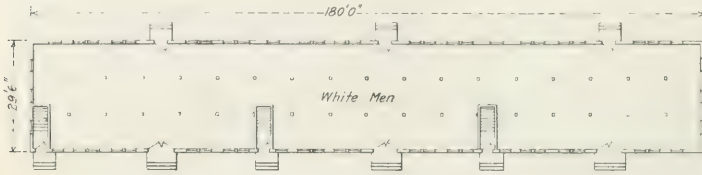
Dining Room for White Men

delay the work, but this was overcome by co-operation on the part of the contractors who were building the nitrate plants. Immediately after the conference on May 6, Mr. Roper hurried to Cincinnati, purchased the furniture and equipment, which was immediately loaded on freight cars and sent to Sheffield in charge of a Southern Railway employee.

Dr. H. R. Thompson, the Y. M. C. A. secretary who took charge of the plant on June 1, was transferred from Decatur, Ala., where he had been in charge of the Railroad Y. M. C. A. He rapidly gathered an organization about him, including competent assistants for work among both the whites and the blacks and an experienced manager for the restaurant. At the present time several hundred men are being fed each day, 750 meals being served on the average.

About 100 men are sleeping in the barracks. While the cost of administration will be increased by the use of several buildings instead of concentration of all of the work in one or two large buildings, it was believed by the railroad officers that the arrangement which was adopted will add to the con-

ELECTRIFICATION IN ITALY.—A correspondent who immediately before the outbreak of the war was in Italy inspecting the electrically-operated railways in that country, has written the *Railway Gazette*, London. He gives the interesting information that at the time of his visit trains were

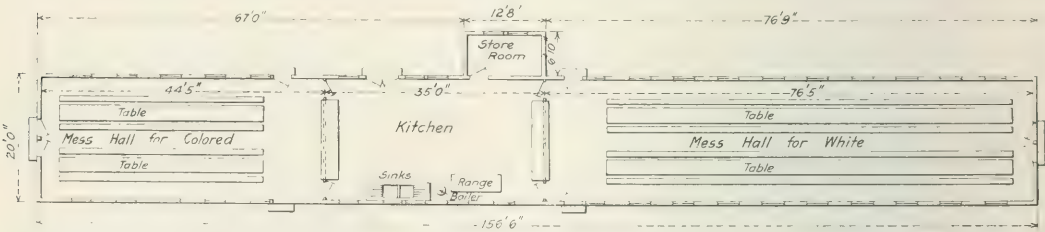


Plans of Barracks Buildings for White and Colored Men

venience and comfort of the men; important factors which had to be considered were the fact that the two races must be provided for separately, and the climatic conditions.

The equipment of the auditorium includes a motion picture outfit, and indications are, judging from Dr. Thompson's

still being operated by steam locomotives between Modane, the terminus of the Paris, Lyons & Mediterranean, through the Mont Cenis Tunnel, and Bardonecchia, the first station on the Italian side of the frontier, a distance of 18.717 km. (11.7 miles), although the electrical equipment had been

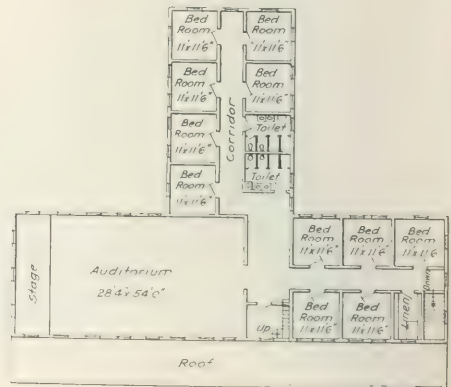
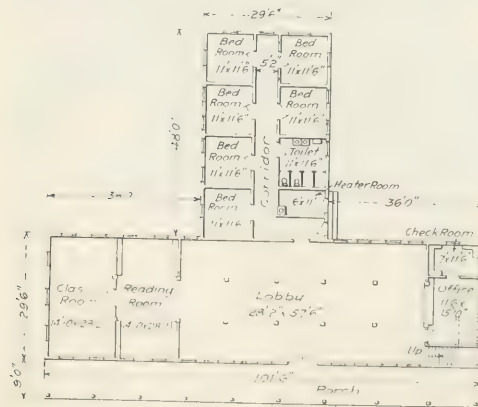


Mess Hall and Kitchen

past record, that the recreation of the men will not be lost sight of either indoors or through the promotion of outdoor sports.

The cost of the plant was originally estimated to be

provided through the tunnel. On asking for an explanation as to why the electrical locomotives did not run through to Modane the correspondent was told by an Italian engineer, with a shrug of his shoulders, that the reason was



First and Second Floor Plans of Administration Building

in the neighborhood of \$60,000, but this figure was exceeded because of the higher prices which it was necessary to pay for labor and materials; this includes the equipment and adequate heat, light and water facilities.

political. His attention was, at the same time, drawn to the fortress at Bardonecchia and that at Exilles, above the left bank of the river Dora, 17½ miles east of Bardonecchia, both command the Mont Cenis Pass between Italy and France.

Proposed New Boundaries for Standard Time Zones

Elaborate and Ingenious Plan for Relieving All Large Cities of the Double Time Standard

By Emerson W. Judd

Statistician, Wood, Struthers & Co., New York.

BY DIRECTION OF CONGRESS the Interstate Commerce Commission is about to revise the boundaries of the zones of Standard time. The "Daylight-Saving Act" recognizes the four existing zones in the United States, exclusive of Alaska—Eastern, Central, Mountain and Pacific—based, respectively, on the time of longitude 75 deg., 90 deg., 105 deg. and 120 deg. west of Greenwich; and it requires the Interstate Commerce Commission to define the limits of each zone, "having regard for the convenience of commerce and the existing junction points and division points of common carriers." To this end public hearings have been given.

For carrying out the purpose of Congress thus to promote the public convenience, the Interstate Commerce Commission holds manifestly a better position than that occupied by the late William F. Allen, when, in 1883, by devising the system of time zones as they stand today, throughout the world, he placed his name among the great ones of the nineteenth century. The zone limits were then defined primarily with regard to railway division points, and only secondarily with regard to the public convenience.

The Act of Congress does not in so many words make it the duty of the commission to fix time division points for such railroads as cross the boundaries of adjoining zones. Practically, however, this is the entire problem. The real business of the commission under the act is to establish railway time division points, for by so doing it will, in effect, define the zone boundaries.

In the circumstances, it is to be presumed that any changes that are ordered by the commission will have been first agreed upon by the commission and the Railroad Administration. In my opinion the following principles should be recognized:

1. No large city should have two time standards; that is to say, the boundaries between zones should avoid all large cities.

2. Diversions of the zone boundaries from the normal position, mid-way between the governing meridians of longitude, should be ordinarily to the west and not to the east.

3. Communities closely associated, politically or commercially, should have the same time standard, if possible.

That adherence to the first principle here laid down is demanded by every consideration of public convenience, can require no argument. For the same reason that two zones of railroad time in New York, Philadelphia, Chicago or St. Louis would be intolerable, two standards are disadvantageous in Buffalo, Pittsburgh, Cleveland and Atlanta.

The second rule is in accordance with the principles of daylight saving. Places geographically in the Eastern zone that use Central time, because their railroads run on Central time, lose afternoon daylight to which they are entitled.

Strict compliance with the third principle in the relocation of boundaries would prevent the running of zone lines between important neighbors, like Cleveland and Youngstown, or Youngstown and Pittsburgh.

A partial list in the Official Guide of dividing points in the United States between the Eastern and Central sections contains 38 names of places. Among them are nine cities

having populations in excess of 60,000—Akron, O., Atlanta, Ga., Buffalo, N. Y., Cleveland, O., Dayton, O., Detroit Mich., Erie, Pa., Pittsburgh, Pa., and Youngstown, O. Other cities in the East of considerable size, similarly afflicted with double railroad time, are Newcastle, Pa., Wheeling and Huntington, W. Va., and Augusta, Ga., and in the West, Salt Lake City, Utah, and El Paso, Tex.

If the pending revision of zone limits accomplishes nothing else, it should at least, for the general comfort, transfer as many time division points as possible from large places to smaller.

The normal line of division between the Eastern and the Central zones is the meridian of 82½ deg. west longitude. Going south across the United States this meridian leaves Lake Erie near Huron, O., between Sandusky and Lorain, and reaches the Gulf of Mexico at Tampa, Fla. Theoretically, therefore, Eastern standard time should cover the United States from Machias, Me., as far west as a line run from north to south approximately from Sandusky through Mansfield, Mt. Vernon, Newark and Wellston, O., Kenova, W. Va., Pikeville, Ky., Norton, Va., Johnson City, Tenn., Asheville, N. C., Greenville and Abbeville, S. C., Thomson and Waycross, Ga., Lake City and Brooksville, Fla., to Tampa. From the Ohio river to the Savannah river the present recognized dividing line follows this course rather closely. North of the Ohio river and south of the Savannah river the zone boundary lies far to the east of its proper place. For this reason those parts of Ohio and of Pennsylvania east of the line from Sandusky to Kenova which now employ Central line locally, and also southeast Georgia and the eastern half of Florida, are robbed of their birthright to afternoon daylight. For this the railroads that operate on Central standard time in the territory just specified are responsible.

As originally located the boundary between the Eastern and the Central standards ran from Buffalo through Salamanca, N. Y., to Pittsburgh, and thence to Wheeling and Kenova. Buffalo, the point of extreme deflection of the boundary to the east, is in longitude 78 deg. 50 min., Pittsburgh in longitude 80 deg. In distance by the New York Central, Buffalo lies 230 miles east of the normal division point in longitude 82½ deg.; in distance by the Pittsburgh, Cincinnati, Chicago & St. Louis, Pittsburgh is 160 miles east and by the Pittsburgh, Fort Wayne & Chicago is 175 miles east of the normal boundary.

This astonishing divergence from the fundamental principles and from the general application of Mr. Allen's scheme was due to the refusal of the Lake Shore & Michigan Southern and the Pennsylvania Company in 1883 to agree to any plan that would compel them to operate in two zones. The opportunity has now come for a suitable relocation.

Within recent years the Baltimore & Ohio has extended its Eastern zone from Pittsburgh to the western edge of Pennsylvania at Newcastle Junction, and the Erie has made Eastern time its standard all of the way from New York to Cleveland, Marion and Dayton. Furthermore, the Pittsburgh & Lake Erie has adopted the Eastern standard west as well as east of Pittsburgh, thus making, in connection

with the Erie, an Eastern standard line from Pittsburgh to Cleveland.

The Wheeling & Lake Erie for two or three years prior to March 31, 1918, used Eastern time, carrying this standard from Wheeling to both Cleveland and Toledo, while its Pittsburgh connection, the Pittsburgh & West Virginia, made, with the Wheeling & Lake Erie, a second Eastern

standard route between Pittsburgh, Pa., and Cleveland, Ohio.

On March 30 last all of New York, all of Pennsylvania and all of northeastern Ohio, as far west as the line of the Wheeling & Lake Erie from Cleveland through Kent and Canton to Wheeling, had Eastern railroad time, save only stations on the New York Central west of Buffalo, the New York, Chicago & St. Louis, the Pennsylvania west of Pittsburgh, Oil City and Erie, the Baltimore & Ohio west of Newcastle Junction, and one or two short local roads. Thus, in the interest of the public, the limits of the Eastern standard had been carried far west from the Buffalo-Salamanca-Pittsburgh-Wheeling line, toward its normal location.

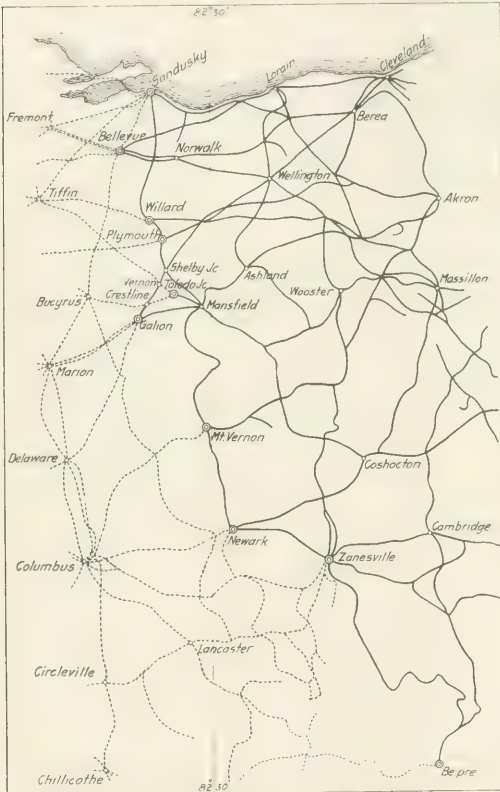
All of the populous region here outlined is Eastern standard territory by geographical location, by general desire of the inhabitants, and by the principles of daylight saving. Locally for the most part it lives, as undoubtedly it should live, by Eastern time, although in sporadic instances in Ohio, as if the discomfort of two standards of railway time were not sufficient, a third standard, sun time, has been adopted by some for domestic use.

The primary problem to be solved by the Interstate Commerce Commission now is how to run a line from north to south across the state of Ohio, as nearly as may be along the meridian of $82\frac{1}{2}$ deg., in a way to make the transfer of dividing points from Buffalo and Pittsburgh to places in Central Ohio as easy as possible for the New York Central, the Nickel Plate and the Pennsylvania. In view of the transverse situation of some of the roads and of other considerations, it would seem to be advisable to run the new line, approximately from northwest to southeast, from Sandusky, O., to Bellevue, to Willard (Chicago Junction), to Plymouth, to Toledo Junction, to Galion, to Mt. Vernon, to Newark, to Zanesville to Belpre.

By such a relocation the ten places here named, all of them in Ohio, will be substituted as dividing points between the time sections for 25 such points now existing in New York, Pennsylvania, Ohio and West Virginia.

That the line here indicated will encounter objections more or less strenuous from some of the railroads concerned, is taken for granted. But what new definition of standard-time limits can be ordered that will be, at first thought, universally acceptable?

The principal criticism of this line will be that it contemplates the establishment of time division points at other places than existing operating terminals, or operating division points. That it does so must be frankly admitted. But even slight familiarity with the existing operating division points of the railways of Indiana, of Ohio and of western Pennsylvania will bring the conclusion that, if present operating division points must invariably govern the location of time division points, the confusion of Eastern and Cen-



The ten proposed boundary stations are indicated each by two circles.

Proposed New Boundary Between the Eastern and the Central Time Zones*

*Under the suggested plan all of the mileage east of the dividing line will have Eastern time. These roads are shown in solid lines, and those on the other side by broken lines. No mileage west of the line will have Eastern time except the Cleveland, Cincinnati, Chicago & St. Louis between Vernon and Crestline. The different roads would be divided as set forth below:

- Sandusky**
 Eastern time—New York Central (Main Line) east, Baltimore & Ohio.
 Central time—New York Central (Main Line) west, Lake Erie & Western, Cleveland, Cincinnati, Chicago & St. Louis, Pennsylvania.
- Bellevue**
 Eastern time—New York, Chicago & St. Louis east, New York Central (Norwalk Branch) east, Wheeling & Lake Erie east.
 Central time—New York Central (Norwalk Branch) west, New York, Chicago & St. Louis west, Pennsylvania.
- Willard**
 Eastern time—Baltimore & Ohio north and south, Northern Ohio east.
 Central time—Baltimore & Ohio west.
- Plymouth**
 Eastern time—Baltimore & Ohio north and south, Northern Ohio east.
 Central time—Northern Ohio west.

- Toledo Junction**
 Eastern time—Pennsylvania east.
 Central time—Pennsylvania west, Pennsylvania (Toledo Division) west.
- Galion**
 Eastern time—Cleveland, Cincinnati, Chicago & St. Louis east, Erie east.
 Central time—Cleveland, Cincinnati, Chicago & St. Louis west and south, Erie west.
- Mt. Vernon**
 Eastern time—Baltimore & Ohio.
 Central time—Pennsylvania (Akron Division) east, Pennsylvania (Akron Division) west.
- Newark**
 Eastern time—Baltimore & Ohio north and east, Pennsylvania east.
 Central time—Baltimore & Ohio south and west, Pennsylvania west.
- Zanesville**
 Eastern time—Baltimore & Ohio.
 Central time—Pennsylvania (Zanesville Division) north, Pennsylvania (Ohio River & Western) east, Wheeling & Lake Erie.
- Belpre**
 Eastern time—Baltimore & Western, Pennsylvania (Zanesville Division) south.
 Central time—Baltimore & Ohio east and north, Baltimore & Ohio west.

tral standards that now prevails between Lake Erie and the Ohio river never will be corrected. It will presently be put up squarely to the several great railroads or to the Federal Railroad Administration to conform their train despatching, in the public interest, to certain new dividing points of time named by public authority; and beyond a doubt they will prove themselves to be quite equal to the task.

For the public the essential feature of the Sandusky-Belpre line, apart from its avoidance of the larger cities, is that it reduces the overlapping of the two zones to a very small minimum. For the railroads its convenience consists in this, that, by avoiding the crossing of branch roads, it creates but few points of change.

The New York Central now changes time at two places, Buffalo on the main line and Sutton, Pa., on the Clearfield branch. The new plan, without increasing the number of dividing points, substitutes Sandusky on the main line and Bellevue on the Norwalk branch.

The Pennsylvania system now has both standards of time in three cities—Pittsburgh, Oil City and Erie, Pa. The plan replaces these three dividing points by four in eastern Ohio—Toledo Junction, Mt. Vernon, Newark and Zanesville—two of them points on major lines and two less important crossings.

The Erie should resume use of the Central standard between Galion and Dayton. Even now the Erie's thrust of the Eastern standard into Central territory between Marion and Dayton is as indefensible on any ground of public convenience or necessity as the New York Central's similar thrust of the Central standard into the Eastern territory between Dunkirk, N. Y., and Titusville, Pa.

South of Ohio it will be found that, with but few rearrangements of division points, the original line of demarcation between the Eastern and the Central zones may be made to coincide in the main with natural barriers, and to a noteworthy extent with state boundaries. The proposed rectification will place in the Eastern zone the state of West Virginia, save only Kenova, the entire states of Virginia and South Carolina, and all but a part of one county in North Carolina; will leave in the Central zone all but a fraction of one county of Kentucky, and substantially all of Georgia; and will transfer from the Central to the Eastern zone half a dozen counties in East Tennessee. The route suggested is from Belpre, O., down the Ohio river, via Kanauga, to Kenova, W. Va., to Elkhorn City, Ky., to Cumberland Gap, Tenn., to Morristown, to Murphy, N. C., to Franklin, to Toccoa, Ga., to Hartwell to Elberton, to Augusta, thence down the Savannah river to the Seaboard Air Line near Myers, to Central Junction, to Bridge Junction, thence to the sea. This relocation will retain six of

the existing dividing points, will eliminate eleven, and will create five new ones, a net gain of six.

By the adoption in toto of the dividing points between the Eastern and the Central time sections that have now been suggested for the railroads south of Lake Erie, the number of such points would be reduced from 42 to 21, or 50 per cent.

In the United States south of Lake Erie today 74 cities, towns or hamlets have both Eastern and Central railway time because two or more railways meeting or crossing operate on different standards, or a single road changes from one standard to the other. These places range in size from Cleveland, with 560,663 inhabitants, Pittsburgh, with 533,905, and Buffalo, with 423,715, down to mere railroad crossings. The total population of the 74 places is 2,435,000. The rectification here proposed reduces the number of double-standard railroad junctions to 23, of which 13 are in Ohio, one each in West Virginia, Kentucky and North Carolina, two in Tennessee and five in Georgia. Among these 23 places, the largest is Augusta, Ga., 41,040 population, and only two others—Zanesville and Newark, O.—have as many as 20,000 people each. These 23 places have 162,000 inhabitants all told.

Numerous places of considerable magnitude, not junctions, are served by two railways more or less closely parallel, running one on Eastern the other on Central time. Warren, Pa., Beaver Falls, Pa., and Warren, O., are good illustrations of this state of things. Twenty-eight such places of 500 population or upward—several of them cities of magnitude like the three just named—may be counted in New York, Pennsylvania and Ohio, and two in other states. The thirty places have 148,000 inhabitants. Under the plan of readjustment above outlined, there will be no double standard places of this description large enough to appear in the census.

Combining the foregoing totals, it appears that the limits of standard time as now "observed and used" by the railroads south of Lake Erie are such that 104 railway junctions or other railway towns, with an aggregate population of 2,583,000, labor under the disadvantage of having both Eastern and Central railroad time. Adoption of the proposed new zone limits would reduce the number of double standard places from 104 to 23, or 78 per cent, and the number of people immediately concerned from 2,583,000 to 162,000, or 94 per cent. All of the railway mileage of the country east of the proposed Sandusky-Savannah line would operate on Eastern time, while west of that line the only road on Eastern time would be five miles of the Big Four between Vernon and Crestline, O.

The time problems in Michigan, in Texas and in the territory west of the Missouri river are of a similar nature but fewer and more easily settled.



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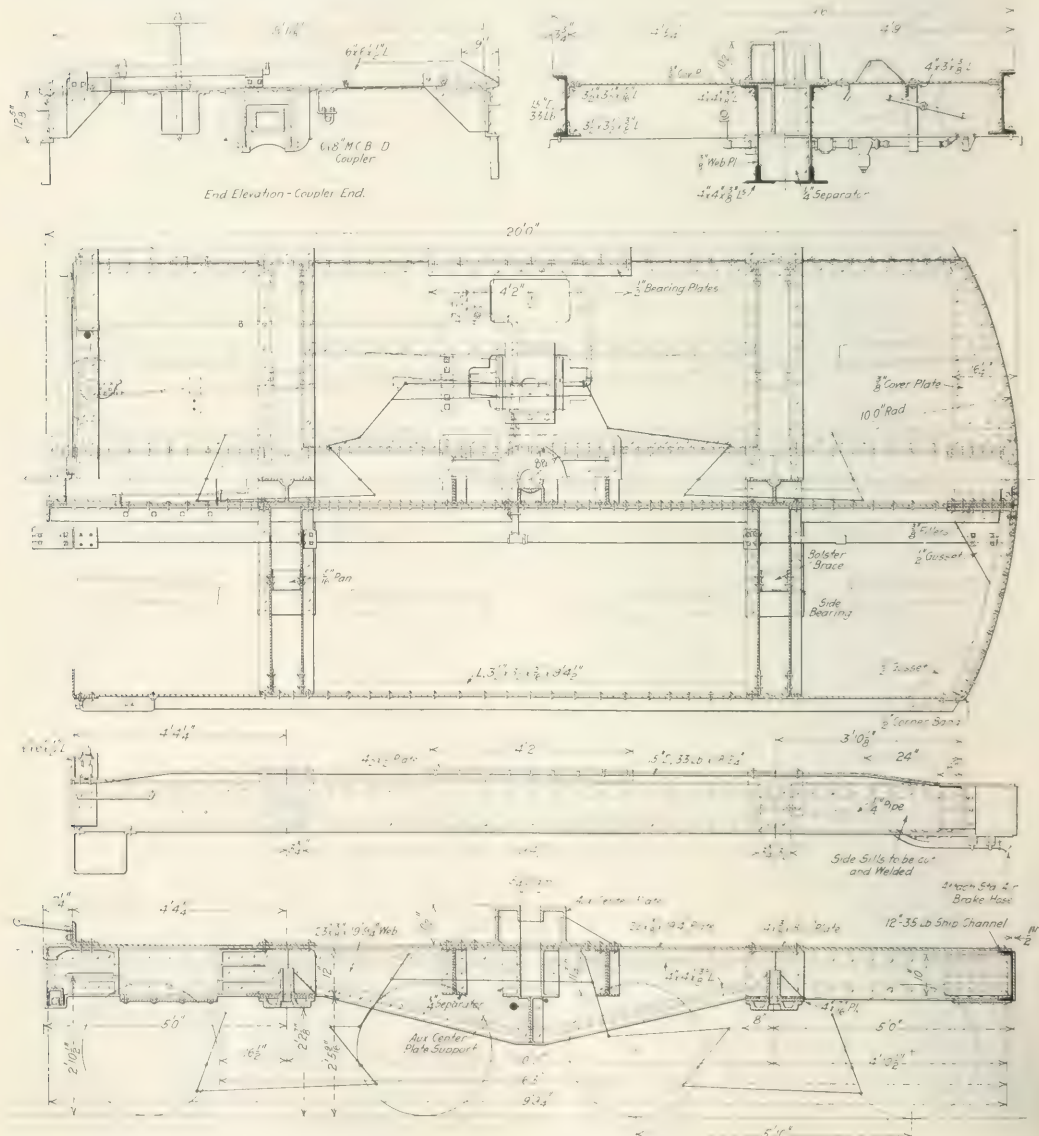
The Station at Chateau-Thierry

Special Cars for Transporting Heavy Naval Guns

Complete Unit Is 56 Ft. Long and Will Traverse Curves
with 100 Ft. Radius; Carries 286,000 Lb.

THE MOVEMENT of big guns by rail requires special equipment, which often involves interesting features of construction. A typical example is found in the gun transport car recently delivered to the Navy Department by the Pullman Company. This car is intended to be used for the transportation of the unmounted barrels of navy guns.

It is designed to handle 16-in. guns, which are 68 ft. long and weigh 286,135 lb., but can also be used for smaller guns. An idler is required when handling 16-in. and 14-in. guns, but smaller guns do not project beyond the ends of the car. The design of the car permits operation over curves as sharp as 100 ft. radius.



Details of the Carrier Units of the Naval Gun Car

The weight of the car complete is 81,000 lb. and the length over the striking castings is 56 ft. When carrying a 16-in. gun the total weight at the breech end will be 165,317 lb. The complete car consists essentially of two flat cars of special design with a bridge placed on them which is arranged to carry the load. The two flat cars on which the

$\frac{3}{8}$ in. thick and 22 in. wide extends the entire length of the car. Between the sills at the center of the car are two pressed steel separators placed back to back. Between these and the cover plate is the auxiliary center plate support. The auxiliary center plate rests on the cover plate and is further supported on the ends by separators between the web

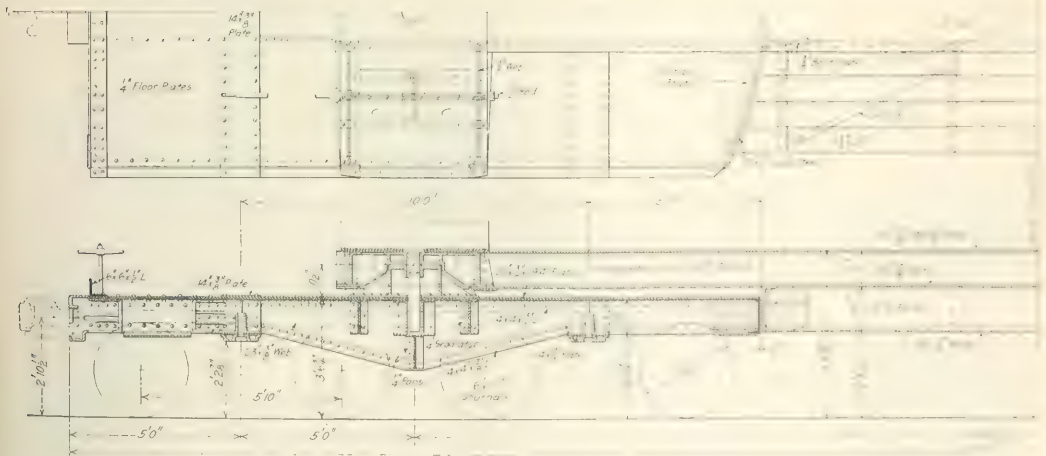
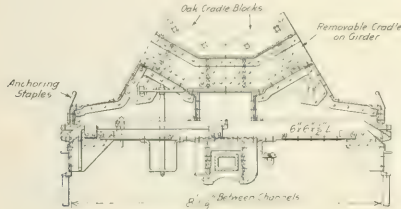


High Capacity Car Specially Designed to Carry 16-In. Guns

bridge is carried are mounted on 70-ton trucks, spaced 10 ft. from center to center. The cars are designed to perform two functions, first to carry the load placed on the auxiliary center plate in the center of the car, and second to transmit the buffing and pulling stresses to the bridge. The center sills

plates. The bolsters are made up of two pressed steel pans spaced 7 in. apart, with fillers above the side bearing, and top and bottom cover plates.

The outer end of the center sill carries the usual draft gear and has a straight end sill. The inner end is arranged



Plan and Elevation of the Naval Gun Car

are of the fishbelly type $24\frac{1}{2}$ in. deep at the center and 12 in. deep at the bolster, made up of two $\frac{3}{8}$ -in. web plates. Each web plate has the bottom edge reinforced with two 4-in. by 4-in. by $\frac{3}{8}$ -in. angles, while at the top edge there is a single angle on the outside of each plate. A cover plate

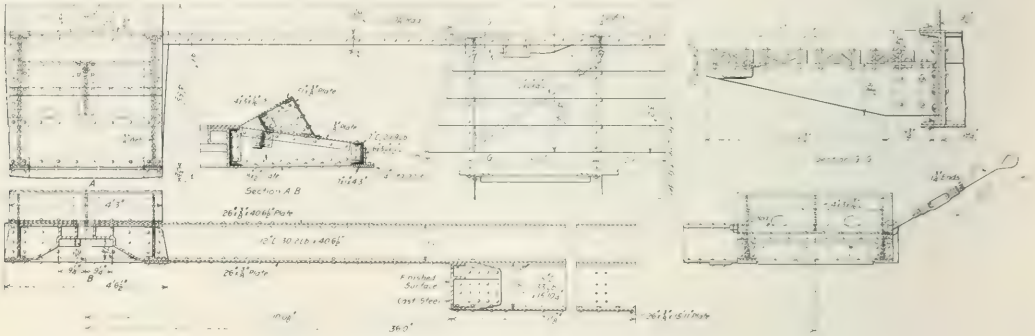
to transmit the buffing forces to the bridge and the end sill is in the form of an arc of a circle concentric with the auxiliary center plate. This curved end sill is a 12-in., 35-lb. ship channel reinforced by a cover plate and faced on the outer surface with a $\frac{1}{4}$ -in. by 12-in. spring steel plate. The

end sill is fastened on either side to 15-in., 33-lb. channels, which form the side sills. An angle iron $2\frac{3}{8}$ in. from the top flange forms the support for the deck, which is made of checkered steel plate. Between the bolsters, the side sills are further reinforced by an angle iron along the bottom edge.

The bridge has a large steel casting on each end, which fits over the auxiliary center plate. These center castings

ing stresses from the upper girders and the center plate, and to insure that the stresses will be transmitted to the lower members the auxilliary center plates are given a longitudinal clearance of $\frac{1}{2}$ in. in the center castings.

The end of the girder member carries two cradles which extend to the side sills and resist the tendency of the bridge to tilt. The center portion is formed of a V-shaped cradle



Girder and Buffer Members of the 140-ton Gun Car

are spaced 36 ft. from center to center and are joined by a girder made up of two 12-in., 30.2-lb. channels spaced 19 in. apart with top and bottom cover plates 26 in. wide and $\frac{3}{8}$ in. thick. Under the center portion of the girder is a buffing member which is in line with the underframes of the flat cars. The buffer member consists of two 15-in., 33-lb. channels with a bottom cover plate $\frac{3}{4}$ in. thick. At each end of the channels is a buffer casting which is curved to fit the end sills of a flat car. The lower buffer member carries four brackets on each side, which serve as supports for running boards. The buffer member is designed to remove the buff-

ing stresses from the upper girders and the center plate, and to insure that the stresses will be transmitted to the lower members the auxilliary center plates are given a longitudinal clearance of $\frac{1}{2}$ in. in the center castings.

Each of the two flat cars has a separate braking system and the train line is carried under the buffing member and connected to the trucks by the usual standard M. C. B. air hose.

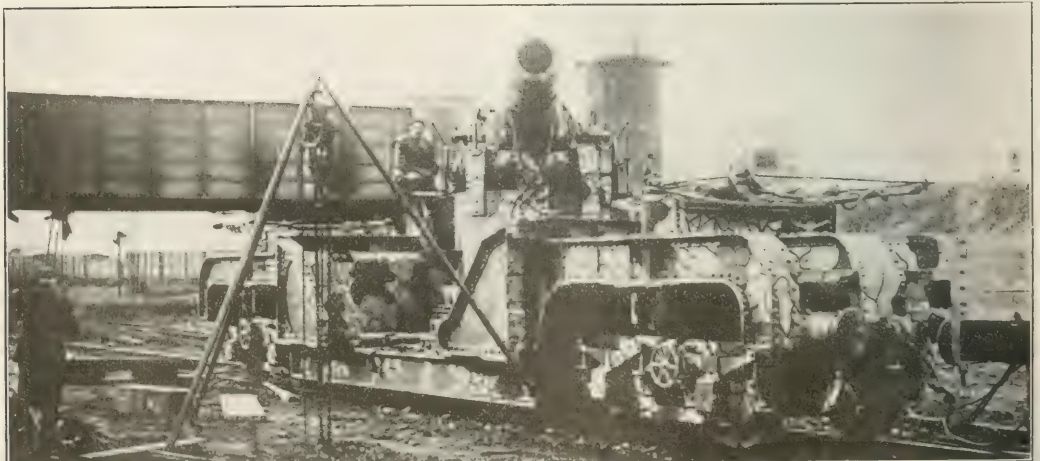


Photo from Press Illustrating Service.

A Camouflaged Gun



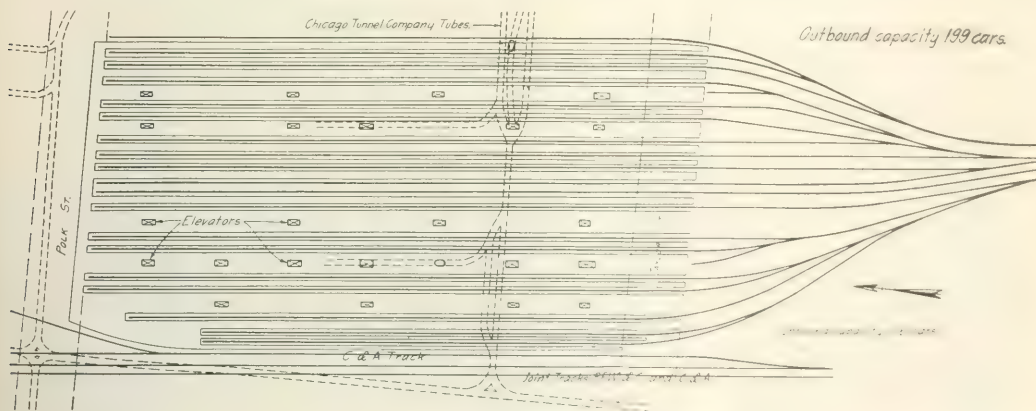
A View of the Future Building from the Southwest.

Pennsylvania Completes Freight House at Chicago

Monumental Structure of Two-Level Type Affords Ample Accommodations for Large L. C. L. Traffic

THE SURRENDER of ground occupied by several of its freight houses, for the construction of the new Chicago Union station compelled the Pennsylvania Railroad, Western Lines, to build a large new freight station, which has been under construction for several years and will be open for business in a few weeks. Designed to meet present and future needs for a very heavy package freight business concentrated in the business center of the city, the plant is of monumental proportions, and the manner in which provision has been made for receiving and delivering the great tonnage of freight within a limited area without entailing

south of the freight stations to be abandoned, but is the nearest available site that afforded a workable plan of sufficient size that was acceptable alike to the railroad and to the city authorities. The latter had refused to approve a plan submitted by the railway for the use of a site several blocks west and north of the one finally adopted, the prime objection being the need for elevated tracks involving long subways for several important streets. However, the selected site is near the center of one of the important freight house districts of the city. Immediately to the north and west respectively are the sites of new freight stations to be built



Track Level Plan Showing Platforms and Elevators

excessive trucking or other expensive operations or the need of any confusing directions to shippers, is both instructive and interesting. As seen from the photographs, special attention has been given to the appearance of this structure, the exterior treatment representing a marked departure from the architecture of most American freight houses.

Has a Central Location

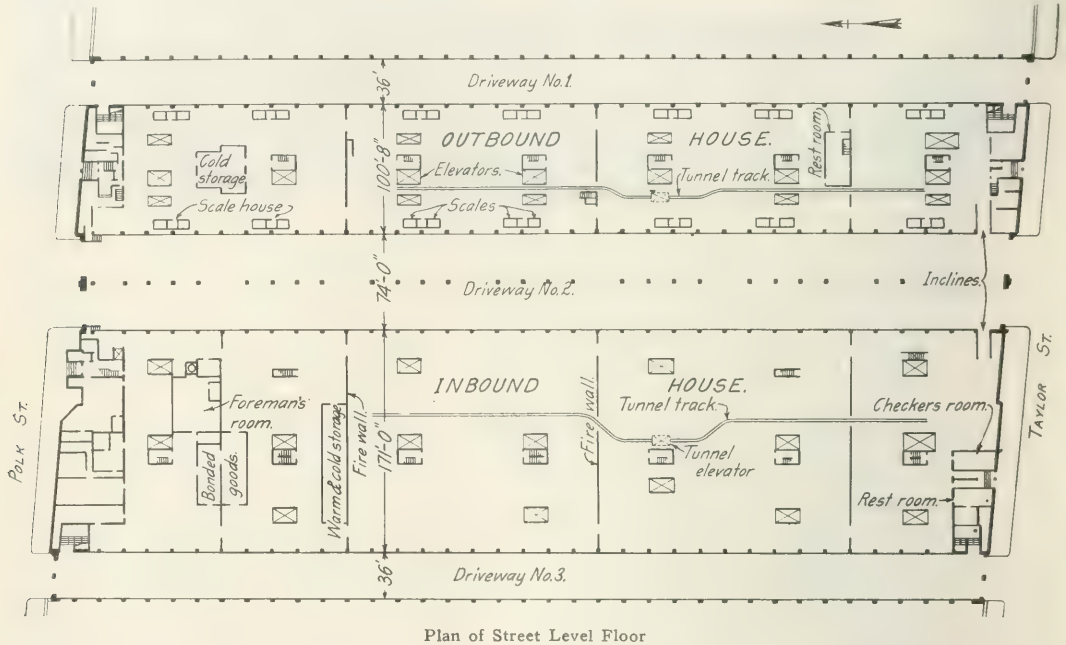
The building occupies the block between Taylor and Polk streets and between the Chicago river and the south approach tracks to the Chicago Union station. The area is about 745 ft. long by 420 ft. wide. The site is about one-half mile

by the Chicago & Alton, and the Chicago, Burlington & Quincy, while two blocks to the southwest is the "Soo" terminal. To the east across the river are the freight houses of the railways entering the Grand Central, La Salle and Dearborn stations. Both Taylor and Polk streets have bridges across the river, affording convenient connections with the east side of the river, as well as viaducts to the west leading over the Union Station tracks.

The station is of the two-level type with the tracks below and the teamways above. This plan was adopted because the site was committed to a separation of the track and street grades by the elevation of the streets on viaducts over the

tracks, and it was out of the question to devise any other plan which would afford as great a capacity for the space available. It was advisable on account of the high cost of

of separating freight destined to and from points east of Pittsburgh from that billed to and from Pittsburgh and west. The details of this will be explained later. On the track level

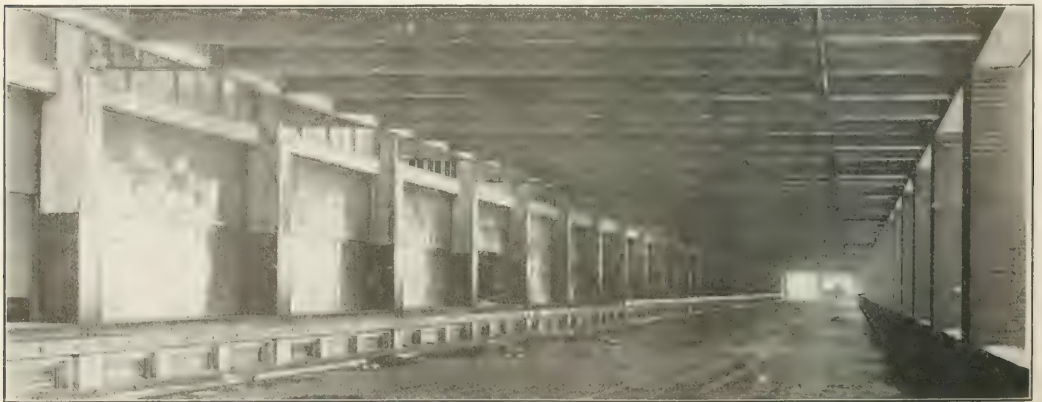


the land, to make an intensive development of the ground.

Independent Inbound and Outbound Houses

From outward appearance and from the structural standpoint, the building constitutes a single unified mass, but there is a central covered driveway 74 ft. wide extending the

there is no physical evidence of these subdivisions. The entire width of the structure is occupied by a grid of 19 tracks, the 10 adjacent to the river, or the east side, with a capacity of 199 cars to be used for outbound traffic, and nine tracks on the west side with a capacity of 187 cars for inbound traffic.



One of the Outer Driveways Serving the Street Floor

length of the building on the street level which separates the plant into two clearly defined units, an inbound house and an outbound house. From an operating standpoint there are actually four units since both the inbound and the outbound houses will be divided transversely for the purpose

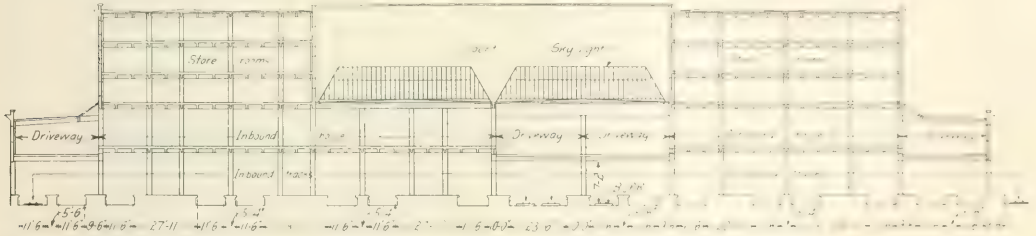
Aside from the street level and track level floors, used for handling the regular railway freight business, the building has three floors above the street level for office and storage purposes. The north end of the second floor for a depth of 125 ft. is occupied by the offices of the agent, cashier, billing

department, etc., but all of the remaining space on these three upper floors is arranged in large warehouse rooms for lease as storage space. In general these rooms are 340 ft. by 100 ft., extending the width of the building. They are separated by 12½-in. transverse walls, but part of the area is taken up by light wells 40 ft. by 135 ft. inter-spaced between these rooms, thus affording light along the two sides of each room and extending down to the ceiling of the first floor where sky lights have been installed to furnish natural illumination to the central driveway and a part of the inbound house.

In addition to the central driveway which is 74 ft. wide

quiring practically no space for storage on the street level, required approximately the same amount of space on the lower level as the inbound house because of the size of the outbound business.

The manner in which this problem was solved is indicated in the cross section showing the spacing of the tracks and platforms in direct relation to the arrangement of the driveway and trucking space on the upper level. In this connection it will be noted that there is a platform between each pair of tracks except where the inner tracks of the outbound and inbound groups join at the middle of the house. Most of these platforms are narrow, serving primarily as a



Cross Section of the Building Looking North

and is divided by a central row of columns into 36-ft. drive-ways, one for each house, both the inbound and the outbound houses are served by outer driveways 36 ft. wide also extending the entire length of the building, and connecting with the street at each end. Under such an arrangement the ordinary standards for the width of freight houses as determined in the usual case, with the driveway on one side and

convenience for trucking through cars, but under the inbound house which has a width of 171 ft. on the street level, space is afforded for three wide trucking and elevator platforms and under the outbound house which has a width on the street level of only 100 ft. 8 in. there is space for only two of the wide platforms. It will be seen that this arrangement will involve the trucking of freight through a maximum of three cars for outbound traffic and a maximum of two cars for inbound freight. These platforms extend the entire length of the building and will be continued southward the full width of Taylor street as soon as the viaduct on that street is reconstructed.

The width of the track space between edges of platforms is 11 ft. 6 in. and the minimum vertical clearance from top of the rail is 16 ft. 10 in. As shown in the track plan, the northwest corner has been cut off to allow space for a lead to the proposed Chicago & Alton freight terminal to be located north of Polk street.

The Elevator Arrangement

The freight will be moved between the floors entirely by elevators. Inclined escalators were considered in preliminary designs but proved unsuited to the layout of this structure. The freight will be transferred from the street level of the outbound house to the track platforms by eight 6-ft. by 17-ft. three-ton elevators. Similarly, freight received in cars will be transferred from the platforms to the street level in the inbound house by fourteen 9-ft. by 17-ft. five-ton elevators. Six of these inbound elevators extend to the top of the building so that freight may be transferred directly from the track platforms to any one of the storage rooms. On the upper floors these same elevators will also be used for transferring goods from the storage rooms to the street level of the inbound house for delivery to teams for destination in any part of the city. In case any goods in storage are to be re-shipped by freight, they will be lowered to the street level of the outbound house by a separate set of elevators on the outbound side, but owing to the fact that any goods in storage which are to be shipped out must be checked through the outbound house like any other freight, these elevators do not provide direct passage from the storage floors to the track level. The convenience of the storage



The North End of the Building From the West

the tracks on the other, do not apply. The width of the inbound house was governed to some extent, of course, by the need of a large storage space on the street level but for the most part the determination of the widths of both houses was based on a consideration of the spacing of tracks and platforms, and the location of elevators. One difficulty in this connection was that the outbound house, while re-

with automatic dials placed inside the checking booths. These offices communicate with the foreman's office, near the north end of the inbound house, by pneumatic tubes, which are also used to connect the foreman's office and the billing office on the second floor. Provision has been made for doubling the number of checking offices and scales at any time this may be necessary in the future. In the inbound house, scales have been installed adjacent to seven of the elevators. Each house is equipped with cold and warm rooms, a checker's room, rest rooms and toilet rooms for laborers and teamsters and equivalent facilities are furnished to the clerical forces on the second floor, with the addition of space for installing a kitchen and dining room.

A sub-basement is provided at the north end of the build-

ing for the accommodation of the heating and power plant, the principal function of which is fire protection. The entire building is equipped with automatic sprinklers which are served by fire pumps in the power plant in connection with a large water tank in the tower. An electrically operated refrigerator system to serve the two cold rooms is installed in a room on the second floor near the north end of the building.

The design and construction of the freight station has been under the direction of Thos. Rodd, chief engineer, Pennsylvania Railroad, Western Lines, and Robert Trimble, chief engineer of construction, with J. H. Minton, assistant engineer in charge of the design and construction, and T. M. Bole, engineer in charge on the ground. Price & McLanahan, of Philadelphia, were the architects for the building.

Doings of the United States Railroad Administration

Director General McAdoo About to Return to Washington; Standard Locomotives Delayed

WASHINGTON, D. C.

DIRECTOR GENERAL McADOO is expected to return to Washington in good health next week from his western trip after having been away continuously for two months and after having been away from his office most of the time for four months. During April he toured the country making Liberty loan speeches and during May he was confined to his home by illness for the greater part of the time, spending only a few days at his office, although he was able to do a great deal of important work. About the end of May he left Washington without announcing his destination, seeking relief for his throat trouble and an opportunity for recuperation. After a brief period of rest in the Yosemite Valley he has been travelling over western railroads and holding conferences with railroad officers and members of his staff which have resulted and will result in important changes in methods of handling traffic. He has also kept in touch with important matters that have been referred to him, such as the question of the increase in wages for mechanical department employees, and there have been no indications of any cessation of activity in the Railroad Administration because of his absence. Director Gray, of the Division of Operation, and Director Carter, of the Division of Labor, who have been in the west with Mr. McAdoo, returned on Monday; Director Lovett, of the Division of Capital Expenditure, on Tuesday, and Director Chambers, of the Division of Traffic, returned on Wednesday.

Pershing's Requirements Will Delay Standard Locomotives

The requirements of our armies in France, including the order placed last week with the Baldwin Locomotive Works for 500 additional 80-ton Consolidation locomotives, will delay somewhat the progress in delivery of the Railroad Administration's standard locomotives for use on this side of the water, of which 1,430 have been ordered. At the same time the Railroad Administration is preparing to take out of service the 135 similar locomotives which were built for our armies in France and turned over to eastern roads last winter. These locomotives will be sent to the Baldwin Locomotive Works, which built them, to be put into shape ready for transportation overseas at the rate of five a week until the entire lot is turned over.

The mechanical department of the Railroad Administration expects to compensate for the delay in the construction of the standard locomotives and the withdrawal of the army

locomotives from service here by the special efforts which it has been making since last winter to rush the repair of domestic locomotives. A large number of these locomotives are already in shape and are in white lead, ready for next winter. Several of the standard locomotives have already been delivered.

Railroads Not to Pay for Non-Essential Public Improvements

Director General McAdoo in circular No. 44 announces that the Railroad Administration should be consulted in advance where it is proposed by public authorities to make improvements for which a portion of the cost is to be assessed against any railroad under federal control. The circular states that wherever street or road construction and other public improvements are contemplated by the authorities in any state, county, district or municipality, for which a portion of the cost in an amount exceeding \$500 is to be charged against any railroad under federal control, the authorities are requested to take the matter up with the federal management of the road directly interested and secure the concurrence of the Railroad Administration in advance.

In the event this is not done the director general will reserve the right to decide whether or not he will participate in the payment.

It is not the attitude of the director general to oppose construction of this character which is meritorious and essential. The director general feels, however, that in the present stress as to the essential labor and material supply all work of this kind which can be postponed without injury should not be undertaken, and the railroad should not be expected to participate in the payment unless the expenditure is indispensable.

Protection for War Department Shipments

The car service section announces in circular CS-20 that in order to properly protect U. S. war department shipments when special protection is considered necessary, agreement has been reached with H. M. Adams, chief, inland traffic service of the war department, providing for necessary guard to protect the property in accordance with the following regulations, and all railroads will arrange accordingly.

A. The war department will acquaint the originating railroad either direct or through the car service section when it is desired to provide a guard for certain shipments.

and will advise as to the number and personnel of the guard except as provided in paragraph C.

B. The department of the army to whom the property belongs shall furnish the guard at its expense, and provide transportation for each person.

C. The guard must in all cases consist of officers or enlisted men of the army, except that in the case of certain articles, such as gun carriages and other equipment moving on its own wheels, also poisonous gases and liquids, a civilian expert, designated by the department interested in the shipment, may constitute the guard or part thereof, and that in cases where the sending of a military guard is impracticable, the department interested in the shipment may, by obtaining a special permit from the United States Railroad Administration through the inland traffic service of the war department, place a civilian guard over a particular shipment.

D. Cars under guard shall be placed in the train immediately ahead of the caboose, except shipments of explosives, gas, or inflammables—which commodities should be kept as near the center of the train as possible, as required by the regulations of the Interstate Commerce Commission covering Transportation of Explosives and Other Dangerous Articles.

E. Sleeping accommodations shall be provided in the caboose for a guard not exceeding four men.

F. If a larger guard is required, special arrangements shall be made providing for a caboose, coach, or sleeping car for their accommodation.

G. Tickets issued to guards shall show that the holder is in charge of a government shipment as a guard, and is entitled to travel on the freight train carrying such shipment.

H. Routing of the ticket shall be the same as the route over which the shipments are to move, and in case of diversion or change in routing while in transit, the railway officers shall effect the necessary change in the routing of the ticket or tickets held by the guard.

I. Waybills must be indorsed showing that a war department guard is traveling with and in charge of the shipment in accordance with these regulations.

J. Officers, agents and yardmasters of the carriers are instructed to direct and otherwise assist the guard in moving through yards, permitting the guard then immediately in charge to accompany car or cars at all times, and to take such steps as are necessary to prevent connecting trains leaving without the full guard.

K. When two or more cars are included in a shipment under guard, and it is necessary to hold one or more cars for repairs, the entire shipment shall be held and forwarded in one train, to the end that the guard shall not be separated. In such case prompt advice shall be telegraphed to the Car Service Section, United States Railroad Administration, Washington, D. C., and by it transmitted to the director of inland traffic, war department.

The above arrangements are not to be extended in any case to or be construed as authorizing the transportation of a guard in charge of war department material for the purpose of expediting movement of any shipment.

Fidelity Bond Premiums Charged to Operating Expenses

General Order No. 36 provides that premiums on fidelity bonds, which have heretofore been paid by or charged to officers, agents, and employees on transportation lines now, or which may hereafter be placed, under federal control, shall no longer be so handled but shall be charged to operating expenses.

Bond for Freight Charges

The division of public service and accounting has issued a form of surety bond, prescribed by the division of law, which

is to be used in all cases where bond is required to be given by shippers and consignees for the payment of freight charges in accordance with General Order No. 25.

Rate Procedure Under Federal Control

Arguments before the Interstate Commerce Commission on July 24, on the question as to whether the justness and reasonableness of rates, etc., initiated by the director general under the authority of the federal control act must be determined upon original complaints and new proceedings or whether such issues may be properly raised by amendments to pending complaints, brought forth a variety of ideas as to the status of rate-making and regulation under the new regime. Most of the complaints pending before the commission attack rates which were superseded on June 25 by the new higher rates put in effect under General Order No. 28.

R. Walton Moore, assistant to the general counsel of the Railroad Administration, calmed some of the fears of the attorneys for the shippers by saying that the administration had no idea of insisting that new complaints be filed because the rates complained of are no longer in existence, but would concede that they may be amended to bring into issue the new rates. He took the position that the director general should be made a party defendant to all complaints against rates initiated by the administration and said that many of the 700 cases in the formal docket would probably have to be reopened because the issues they involve have passed out of existence or been changed as a result of the new rates. Cases involving the reasonableness or discriminatory feature of the old rates were dead because the commission could not change them by prescribing new rates for the future without reference to the director general's rates.

Most of the shippers' representatives present seemed satisfied in the main with this position but raised some additional points. John S. Burchmore referred to the distinction between cases where the cause of complaint arises solely from the new rates and those in which the relation formerly complained of still exists because the rates have been advanced by corresponding amounts and said that the commission should have the same jurisdiction over such cases as in the past. One attorney wanted the director general made a party to all cases for the protection of the shippers, saying that Mr. McAdoo is now the "czar" and that an order for reparation, for example, should run against him. Commissioner McChord asked if Mr. McAdoo had been a czar before March 21, the effective date of the law authorizing him to initiate rates, and whether he should be made a party to cases arising before that time. J. B. Norman objected strenuously to the idea of making the director general a party to the rate cases and also to the appellation of "czar." He called attention to the fact that the law refers to the rates of "the carriers" and does not mention the director general, and declared that the authority of the Interstate Commerce Commission over rates is the same as it was except that it cannot suspend the director general's rates or initiate a proceeding against them of its own motion.

Frank Lyon caused some smiles by declaring that the rate wisdom of the past no longer avails and that he regarded the director general as the representative of the shippers, to be approached not as a party to litigation but by requests to make proper adjustments. He had attempted to present this idea in letters to the director general and he admitted that the replies he had received from his railroad subordinates had been somewhat disappointing but he thought the fact that shippers had been appointed members of the freight traffic committees was evidence that he was "struggling with the idea" that he was the representative of the shippers. Mr. Lyon said that former criteria of the reasonableness of rates have gone into the discard: that no

one pretends that the new increased rates are intended to represent reasonable rates. They represent rather the fact that the Railroad Administration needs the money, he said.

Marking of Freight for Government

For the purpose of preventing the practice of some shippers of seeking to obtain privileges for their shipments to which they are not entitled by marking them to indicate that they contain government freight, and to systematize the marking of government shipments, General Order No. 38, issued on July 24, provides that on and after August 15 the following requirements and provisions shall apply and be observed in respect to the shipments hereinafter described.

1. Shipments intended for use of any one of the government departments, either directly or through a contractor with the United States government, shall not be entitled to or receive any privilege which may be accorded on account of being intended for use of one of the United States government departments, either directly or indirectly through a contractor with the United States government, where said shipments are consigned otherwise than in one of the following ways:

(a) To a government officer designated, not by the name of the individual, but by the title of his position as, for example, Supply Officer, Naval Inspector, or Constructing Quartermaster.

(b) To a government officer designated not by name but by title as above, followed by the words "For account of," and then followed by the name of the contractor or agent for the government engaged on the work at the point of destination.

(c) On some contracts the government has entered into an agreement designating certain parties as agent, or agents, for the government on that particular contract. Shipments for such parties shall be consigned to the particular department for which the work is being done, followed by the words "for account of," and then followed by the name of the agent as, for instance:

Ordnance Department
For account of du Pont
Engineering Co., Agent.
Penniman,
Williamsburg, Va.

or

Ordnance Department
For account of T. A. Gillespie,
Loading Co., Agents.
South Amboy, N. J.

(d) Shipments of material, equipment and supplies for any person repairing or building ships under the supervision of the United States Shipping Board Emergency Fleet Corporation, shall be consigned only to the United States Shipping Board Emergency Fleet Corporation, followed by the words "For account of" and then followed by the name and location of the particular concern performing the work, as for instance:

United States Shipping Board
Emergency Fleet Corporation
For account of American International
Shipbuilding Corporation,
Hog Island, Pa.

2. It is forbidden—

(a) In consigning a shipment to use the words "United States Government" or substantially that term, or abbreviations thereof, as the sole description of the consignee;

(b) Or to consign a shipment to and in the name of the United States government followed by words indicating that it is sent "care of" a private person, firm or corporation;

(c) Or to consign a shipment to a government official

or to an officer of the army or navy by his name as an individual.

(d) Or to consign a shipment to a government official or to an officer of the army or navy followed by words indicating that it is sent "care of" a private person, firm or corporation.

3. No shipper or other person seeking or obtaining any privilege which may be accorded on account of the shipment being intended for the use of any one of the United States government departments, either directly or indirectly, through a contractor with the United States government, shall, without authority, use or cause to be used as consignee the name or title of the United States or of any department, bureau, agency, employee or officer thereof, or of the United States Shipping Board Emergency Fleet Corporation or of any officer, agent, employee thereof, or of any other person, or the designation "Emergency Fleet Corporation"; nor shall any shipper or other person offer or cause to be received for carriage, or transported, without authority, any such shipment consigned as specified in the foregoing paragraphs number 1 and 2, for the purpose of securing, by such consignment, any privilege which may be accorded on account of the shipment being intended for the use of any one of the United States government departments, either directly or indirectly through a contractor with the United States government.

Agents are forbidden to sign or issue bills of lading or receipts for shipments which in any manner conflict with any of the foregoing provisions.

(Violation of the foregoing order is punishable by fine of not more than \$5,000 or by imprisonment for not more than two years or by both such fine and imprisonment.)

Order Regarding Payment of Freight Charges Modified

The Division of Public Service and Accounting announces in P. S. & A. Circular No. 20 that consideration has been given to several inquiries concerning the practical application of General Order No. 25, as affecting certain long established practices of the carriers and paragraph 5 of the order is amplified to read as follows:

Freight consigned to "order" or to "order notify" shall be delivered only upon surrender to the agent of the carrier of the original bills of lading for such freight, and the payment of the freight charges thereon as herein provided. Provided, however, if such a bill of lading be lost or delayed, the freight may be delivered in advance of surrender of the bill of lading upon receipt by the carrier's agent of a certified check, for an amount equal to 110 per cent of the invoice, or upon receipt of a surety bond either individual or corporate, acceptable to the treasurer of the carrier in an amount for twice the amount of the invoice. When conditions require it, a blanket bond may be accepted, but such blanket bond may only cover shipments received at one station on one railroad. If shippers desire to arrange for the delivery of their "order notify" shipments to consignees on shipper's written or telegraphic orders without the surrender of bills of lading, a blanket bond in satisfactory amount must be filed with the treasurer of the initial carrier, and reference to this bond must be shown on shipping orders. Initial carrier will notify all interested lines and show reference to bond on each waybill.

When shipments from foreign countries move on "order notify" bills of lading, delivery may be made to final consignee upon presentation of custom house certificate indicating deposit of endorsed bill of lading with the customs officer at port of entry, or upon presentation of customs permit indicating that consignee has filed bond with customs officer guaranteeing production of bill of lading.

Fruit and vegetables consigned to shipper on "straight bill of lading—original—not negotiable" shall be delivered only

upon surrender of consignor's written or telegraphic order for such freight to the agent of the delivering carrier, and the payment of freight and other charges. In such cases, a blanket bond, in satisfactory amount, indemnifying the railroads against the delivery of shipments on fraudulent orders, must be filed with the treasurer of the initial carrier, and reference to this bond must be shown on shipping orders. Initial carrier will notify all interested lines, and show reference to bond on each waybill.

Care should be exercised to differentiate between the forms of bonds required by the order. The bond applicable to freight charges, provided for by paragraph 2, is not available in compliance with the provisions of paragraph 5. To protect the carrier in the delivery of "order notify" shipments or straight consignments to be delivered on shipper's order, a separate form of bond must be executed; such form of bond has been approved by the Division of Law and is attached to the circular.

Express Franks Cancelled

Under instructions from Director General McAdoo the American Railway Express Company (the new company established under the contract between the director general and the four principal express companies of the country) has cancelled all express franks previously in use and adopted the policy of issuing no new franks.

In the past free service was given by the express companies to a large number of people, not only express officers and employees but also the officers of railroad companies and others. As a result of this practice a great many express franks were in existence and a large quantity of goods was carried free of charge.

After careful consideration, the director general decided that it was proper and wise to eliminate this free service entirely, and as a result all matter now carried by express is paid for.

Organization of Fuel Conservation Section

The Fuel Conservation Section of the Division of Operation, of which Eugene McAuliffe is manager and Major E. C. Schmidt assistant to the manager, has increased its organization by appointing Robert Collett assistant manager for the eastern region and also supervisors for each of the other regions as follows: Howard C. Woodbridge, supervisor, Allegheny Region; Harry Clewer, supervisor, Pocahontas Region; Bernard J. Feeney, supervisor, Southern Region; Frank P. Roesch, supervisor, Northwestern Region; Leslie R. Pyle, supervisor, Central Western Region, and J. W. Hardy, supervisor, Southwestern Region. The supervisors will give special attention to the conservation of fuel used on locomotives, in shops, at terminals, at water stations, and for all miscellaneous purposes. They will also give attention to the preparation of fuel received and to its quality; and they will make investigations and recommendations with respect to its transportation and to its handling at fuel stations.

Advertisements on Cars to Be Eliminated

The Car Service Section has issued a circular saying it is desirable that railroad refrigerator cars bearing the advertisements of brewing companies be repainted in accordance with the standards of the individual railroads and the advertisements eliminated. Roads are requested to advise how many of such cars they have and also of any other railroad refrigerator or other class cars they have that bear similar advertisements so that consideration can be given to repainting them.

Progress Report on Capital Expenditures

In order that the Railroad Administration may be kept informed of the progress being made on addition and bet-

terment work authorized for the calendar year, the Division of Capital Expenditures, in D. C. E. Circular No. 9, requests the federal manager or general manager of each road to furnish a monthly report on D. C. E. Form 10 giving the progress for each project authorized when the estimated cost chargeable to capital account exceeds \$25,000.

* * *

The office of the Board of Railroad Wages and Working Conditions has been removed from 718 Eighteenth street to Room 812, Southern Railway Building, Washington.

Orders of Regional Directors

AUTHORITY OF INDIVIDUAL RAILROAD OFFICERS.—The Southern regional director in circular letter No. 347 says: "While the regional traffic committees have duly advised all traffic officers that authority no longer vests in the individual railroad officer to change any freight rate or charge, passenger fare or charge, baggage charge, or rule, regulation or privilege which in any wise affects freight or passenger revenues, but that specific authority or instructions must be obtained in each and every instance, apparently this absolute requirement is not well understood by other than traffic officials. Attention has been drawn to an instance where a carrier advanced a yard limit board a sufficient distance to include an industry as within the switching limits of a city, thus affecting the freight charges that would otherwise apply to and from that industry." It is directed that operating and other officials concerned be made conversant with these requirements.

Corporation Data on Time Tables.—During the period of government control, according to circulars issued by the regional directors, the practice of showing names, titles and addresses of corporate officers in connection with time tables and other informative matter in the Official Guide will be discontinued and only the names, titles and addresses of the administration organization are to be included. However, if the various companies desire to have a showing of their corporate officers made, there is no objection to their doing so in a section of the guide set apart for that purpose with the understanding that the cost will be paid for by the companies.

Corporate Names to Be Submerged.—The names of the individual railroad companies are to be submerged as much as possible on all stationery and forms used in railroad operation under federal control in order to make them clearly subordinate to the names of the United States Railroad Administration, according to circulars issued by the regional directors. The instructions are to have stamped or printed, as may be found most economical, upon all existing stationery "in such manner as to make it clear that it is intended to eliminate the name of the corporation and yet maintain the identity of the property," a heading in the following form:

UNITED STATES RAILROAD ADMINISTRATION
W. G. McAdoo, Director General of Railroads
NORTH AND SOUTH RAILROAD

It is desired that all forms be immediately adapted to this change without incurring undue expense or failing to utilize any existing stationery and that the foregoing heading be so applied, if that be possible, that no suggestion will be conveyed that the channels of ordinary business procedure are being changed. It is declared to be important that routine business be not diverted through the administrative offices at Washington. The name of local officers, local office addresses, etc., are not to be eliminated.

This is to apply to envelopes, letterheads, payrolls, expense bills, vouchers, bills, and all forms of stationery upon

which communications are written or statements are made which carry a printed or stamped heading, or on which the name of the railroad company appears. Tickets and baggage checks are excepted, and are covered by special instructions. All new tariffs, circulars, notices, or announcements hereafter issued, and envelopes, letterheads and similar stationery henceforth provided, shall carry a heading of the character described above.

On account of the prospective changes in all accounting forms, as well as in bills of lading and other documents which when executed constitute contracts, it is not practicable at this time to issue final instructions as to the forms to be used. Therefore, until further advised, the use of existing forms will be continued with the modification above directed, but such forms shall not be reprinted in quantities estimated to be sufficient to last longer than six months from August 15, 1918. A reasonable supply of forms of contracts which produce a change in status which would in some cases continue beyond federal control, such as leases and side track contracts, may be retained unstamped, to provide for cases likely to arise within six months of August 15, 1918, in which the duration of the contract would be sufficient to possibly extend beyond federal control. This will provide forms for execution by the corporation with the consent of the federal manager in such cases.

By reason of the fact that bills of lading are distributed generally among shippers and frequently privately printed by the shippers, it is directed that notice should be given to all shippers and particularly those known to agents as using private forms of bills of lading, that on and after August 15, no bill of lading will be executed by the carrier, unless stamped or printed as directed above.

As to passenger tickets and baggage checks, the existing forms may be used. New standard forms will be authorized and when available will be used in replenishing stock.

It is stated that the required change can probably be most economically effected by transmitting stationery to central points, stamping or printing the same there and re-distributing it. If it seems most economical to accomplish the change in the stock at small stations by the use of rubber stamps, it is suggested that stamps be forwarded from station to station on each division under the direction of the division officers, to avoid an unnecessary number of stamps. Arrangements are to be made to have the stamped stationery put in universal use by August 15, 1918.

Equipment for Grain Movement.—In Circular No. 44, dated July 25, the regional director of the Southwestern railroads states that reports reaching his office indicate a shortage of grain cars to protect the movement of grain in the Southwestern region and asks that every effort be made to increase the supply of grain cars by giving preferred attention to light repairs to equipment, by handling grain promptly from loading stations to destination, by unloading and releasing loaded cars promptly and returning them for further loading, and by loading equipment to its capacity.

Diversion Bureau for Fruit and Vegetables.—To provide facilities for the transmission of information to shippers and receivers and for handling the diversion or re-shipment of fruit and vegetables in transit on the Great Northern and the Northern Pacific from points west of Spokane, Wash., the regional director of Northwestern lines has created a re-recognizing and diversion bureau at Chicago, with J. B. Crawford, formerly superintendent of transportation of the Pacific Fruit Express, in charge. Agencies have also been established in the offices of the Great Northern and the Northern Pacific at Spokane, Wash.; St. Paul, Minn.; Havre, Mont.; Laurel, Minn.; N. D., and Mandan, to assist the bureau. Effective August 1, originating lines will instruct all billing agents promptly to mail copies of waybills covering all carloads of fruits and vegetables to the agency at Spokane. Eastbound trains having one or more cars of

fruit or vegetables will be given a block number at Spokane. Telegraphic reports showing the contents of blocks will be sent from Spokane to the agency at St. Paul and to the bureau at Chicago and confirmation of these reports will be mailed from Spokane to the other agencies along the line. Telegraphic passing reports of blocks will be sent by the various agencies to the bureau at Chicago and to the Spokane agency, and also to the agency at St. Paul until the blocks pass through that city. All requests for diversions or re-assignments in transit will be handled entirely by the bureau at Chicago or its agencies at St. Paul or Spokane, and if done by either of the latter two agencies will be reported by mail to the Chicago bureau.

Fuel Conservation Meeting.—A meeting was held at Hotel Sherman, Chicago, on August 1, under the auspices of Eugene McAuliffe, manager of the fuel conservation section of the United States Railroad Administration, and of the United States Fuel Administration for the purpose of giving railroad officers and employees of the Northwestern regional district an opportunity to consider and discuss fuel economies. The meeting was attended by general managers, general superintendents, superintendents of motive power, purchasing agents, master mechanics, traveling engineers, superintendents, train masters and train dispatchers who were selected by their respective roads as best qualified to represent their lines.

Galveston Demurrage Bureau Approved.—In Supplement No. 7 to Circular No. 65, dated July 25, the regional director of Northwestern railroads announces that through an oversight the name of the Galveston Demurrage and Storage Bureau was omitted from the list of demurrage bureaus and associations approved under General Order No. 6 of the director general.

Increasing Express Efficiency.—The regional director urges Northwestern railroads to give their utmost co-operation in making the service of the American Railway Express Company prompt, efficient and satisfactory. Among the points which Mr. Aishton wishes the lines under his jurisdiction to consider are: whether all express is being loaded currently on proper trains at important terminals and transfer points; whether trains are being held for the loading of express and what has been fixed as the maximum time for such detention; whether sufficient employees are provided by the express company for the expeditious handling of express matter; what study has been made of the situation, either independently or jointly, with the express representatives respecting this service, and particularly with a view of giving the express companies the maximum service with the minimum detention to trains, and whether certain trains have been designated to handle express business and if proper efforts are being made to confine express tonnage to those trains.

Coal Trestles.—The regional director of Central Western railroads suggests that a considerable saving in car days could be accomplished if all industries receiving coal in carload lots were required to provide themselves with facilities for utilizing drop bottom or dump equipment, and that where the amount of coal used is not sufficient to justify the construction of a high trestle satisfactory results could be secured with an elevation of two or three feet, or sufficient to hold one carload of coal. Central Western railroads are asked to investigate the possibility of introducing trestle facilities where they seem practical.

MILAGE WORKERS GETTING DEFERRED.—Members of the Prussian Diet are incensed at the adjournment of the Diet until September 20, not because of the delay caused to the Prussian Reform bill, says a despatch to the *New York Times*, but because the question as to whether the members will obtain free railway tickets was not decided. As one paper says, this shows the seriousness of the desire for reforms.

Pacific and Mikado Type Locomotives for C. B. & Q.

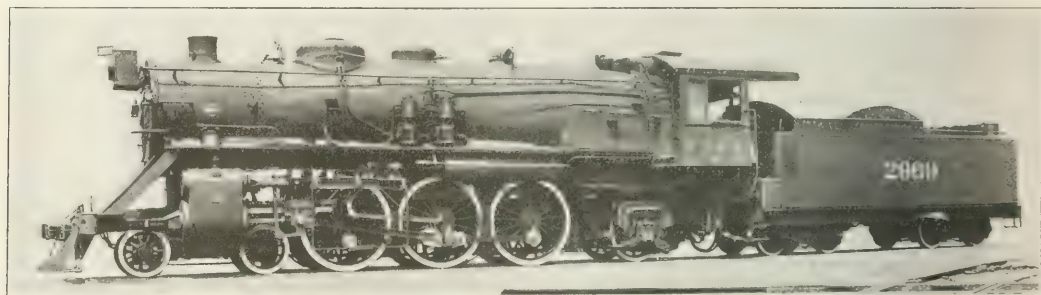
Based on Previous Designs of the Same Types with Improved
Details; Many Interchangeable Parts

DURING THE PAST few years four classes of locomotives for road service have been built by the Baldwin Locomotive Works for the Burlington System. These classes are as follows:

A Pacific type for passenger service, with 27-in. by 28-in. cylinders and 74-in. driving wheels, first built in 1915.*

can be carried out to an unusual degree. The Pacific type exerts a tractive effort of 42,200 lb. and the Mikado type 52,200 lb., the ratio of adhesion being slightly over 4 in each case.

The boilers are alike, except for a few changes in details incident to the different classes of service in which the loco-



Pacific Type Locomotive Developed on the C. B. & Q.

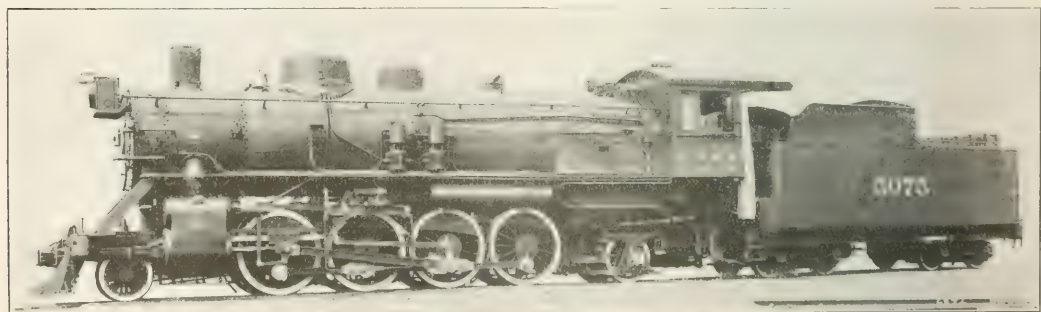
A medium-weight Mikado, with 27-in. by 30-in. cylinders and 64-in. driving-wheels, first built in 1911.

A heavy Mikado, with 28-in. by 32-in. cylinders and 64-in. driving wheels, first built in 1912.

A Santa Fe type, with 30-in. by 32-in. cylinders and 60-in. driving wheels, first built in 1912.

A careful study has been made of these four classes, with a view to improving details when placing successive orders. While the leading dimensions of each class have been re-

motives are used. The superheaters are 34-unit, Type A. The barrel is built with three rings; the first ring is sloped on the top, and the third ring on the bottom. This provides a large steam space, and a free entry to the firebox throat. The main dome is placed on the middle ring; here the longitudinal seam is on the right-hand side, and a large inside liner covers the seam and re-enforces the shell under the dome opening. The auxiliary dome is on the third ring, and is placed over a 16-in. opening in the shell. The seam,



Burlington Mikado Type Having Many Details Interchangeable with the Pacific Type

tained, and no change has been made in the tractive effort developed, the designs have been thoroughly revised since the first locomotives were built. An order which includes all four classes is now being completed. Special interest centers in the Pacifics and the medium-weight Mikados, because of the extent to which interchangeable parts are used in these designs. A large number of details and fittings are interchangeable in all the locomotives, but the dimensions of the two types referred to are such that this policy

which is on the top center, is welded throughout its length, and re-enforced by inside and outside welt strips. By removing the auxiliary dome the boiler can be entered without dismantling the throttle mechanism.

The firebox has a combustion chamber and the seams uniting this chamber with the crown and throat and those uniting the throat and side sheets are welded. A brick arch is installed, and is supported on angle irons studded to the side sheets. The grate rocking bars are held in rectangular frames, which are trunnioned so that they can be tilted through a wide angle when dumping the fire. The grate

*For a description of this locomotive, see the *Railway Age Gazette* for August 13, 1915, see page 77.

castings interchange on the two types of locomotives. The ash-pans of both types are of the double-hopper pattern with swing bottoms, and separate operating rigging for each hopper.

The cylinders of the Pacific and medium-weight Mikado type locomotives are cast from the same pattern. The steam chest heads are interchangeable, and the cylinder heads are similar, except that those of the Pacifics are recessed to a greater extent than those of the Mikados, to allow for two inches less piston stroke. There is a slight difference in the steam-chest bushings, the ports being so cut that on the passenger locomotives there is an exhaust clearance of $\frac{1}{4}$ -in., while the valves are line-and-line on the freight engines. No by-pass valves are used on these cylinders, but vacuum relief valves are tapped into the steam chests. The piston-valves are interchangeable, as are also the pistons and their rods, except for a slight difference in the length of the latter.

The piston heads are rolled steel, of light section, fitted with cast iron bull-rings which are shrunk on and further secured by electrically welded retaining rings. The piston rods are extended, and are of Nikrome steel, hollow bored. Interchangeable crossheads are used on the two types of locomotives. They are of the Laird pattern, with light bodies of .40 carbon steel and bronze shoes. The crosshead wrist pins are of Nikrome steel, hollow bored, and the same is true of all the crank-pins on the Pacific type and the main pins on the Mikado type. Nikrome steel is also used for the main and side rods, and for the stub straps of both types. The main rod stubs are alike on the two locomotives. All the driving axles are of chrome-vanadium steel, hollow bored.

A light design of Walschaert valve gear, with Ragonnet power reverse mechanism, is used on these locomotives, the valve gear pin bearings being fitted with case-hardened bushings. The power reverse cylinder on both classes is placed immediately back of the reverse shaft, so that a short reach-rod connection can be used.

The design of the machinery, as above described, is the result of careful study on the part of the railroad and the builders; and by the use of special materials and correct proportions the parts have been lightened and the dynamic augment on the rail materially reduced. Tests have shown a marked reduction in bridge stresses as a result of this policy. Light parts are also used on the heavy Mikado and Santa Fe type locomotives.

The main frames of the Pacific and medium-weight Mikado type locomotives are five inches wide and are cast of .40 carbon steel, annealed. The driving-boxes interchange on these two types, as do also the pedestal wedges. The shoes and wedges are of bronze. The Rushton design of trailing truck with outside journals and swing links of the three-point suspension pattern is used on the passenger locomotives. These links act as an effective stabilizer and no centering device is necessary. The Mikados are equipped with the Hodges trailing truck.

The cabs have been redesigned, and are considerably shorter than those used on the previous locomotives. This saves unnecessary weight and gives the enginemen a better view through the front cab windows. The steam turret is placed outside the cab, and the valves have extension handles. Each locomotive is equipped with a speed recorder which is driven from the rear truck axle.

The tenders of both types are similar in construction, and are equipped with coal pushers. The frames have 12-in. channels for the longitudinal sills, with oak front bumpers and back bumpers of built-up steel. Equalized pedestal trucks are used with the Pacific type locomotives, and arch-bar trucks with the Mikados. The wheels, in each case, are of forged and rolled steel.

The tables contain the principal dimensions of the two types:

Pacific		Medium-weight Mikado	
Gage	4 ft.	4 ft.	4 ft.
Service	Passenger	Passenger	Freight
Fuel	Bit. coal	Bit. coal	Bit. coal
Tractive effort	42,200 lb.	42,200 lb.	52,200 lb.
Weight in working order	269,200 lb.	269,200 lb.	278,600 lb.
Weight on drivers	171,300 lb.	171,300 lb.	211,300 lb.
Weight on leading truck	49,300 lb.	49,300 lb.	27,900 lb.
Weight on trailing truck	48,600 lb.	48,600 lb.	39,400 lb.
Weight of engine and tender in working order	433,000 lb.	433,000 lb.	472,000 lb.
Wheel base, driving	13 ft.	13 ft.	16 ft. 9 in.
Wheel base, total	33 ft. 8½ in.	33 ft. 8½ in.	33 ft. 9½ in.
Wheel base, engine and tender	68 ft. 4 in.	68 ft. 4 in.	68 ft. 5 in.
Weight on drivers ÷ tractive effort	4.1	4.1	4.1
Total weight ÷ tractive effort	6.4	6.4	5.3
Tractive effort ÷ lb. per sq. in.	695.3	695.3	743.9
Equivalent heating surface* ÷ grate area	76.5	76.5	76.5
Firebox heating surface ÷ equivalent heating surface, per cent.	6.5	6.5	6.5
Weight on drivers ÷ equivalent heating surface	38.1	38.1	47.1
Total weight ÷ equivalent heating surface	59.9	59.9	62.0
Volume both cylinders	18.6 cu. ft.	18.6 cu. ft.	19.9 cu. ft.
Equivalent heating surface ÷ vol. cylinders	242.0	242.0	225.9
Grate area ÷ vol. cylinders	3.2	3.2	3.0
Kind	Simple	Simple	Simple
Diameter and stroke	27 in. by 28 in.	27 in. by 28 in.	27 in. by 30 in.
Kind	Piston	Piston	Piston
Diameter	14 in.	14 in.	14 in.
Driving, diameter over tires	74 in.	74 in.	64 in.
Driving, thickness of tires	4 in.	4 in.	4 in.
Driving journals, main, diameter and length	11 in. by 11 in.	11 in. by 11 in.	11 in. by 11 in.
Driving journals, others, diameter and length	10 in. by 12 in.	10 in. by 12 in.	10 in. by 12 in.
Engine truck wheels, diameter	37½ in.	37½ in.	37½ in.
Engine truck, journals	6 in. by 12 in.	6 in. by 12 in.	6 in. by 10 in.
Trailing truck wheels, diameter	48½ in.	48½ in.	42½ in.
Trailing truck, journals	8 in. by 14 in.	8 in. by 14 in.	8 in. by 14 in.
Style	Water-tight	Water-tight	Water-tight
Working pressure	180 lb. per sq. in.	180 lb. per sq. in.	180 lb. per sq. in.
Outside diameter of first ring	78 in.	78 in.	78 in.
Firebox, length and width	108½ in. by 78½ in.	108½ in. by 78½ in.	108½ in. by 78½ in.
Firebox plates, thickness	Sides, back and crown, ¾ in.; tube, ½ in.	Sides, back and crown, ¾ in.; tube, ½ in.	Sides, back and crown, ¾ in.; tube, ½ in.
Firebox, water space	Front, 6 in.; sides, 6 in. to 4 in.; back, 4 in.	Front, 6 in.; sides, 6 in. to 4 in.; back, 4 in.	Front, 6 in.; sides, 6 in. to 4 in.; back, 4 in.
Tubes, number and outside diameter	200—2½ in.	200—2½ in.	200—2½ in.
Flues, number and outside diameter	34—5½ in.	34—5½ in.	34—5½ in.
Tubes and flues, length	18 ft. 6 in.	18 ft. 6 in.	18 ft. 6 in.
Heating surface, tubes and flues	3,072 sq. ft.	3,072 sq. ft.	3,072 sq. ft.
Heating surface, firebox and combustion chamber	292 sq. ft.	292 sq. ft.	292 sq. ft.
Heating surface, total	3,364 sq. ft.	3,364 sq. ft.	3,364 sq. ft.
Superheating surface	751 sq. ft.	751 sq. ft.	751 sq. ft.
Equivalent heating surface*	4,491 sq. ft.	4,491 sq. ft.	4,491 sq. ft.
Tank	Water bottom	Water bottom	Water bottom
Frame	163,800 lb.	163,800 lb.	193,400 lb.
Weight	36 in.	36 in.	33 in.
Wheels, diameter	5½ in. by 10 in.	5½ in. by 10 in.	6 in. by 11 in.
Journals, diameter and length	8,200 gal.	8,200 gal.	10,000 gal.
Water capacity			

* Equivalent heating surface = total evaporative heating surface ÷ 1.5 times the superheating surface.

ENGLAND'S RAILWAY LABOR UNION.—The National Union of Railwaymen of England has a membership of 401,579.—*The Engineer, London.*

RAILROAD OFFICER IS PREMIER OF SIBERIA.—Lieutenant General Horvath, vice president and general manager of the Chinese Eastern Railway, having declared himself premier of a temporary Siberian Government, has been proclaimed provisional ruler of Siberia, according to press despatches from Harbin.

ENGLISH RAILWAY "RATIONS" TRAVEL.—In order to restrict Saturday passenger traffic from East Lancashire to Blackpool, Southport and other coast resorts of England, the Lancashire & Yorkshire Railway has decided that, from June 29, all tickets must be applied for in advance, as much as three days' notice being necessary in some towns. Tickets will be limited in number, according to the capacity of the trains, and will be available only by the trains for which they are issued.

French Railways During the War

A VERY INFORMING BULLETIN, under the above title, was issued by the Paris Chamber of Commerce in June, 1918. It will be read with keen interest by railway men in the United States, because of the points of similarity and of contrast between the French and the American railways during the war, which it brings out.

"The organization and management of railways during the war are regulated in France by the law passed December 28, 1888: According to Article 22 of this law, 'In time of war, the control of the railways is entirely in the hands of the military authorities'; and so it was on August 2, 1914, all railway officials, from an engineer to a porter, were mobilized, and ready at their respective posts. The large private companies and the board of directors of the Etat Railway, in whose hands the control of French railways is vested in times of peace, delegated their powers to the military authorities, merely reserving to themselves the technical supervision of the *personnel*. A special Commission was appointed, consisting of two members; an officer of high rank (the military Commissioner) and an influential representative of the Company (the technical Commissioner), to undertake collectively the general management of each different railway.

Their Military Rôle

"Ever since the outset of hostilities French railways have carried out, in an irreproachable manner, the important missions assigned to them at different times by the High Command, and the necessities of mobilization. On the Est Railway the transporting of troops and war material to the points of concentration was effected in a fortnight by 4,000 trains. Since then, notwithstanding the fact that part of the line has been occupied by the enemy, and some works destroyed in battles, or by bombardments, it is still open, and used for transport purposes, etc. The Nord Railway Line was able to save all the material hastily sent down southwards; 2,700 Belgian engines were brought back, while the armies fought heroically to stem the tide of German invasion, and hundreds of trains waited, till the last minute, in order to save the guns. Just before the battle of the Marne, the Nord Railway, uniting its efforts to those of the Est, enabled the different corps to be rapidly transferred from the extreme right to the extreme left of the army, and so ensure victory. On the Nord Railway Lines, which have been reduced from 3,840 kilometres to 1,976, as many as 114,000 military trains were run in 1915. Notwithstanding the fact that they are, comparatively speaking, situated at some distance from the war-zone, the other lines: Paris-Orléans, Paris-Lyon-Méditerranée, the Midi, and Etat Railways, have afforded equally valuable assistance during the period of mobilization; the three first provided for the transporting of men and munitions to the North, the last named, working in conjunction with the Nord Railway Line, ensured the transfer of troops from the West of France, also those of the British armies. Over these lines, considered as a whole, 17,000 train-loads of troops and 250 of siege artillery and ammunition were carried between August 5 and 26, in 1914.

"During the succeeding months, when the front was being extended towards the North Sea, 700,000 men were transported in more than 6,000 trains, over 228 kilometres of line. Later on, the rôle of the railways was changed by degrees according to the kind of operations in hand, though their importance was in no way lessened. They had to carry to the trenches in the North, into Italy, or to the ports available for supplying the armies at Salonika, re-inforcements, food stuffs and munitions—to bring back to the interior of the country civilian refugees, the wounded, repatriated persons and German prisoners; to transport Indian, colonial and American troops, and ensure a postal service, comprising millions of letters and parcels, with the armies. The necessities of national defence will not allow of our

stating exactly to what extent their valiant self-sacrifice has been carried, how officials have fallen nobly at their posts and the splendid results obtained by close collaboration with our High Command at the battles of Verdun, in the Somme and Champagne, as well as at the time of the renewal of fighting in the open, on the Western front, and the stopping of the great German offensive in March, 1918. The French government, desiring to acknowledge the valuable assistance given by railway officials, has had a great number of them specially mentioned—and rewarded for distinguished service. It also wished to bring under their country's notice the splendid behavior of the *personnel* of the Nord and Est Railways and on the army lines; Mr. Clemenceau, the premier and minister of war, gave the reasons for such a step in the following terms: 'After having displayed from the very beginning of the war, the most splendid endurance and energy in the fulfillment of duties particularly hard, the *personnel* (of the above railway companies) gave during the recent military operations, and often under the most perilous circumstances, fresh proofs of a spirit of self-sacrifice, and of admirable devotion to their country.'

From an Economic Point of View

"Heavy military traffic, however, only hindered for a short space of time passenger traffic; and the goods transport service has, up to the present, always been able to meet the requirements of civilians in a satisfactory manner. A statement of the returns of the big railway companies enables us to realize the extent of the revival in the economic life of our country. If we examine it since 1914, we see that, setting aside the decrease, at the beginning of hostilities, the receipts have gradually been on the increase, almost rising to, in the case of certain lines not directly connected with military operations, the amount of normal receipts, in spite of a reduction in the length of the lines and a shortage of rolling stock. The following table, showing in *million of francs* the large-railway companies' returns from 1913 up to 1917, goes to prove this fact.

Railways	1913	1914	1915	1916	1917
Nord	336	208	111	125	137
Est	305	196	114	133	134
Paris-Lyon-Méditerranée	596	455	462	523	531
Paris-Orléans	308	244	256	283	301
Midi	147	117	122	125	138
Etat	324	262	278	296	296

"It is as well to call attention to the fact that this rise—which is also noticeable during the same period with regard to receipts in connection with military affairs—does not prevent an important deficit, due to the enormous increase in the cost of running trains, resulting both from the rise in the price of coals, raw materials, labor, wear and tear of rolling-stock, and the continual higher salaries, pensions and indemnities. In order to remedy, in a certain degree, the difficult situation into which the prolongation of such a state of things would have inevitably placed the French railway companies, and following the example of all the belligerent countries, parliament, on March 31, 1918, voted a general increase of 25 per cent on all tariffs except for the army transport service and parcel-post rates. *This extra percentage is to be taken off at the end of the sixth year after the cessation of hostilities.*

"Apart from these general remarks on French railways as a whole, it is interesting to get some idea, gathered from official reports, of the work carried on by each railway company respectively.

"*Paris-Lyon-Méditerranée.*—From August 26, 1914, the P.-L.-M. Railway Co., while having to contend with the very considerable requirements of army transport, was able gradually to resume its goods traffic. Early in 1915 its ordinary traffic had increased 20 per cent compared to that of 1913. In 1917 the tonnage for goods had risen 32 per cent compared to what it was in 1913. The future will permit us to give fuller particulars as to how, in the autumn of 1917, the efforts of the company exceeded even those made in 1914, and how

by enabling large allied contingents to arrive speedily at a distant front, it merited the praise and gratitude of the country.

"Paris-Orleans Railway.—After having, during the first month of the war, run 3,500 military trains, besides facing the difficult task of re-victualling the entrenched camps around Paris, as well as the transporting of French and American troops, the Orléans Railway Co. has continually encouraged agricultural activity in the regions through which it runs, and repaired the wear caused to its rolling stock by giving large orders for this purpose. In 1917, its receipts amounted to 34 millions more than those of the preceding year, exceeding by about a 100 millions those of 1913. The gross tonnage per kilometre, for goods-traffic, rose to 16 millions and a half tons (75 per cent more than in 1913).

"The Midi Railway.—The fertile regions of the South West of France having been specially called upon to convey large quantities of food stuffs for the re-victualling of the armies and the civilian population, the Midi railway has had more than any other line, to struggle against the shortage of rolling stock. The gross receipts for 1917 have nevertheless exceeded by 18 millions those of the preceding year, and by 14 millions those of 1913.

"The Etat Railway.—Owing to the extent of coast line it serves, the Etat Railway constitutes the principal means of transmission for raw material as well as for conveying munitions and overseas-troops. But the chief characteristic of its work during the war has been, above all, the considerable development made in connection with transactions for fuel, for the requirements of the civilian population, and this in accordance with a decree signed on December 4, 1914, conferring upon the company the rights of importation and sale. The Etat Railway is also intrusted with the financial side of the question of a relief fleet formed with the object of assuring certain transports connected with supplies for the Allies. It has, moreover, undertaken the running of a private fleet with a view to increasing the freight available for the transport of English coal. This undertaking as well as the military effort accomplished by it, to the same degree as by the other companies, deserves to be looked upon as a valuable factor in the renewal of the economic life of the country.

"The Nord and Est Railways.—Although the Nord and Est Railways are partly in invaded territory and, above all, used for purposes of national defence, it is a remarkable fact that, according to statistics, their commercial traffic is again regularly progressing, and is even on certain lines *proportionately* superior to what it is in times of peace.

"The above brief statements prove that the return of France to an economic *régime* almost approaching that of normal times is, for the most part, due to French railway companies which have also made it a point of honor to give all the help in their power with the national defence loans, either by their respective subscriptions or the repayment of coupons to shareholders. We must also mention the grants and allowances given as indemnities for the high cost of living to the companies' officials, both male and female. These grants, which were at first made by the government, are retroactively borne by the companies, from the time the rise in transport tariffs voted by parliament comes into force.

"Certainly, before the end of hostilities, so as to meet all military requirements, and after the conclusion of peace, to repair the damage done to the railways and assure their financial security in future, there will be many difficulties to contend with and overcome. But it will not be one of the least results of the war, if a solution is found to such an important question by creating between the different companies, interested in the matter, co-ordination of effort, and patriotic emulation eminently conducive to France's economic expansion, which is so closely associated with the prosperous condition of her railway systems."

TO IMPROVE PORT OF PARIS.—A committee of the Municipal Council of Paris has submitted a report approving the issue of a credit for 50,000,000 francs (\$9,650,000) with which to defray the expenses for improving the port of Paris. Two years ago Minister of Public Works Marcel Sembat announced that a project was under way for improving the traffic facilities between Paris and Havre. Railroad tracks and a barge canal were planned to relieve shipping congestion between Paris and the sea. It is probable that the above project is connected with the plan announced by Mr. Sembat.



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This New Arrangement Transfers 300 Tons Daily from Barges to Cars

General News Department

With mail weighing 175 lbs., Lieutenant Bonsal flew from Philadelphia to Belmont Park, New York, in 42 minutes on July 29. This is at the rate of about 120 miles an hour.

J. M. Hansen, president of the Standard Steel Car Company, has accepted appointment as a member of the General Executive Committee of the Railway Business Association.

The Western Union has pleaded "not guilty" in the suit brought against it charging violation of the statutes which forbid encroachment on the government's mail monopoly, by sending night letter telegrams by train.

No increase in the present rates of taxation on transportation is contemplated by the Ways and Means Committee of the House of Representatives now engaged in drafting the revenue bill intended to raise \$8,000,000,000 in war taxes for next year.

The New York Sun, in a special dispatch from Washington, says that postmasters throughout the country are to be made fiscal agents and treasurers for local telephone and telegraph offices under plans tentatively decided on by the Post Office Department Committee on Telegraphs and Telephones.

Three special investigators representing the Division of Labor have been appointed by the Railroad Administration. These investigators are William Blackman, formerly connected with the Department of Labor; John A. Moffatt, formerly an officer of the Hatters' Union, and Anthony M. Danks, of the Division of Safety of the Interstate Commerce Commission.

Colonel T. S. Williams, president of the Brooklyn Rapid Transit, has announced that the wage increases which range from 10 to 25 per cent, which had been determined upon by the company, are to be put into effect August 2. This will add, it is estimated, \$1,100,000 a year to the expenses of the company. Colonel Williams said that the principle on which the wages were advanced was that followed by the federal wage commission in recommending higher wages on steam railroads: namely, the consideration of the rising cost of living.

The Administrative Committee of Dining Car Superintendents has notified the Federal Food Administration that railroad dining car superintendents have been requested to no longer place sugar bowls on dining car tables, and it is understood that the same practice as that followed by hotels will be adopted, namely, of serving diners two half lumps or one teaspoonful of sugar only at each meal. This action was taken voluntarily by the dining car superintendents, the Food Administration having prescribed no method of serving sugar on dining cars.

The Kansas City-Florida Special, a St. Louis-San Francisco passenger train operating between Kansas City, Mo., and Jacksonville, Fla., was derailed near Fickinger, Ark., on July 18. The cause of the derailment has not yet been determined. The locomotive left the rails on the curve and was followed by the baggage car, smoking car and two coaches which turned over, while the sleeping cars remained on the track. The engineman, fireman and two passengers were killed and about forty passengers were injured. Most of the injuries, however, were slight.

The National Research Council, acting as the Department of Science and Research of the Council of National Defense, has appointed a committee to investigate the fatigue phenomena of metals. H. F. Moore, professor of the engineering experiment station of the University of Illinois, is chairman. The committee is charged with the responsibility of developing a knowledge of the strength and durability of metals subjected to repeated stresses, such as ship structures, crank shafts of air-

craft engines, and heavy ordnance. According to present plans the experimentation required will be done in the laboratories of the University of Illinois under the personal direction of Professor Moore.

The Inland Waterways Committee has made a report to the Railroad Administration favoring the appointment of an administrator for the Chesapeake & Delaware Canal. The plan suggested does not necessitate the actual taking over of the property by the government, but the administrator would be given power to put on new boats or barges and to control operation of the canal with a view to giving relief to railroad congestion. This report was made public by J. Hampton Moore, Representative from Pennsylvania, in the absence of Director-General McAdoo.

A military railroad seven miles long, connecting Camp Humphreys, Va., with the Richmond, Fredericksburg & Potomac, has just been completed by engineer troops in training at the camp, who will also operate the trains. The work on this railroad, which is standard gage, was started during the winter by the 102nd Engineers, and the first train over the line, carrying a large number of men bound for Washington, was run on Saturday, July 27. No regular passenger service will be operated, but the road will perform a useful service in the transportation of supplies for the camp.

The Interboro subways, New York City, are to be reorganized so as to provide two through north and south lines, in Manhattan, on August 1, according to an announcement made by the State Public Service Commission. The east side line will be designated as the Lexington avenue line: it will extend by the present line from the southern terminus in Brooklyn, northward to the Grand Central terminal, 42nd street, thence by Lexington avenue to the Harlem river, and thence to 167th street, where it merges into the Jerome avenue (elevated) line. A branch to Pelham Bay Park is still unfinished. The west side line will be called the Seventh avenue line. This consists of the present subway from the northern termini southward to Times Square, at Broadway and Seventh avenue, and thence southward through Seventh avenue and Varick and other streets to South Ferry, with a branch through Park Place eastward to Brooklyn. This branch is in operation only as far as William and Wall streets. That part of the present subway from the Grand Central Terminal, at Fourth avenue and 42nd street, westward to Times Square, will be operated by shuttle trains connecting the east side and west side lines. Both of the through lines—the Lexington Avenue and the Seventh Avenue—are four-track throughout the section of heaviest traffic, about six miles in length. With the elevated lines Manhattan now has 17 tracks above or below surface between "down town" and Harlem.

Safety Work Pays on the North Western

The accident statistics of the Chicago & North Western show a marked decrease in the number killed and injured on that road in the 7½ years ending December 31, 1917, as compared with the 7½ years which terminated on June 30, 1910, before the "safety first" committees were organized. The statistical comparison is as follows:

315	fewer employees killed, a decrease of 58.9 per cent.
16,443	fewer employees injured, a decrease of 25.2 per cent.
7	fewer passengers killed, a decrease of 8.8 per cent.
1,454	fewer passengers injured, a decrease of 20.8 per cent.
337	fewer outsiders killed, a decrease of 19.0 per cent.
169	fewer outsiders injured, a decrease of 3.7 per cent.

Safety work was commenced on the North Western in May, 1910, and there are now over 900 men serving on division, local, shop, terminal and central safety committees. Records kept for the 5½ years ending December 31, 1917, indicate that

the overwhelming majority of accidents are due to carelessness and are preventable. During that time 292 deaths to employees, or 87.16 per cent, were due to dangerous and thoughtless practices; 20, or 5.97 per cent, were caused by collisions and derailments; 20, or 5.97 per cent, by defective engines, cars, track, tools, machinery, etc.; and 3, or 0.90 per cent, were unavoidable. Of the cases of injuries to employees, 30,537, or 86.11 per cent, were the result of dangerous practices; 579, or 1.63 per cent, were due to collisions and derailments; 1,680, or 4.74 per cent, were caused by defective engines, cars, track, tools, machinery, etc., and 2,068, or 7.52 per cent, were unavoidable. In the years 1912 to 1917 inclusive, safety first committees on the North Western made 27,082 recommendations which were adopted by the road and only 1,201 which were rejected as impractical.

Railway Signal Association

The annual meeting of the Railway Signal Association is to be held on September 19 and 20 at the Hotel McAlpin, Broadway and Thirty-fourth street, New York City. French Lick Springs was originally selected as the place for the meeting, but owing to war conditions and the omission of the June stated (New York) meeting, it was considered desirable to cancel the arrangements for French Lick Springs and to hold the meeting in New York. The sessions will be called at 9 a. m. and close at 6 p. m., with an intermission for lunch.

Changes in the Master Car Builders

Interchange and Loading Rules

The executive committee of the Master Car Builders' Association has recently issued Circular No. 6 supplementing the 1917 loading rules. This circular contains modifications of rules 17, 56, 57 and 59 and also the following new rules: Rule 88 covering the manner of loading metal plates in gondola cars. Rule 112-C on loading wrought iron pipe 12 in. or less on flat cars. Rule 117-B on the manner of securing concrete culvert pipe loaded on flat cars and Rule 125 on the manner of loading metal sheets in box cars.

Circular No. 9 announces the extension of the date effective of paragraphs d, f, h, and i of Rule No. 3 to October 1, 1920, and the elimination of paragraph k of Rule 3, effective July 15, 1918.

The executive committee has also issued the following circular relating to the defect carding of cars offered in interchange: "The M. C. B. Rules in reference to defect carding of cars in interchange are modified as follows: (a) Defect carding for any delivering line defects, as between government controlled roads for defects on cars belonging to non-government controlled roads and private car lines as well as cars belonging to government controlled roads is discontinued. (b) Defect carding for any delivering line defects on cars belonging to non-government controlled roads and private car lines is limited to the first and last government controlled road receiving or delivering the car."

The French Railway Used by the American Forces

A letter recently received by the editor from Dalton W. McCarthy, a member of the Light Railways and Roads contingent of the American Expeditionary Forces in France, was accompanied by a most interesting, illustrated pamphlet, entitled "America's Way to the War in France." This booklet, which is published in English, describes the Paris-Orleans Railroad, over which most of the American troops travel on their way to the front. This company operates 4,869 miles of lines which connect the ports of Brest, St. Nazaire, Nantes and Bordeaux with Paris. The main artery of the system, and the most important from the standpoint of traffic, is the line which connects Paris with Bordeaux, the great port at the mouth of the Garonne. This line passes through Tours, Poitiers, and Angoulême. This is also part of the route from Paris to the western Pyrenees, the Basque coast (including the well-known resorts of Arachon and Biarritz), Spain and Portugal. Another line cuts through central France from North to South, passing through Vierzon, Issoudun,

Chateauroux, Limoges and Cahors, to Toulouse, where it connects with lines which lead to the central and eastern Pyrenees and the western Mediterranean coasts of France and Spain. An additional north-and-south line traverses the industrial region of which the centers are Bourges and the Montlucon, climbs into the mountains of Auvergne, and reaches the cities of Clermont-Ferrand and Aurillac, besides the spas of Royat, Mont-Dore, La Bourboule, Saint-Nectair and Vic-sur-Cère. These main lines are interlaced by a series of transversal lines running east and west.

The booklet includes a brief history of the railroad and a description of the cities and departments through which it operates, amplified by photographs of points of interest. Brief reference is also made to the important part taken by this railroad in assisting in the mobilization at the outbreak of war. During the first days of the mobilization, between August 2 and 5, 1914, it put on about 1,500 troop trains; between August 5 and 19, it moved nearly 600,000 officers and soldiers belonging to the metropolitan corps and the colonials of Algeria, Senegal and Morocco; the 144,000 horses, 40,000 carts and cannons, and 64,000 tons of material and provisions. During 1916, the railway carried 9,500,000 officers and men on personal journeys, while the number of carloads of troops, horses, war material and provisions of all kinds carried was 1,063,630. A few months after the outbreak of war, moreover, the company transformed its shops into munition factories where it has turned out more than two million shells of various calibres.

Routing Freight in the West

Frank B. Townsend, formerly vice-president in charge of traffic of the Minneapolis & St. Louis, and now on the staff of the regional director of Northwestern railroads, delivered an address before the Traffic Club of Chicago on July 23, on the subject of "Routing Freight in the Western Territory." He described in detail the operating economies which have been achieved through close supervision of the routing of freight in the West. The results attained in this direction were covered in an article in the *Railway Age* of July 12, page 57. Mr. Townsend's address contained some more recent statistics than were contained in this article which indicate that the rerouting plan is operating with more and more success as time goes on. For instance, between May 25 and July 15 there was rerouted at Minnesota Transfer, Minn., a total of 2,723 carloads, which resulted in a saving of 326,682 loaded car miles, or an average reduction in the haul of 120 miles per car.

Mr. Townsend also outlined the new classification of routes which governs the movement of traffic out of the Chicago switching district. They are as follows:

(a) *Preferred Route*: This will include all direct routes via which the mileage does not exceed 115 per cent of the short route. The distance from Chicago to destination will be shown, and if, for any reason, the short route should not be used in preference, it will be carried as a "Second Preferred Route," or as an "Emergency Route."

(b) *Second Preferred Route*: This will include all direct routes via which the mileage is not in excess of 125 per cent of the short route, and joint routes over two or more lines via which the mileage does not exceed 115 per cent of the mileage via the short route.

(c) *Emergency Routes*: This will include recognized routes which have been used in the past and via which the mileage is in excess of 125 per cent of the short direct line route, and will also include routes via two or more lines via which the mileage is in excess of 115 per cent of the short direct line route.

Mr. Townsend also congratulated shippers for the co-operation which they have given the railroads in increasing car efficiency by loading equipment to capacity. Railroad Administration statistics for the four months of January to April show the average tons per loaded car to be 26.4 tons for 1918, as against 23.7 tons for 1917, or an increase of 2.7 tons per car, or 11.4 per cent. This means that for every 100 cars required in the first four months of the year 1917 to move the traffic of the country, only 89 cars were required for the first four months of this year to move the same amount of tonnage. Many individual shippers have shown much greater increases in the average loading per car, but the figures are based on reports for 94 per cent of the total operated mileage of the class one railroads in the United States, and includes all carload and less-than-carload traffic.

Traffic News

The so-called Victory Special, which is being operated under the auspices of the New York State Food Commission and the Home Economics Department of Cornell University, is now making a trip over the Delaware & Hudson. Demonstration of the uses of wheat substitutes and the conservation of foods is being made for the benefit of women along the line.

The car service section, for the purpose of reducing accumulations of shipments caused by embargoes, has directed the roads to prepare and forward promptly a complete statement of cars now held, refused by connections on account of embargoes. On receipt of this information it is the intention to handle with a view to authorizing the acceptance of such cars as may properly be forwarded to destination at this time.

Porters at the Grand Central Terminal

Miles Bronson, terminal manager of the New York Central Grand Central terminal in New York, says that all "red cap" porters of draft age have been laid off, but have been offered employment in the baggage rooms or on the cleaning forces. Under normal conditions the porters at the Grand Central number about 165. Seventy of these have been laid off and about 95 have been retained. This force of porters serves 391 trains which are handled in and out daily of the Grand Central Terminal, and it is estimated that about 75,000 to 80,000 people use the terminal daily.

These porters have been paid from \$22.50 to \$45 a month, but under the new wage schedule they will receive an increase of wages of \$20 a month.

Philadelphia-New York Commutation

The Railroad Administration has fixed a commutation rate of \$31.86 between New York and Philadelphia. This commutation ticket, good for one month, will allow the purchaser to make 54 one way rides within the calendar month. The purchaser will be required to provide a photograph of himself to be attached to the ticket and stamped for purposes of identification. Tickets were placed on sale on July 31, both for use over the Pennsylvania and over the Central of New Jersey Reading route. The tickets, however, are not interchangeable and must be used only over the route for which they were purchased. The present one-way fare between New York and Philadelphia is \$2.20, with eight per cent added for war tax, making \$2.38. If all of the 54 rides were used in the month, the cost per ride on the commutation ticket would be 59 cents.

Coal Production

Production of bituminous coal during the week of July 20, while not equivalent to the record week of July 13, was higher than any previous week, according to the report of the Geological Survey. The output during the week ended July 20, including lignite coal and coal made into coke, is estimated at 12,950,000 net tons as against 13,273,000 net tons during the week preceding or a decrease of 2.4 per cent, and as against 11,230,000 during the current week of 1917, or an increase of 15.3 per cent. The average production per working day during the week of July 20 is estimated at 2,159,000 net tons as against 2,212,000 net tons during the week previous and 1,872,000 net tons during the week of July 20, 1917.

Anthracite shipments during the week ended July 20, declined 1,755 carloads, or 4.2 per cent, compared with the week preceding, the total movements amounting to 40,664 carloads.

The percentage of full time output lost on account of car shortage during the week ending July 13 was only 3.9 per cent.

Commission and Court News

Interstate Commerce Commission

The commission has dismissed the complaint of the Northwestern Traffic and Service Bureau against rates on coal in carloads from Manitowoc, Wis., to St. Paul and Minneapolis.

The commission has awarded reparation to the Macey Company for charges for trap car service from their plant to the Pere Marquette freight station at Grand Rapids, and has fixed a price not to exceed three dollars for this service.

The commission has dismissed a complaint of John P. Wilson, claiming that by demanding the payment of under charges on a carload of peaches after the net proceeds from the sale thereof had been remitted to the consignor while rendering correct bills to other commission merchants prior to the remitting of such proceeds, the Pennsylvania Railroad discriminated against the complainant.

Court News

Permits for Liquor Shipments

The Supreme Court of the State of Washington holds that under the statute of 1915, p. 12, § 17, providing that druggists desiring to ship intoxicating liquors into the state shall first secure a permit therefor which shall be void 30 days from the date of issue, a permit granted to a druggist was absolutely void after 30 days, and the liquor was contraband, although the permit was good when the shipment started.—*State v. Great Northern (Wash.)*, 172 Pac., 546. Decided April 26, 1918.

Discriminatory Switching Charges

Switching being a terminal service that is rendered only in connection with certain parts of the traffic, and which may not be required, and being a service separate and distinct from transportation service, the Colorado Supreme Court holds that a carrier has no right to fix a rate that includes switching charges regardless of whether switching services are rendered.—*Consumers' League v. Colorado & Southern*, (Colo.), 172 Pac. 1064. Decided May 6, 1918.

Limitation of Liability—Warehouseman's Authority

The Colorado Supreme Court holds that a warehouseman, authorized to ship goods in the owner's name, has the authority to make a statement as to the value of the goods. The state statute providing that nothing therein shall deprive any holder of a bill of lading of any remedy or right of action under the existing law, did not preserve the common-law right of recovery of actual value of goods lost, where bill of lading contained a clause limiting liability.—*D. & R. G. v. Teufel (Colo.)*, 172 Pac. 1060. Decided May 6, 1918.

Loss of Oil from Tank Car

A consignee of cotton seed oil furnished tank cars for the shipment, and it was not apparent that the inner valve in a car had not been closed. In an action against the railroad, the Circuit Court of Appeals, Fifth Circuit, held that the railroad could not be held liable for loss of the oil resulting from failure to securely close the valve, notwithstanding the outer cap might have prevented the escape, had it not been defective; it appearing that cars were often used without fastening the outer cap.—*Alabama & Vicksburg*, 249 Fed., 308. Decided February 4, 1918.

The same court holds that where a seller of cotton seed oil loaded it in its own tank car, the buyer cannot, having paid the draft accompanying the bill of lading, recover against the carrier for loss of oil resulting from a defect in the car not discoverable by reasonable inspection, even though the railroad made the seller, who was required by contract to deliver the oil, an allowance for the use of the car.—*Alabama Great Southern v. Morris & Co.*, 249 Fed., 312. Decided February 4, 1918.

Equipment and Supplies

Government Car and Locomotive Orders

The United States Government has given an additional order for 500 Consolidation type locomotives to the Baldwin Locomotive Works, for service on the military railway lines in France.

The Railroad Administration's order for 15 additional locomotives from the Lima Locomotive Corporation, reported in these columns last week, is for light Mikado locomotives.

It is understood that orders for 10,000 cars for the use of General Pershing's forces will be distributed as follows: American Car & Foundry Company, 2,400; Standard Steel Car Company, 1,900; Haskell & Barker, 1,800; Pressed Steel Car Company, 1,500; The Pullman Company, 1,500; Standard Car Construction Company, 400 tank cars; Liberty Car Company, 250; St. Louis Car Company, 250; all but the 400 tank cars are box cars and gondolas.

Iron and Steel

THE KANSAS CITY SOUTHERN has ordered 203 tons of miscellaneous steel from the Kansas City Structural Steel Company.

THE LAKE SHORE & MICHIGAN SOUTHERN has ordered from the Vierling Steel Company 145 tons of structural steel for an extension to its Chicago freight car repair shop.

Track Specialties

THE ANN ARBOR is inquiring for about 3,000 tons of 85-lb. rails.

THE BALTIMORE & OHIO has placed an order with a Pittsburgh concern for 1,000 kegs of spikes.

THE PITTSBURGH & WEST VIRGINIA has placed an order with a Pittsburgh concern for 500 kegs of spikes.

Signaling

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has awarded a contract to the Union Switch & Signal Company for the installation of an electro mechanical interlocking plant at Stones River, Tenn. A Saxby & Farmer mechanical machine will be installed, having 19 working levers and 13 spare spaces in a 32 lever frame. The electric unit will be the "S-7" type, having 16 working levers and 16 spare spaces in a 32 lever frame.

BEWARE OF LIBERTY BOND SWINDLERS.—A warning to the public against Liberty bond swindlers is given in a poster to be sent out for wide distribution by the Chamber of Commerce of the United States. Publication of the warning was prompted by reports that bondholders in many parts of the country had been approached by persons offering to trade for the bonds stocks of doubtful value. In most instances the bondholders have been told that the stocks offered in exchange for bonds are absolutely safe and that they will pay far greater returns than do the Liberty bonds.

YOU ARE DOING IT.—Every time you read, you purchasers of Liberty Bonds and War Savings Stamps, of what the United States is doing in France in building wharves and railroads, or deluging the Germans with gas or shelling them out of position with big guns or shrapnel, or of bombing their arsenals or cities, or of the great work of our Army and our Navy, or of the building of ships here, or of any or all of the great or small achievements of America, here or abroad or on the seas, you buyers of Liberty Bonds and War Savings Stamps truthfully can say, "I had a hand in this"; "I contributed to this"; "I am helping do this"; "It is part my work."

Supply Trade News

J. A. Simpson, editor of the Rock Island Lines Employees' Magazine, has resigned to become secretary of the Dooley-Brennan Advertising Company, Chicago.

William V. Dee, until recently secretary and general sales manager of the G. Drouvé Company, Bridgeport, Conn., has severed his active connections with this company.

F. H. Charbono, who for many years has represented the Independent Pneumatic Tool Company in the East, with headquarters at New York, has been appointed manager of the Southern district, with headquarters at Birmingham, Ala., to succeed **George C. Wilson**, who has resigned to look after his interests in the North.

George H. Musgrave was appointed general manager of the Star Brass Manufacturing Company, Boston, Mass., on July 1. Mr. Musgrave has been with this company for more than 30 years, having left the service of the New York & New England Railroad to go to the Star Brass Manufacturing Company. In 1900 he was appointed general sales agent, specializing on railway, marine and naval steam devices.

The Aspromet Company, Pittsburg, Pa., manufacturers of asbestos-protected metal for use in building construction, announces that this company opened an office in the Munsey building, Washington, D. C., on August 1. This office is in charge of **O. O. Robinson**, district manager, and will also be under the personal supervision of **H. E. Marks**, general sales manager of the company.

A. G. Delany, salesman for the American Brake Shoe & Foundry Company, with headquarters at Chicago, has been appointed local manager of that company at Minneapolis.



A. G. Delany

Minn., where he will have charge of its work, and will also look after sales in northwestern territory. Mr. Delany was born at Worcester, N. Y., in 1879. In 1896, he entered the service of the Chicago, Burlington & Quincy as an office boy; later he served for a period of seven years in the Burlington locomotive shops at Chicago, and at Aurora, Ill., following which he was appointed mechanical traveling inspector for the same road, having charge of the heating and lighting of passenger cars of both the

east and west lines. In 1905, he resigned to become salesman for the Safety Car Heating & Lighting Company, at Chicago, where he remained for three years, following which he went with the Chicago Car Heating Company, as salesman, with headquarters at Atlanta, Ga. In 1911, he left that company to become salesman for the American Brake Shoe & Foundry Company, at Chicago, which position he held until his recent appointment as local manager of the same concern at Minneapolis, as mentioned above.

HONORS.—The London & North Western 30,052, of the staff employed by the London & North Western immediately prior to the war have left the company for active service. The casualties at the end of June numbered 10,513. Military awards have been made to 459 employees of the company who have distinguished themselves serving with the forces.

ANNUAL REPORT

Southern Pacific Company—Thirty-fourth Annual Report

REPORT OF THE BOARD OF DIRECTORS.

New York, July 14, 1918.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY.

Your Board of Directors submits this report of the operations of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1917.

PROPERTIES AND MILEAGE.

The transportation lines constituting the Southern Pacific System, December 31, 1917, were as follows:

DIVISIONS.	FIRST MAIN TRACK.	ADDITIONAL MAIN TRACK.	SIDE TRACKS.	FER. WATER LINES.
A.—MILEAGE OF LINES BELONGING TO OR LEASED BY COMPANIES THE CAPITAL STOCKS OF WHICH ARE PRINCIPALLY OWNED BY THE SOUTHERN PACIFIC COMPANY.				
(1)—Operated by the Southern Pacific Company under leases:				
Central Pacific Ry.....	2,267.06	256.23	908.79	9.60 125
Oregon & California R. R.....	1,214.36	7.56	281.60	....
Southern Pacific R. R.....	3,530.13	208.29	1,583.86	3.00
South Pacific Coast Ry.....	106.70	20.46	50.16	3.00
(2)—Operated by the following Companies:				
Morgan's Louisiana & Texas R. R. & S. S. Co.....	400.67	58.35	232.68	3.00
Louisiana Western R. R.....	207.74	....	83.10	....
Lake Charles & Northern R. R.....	72.66	....	12.38	....
Texas & New Orleans R. R.....	468.14	6.02	215.49	....
Galveston, Harrisburg & San Antonio Ry.....	1,360.95	6.59	371.01	....
Houston, East & West Texas Ry.....	190.94	....	58.16	....
Houston & Shreveport R. R.....	40.72	69	7.20	....
Houston & Texas Central R. R.....	948.51	9.04	263.09	....
San Antonio Pacific Terminal Company.....	....	....	25.68	....
Arizona Eastern R. R.....	377.774	....	75.36	....
Southern Pacific Company.....	....	....	4.40	....
B.—MILEAGE OF LINES BELONGING TO COMPANIES THE CAPITAL STOCKS OF WHICH ARE PRINCIPALLY OWNED BY THE MORGAN, LOUISIANA & TEXAS R. R. & S. S. CO., AND WHICH ARE OPERATED BY THE OWNING COMPANIES.				
Meria & Vernon R. R.....	21.44	....	11.02	....
Total.....	11,207.26	573.23	4,176.58	19.90 4,525
Less operated jointly by Proprietary Companies.....	43.41	12.53	29.84	....
Total miles of road operated December 31, 1917.....	11,164.35	560.70	4,149.74	18.90 4,525
Total miles of road operated December 31, 1916.....	11,095.91	560.76	4,030.35	18.90 4,525
Increase.....	68.44	....	119.39	....
Decrease.....	....	06	....	....
Average miles of road operated during the year.....	11,136.84	560.73	....	....

*Includes 2.48 miles owned jointly with other companies, 4.87 miles leased from other companies, and 187.65 miles operated under trackage rights; and excludes 22.61 miles of owned lines leased to other companies. In addition to the mileage above tabulated, the Southern Pacific Company solely controls through ownership of capital stock, 780.48 miles of electric lines, and 1,240.52 miles of the Southern Pacific R. R. Co. of Mexico; and jointly controls (through ownership of capital stock in equal proportions with the Atchison, Topeka & Santa Fe Ry. Co.) 507.30 miles of the Northwestern Pacific Railroad, and 59.66 miles of the Sunset Railway. A GRAND TOTAL OF 17,782.31 MILES.

As of midnight December 31, 1916, the Central Pacific Railway Company and the Southern Pacific Railroad Company acquired the railways of the following companies:

COMPANY.	From	To	Miles Com- Total Miles pleted Pro. and in- jected operation.
Lincoln Northern Railway, Lincoln, Cal., Dairy Farm			
Southern Pacific Rail- Mine, Cal., 11.20			
ROAD COMPANY:			
Coast Line Railway..... Santa Cruz, Cal., Davenport, Cal.	11.90	11.90	
Colusa & Hamilton Rail- road.....	Harrington, Cal., Hamilton, Cal.	61.23	40.66
Hanford & Summit Lake Railway.....	Ingle, Cal., Hardwick, Cal.	42.41	40.41
Mojave & Bakersfield Rail- road.....	Mojave, Cal., Bakersfield, Cal.	85.00	....
Oroville & Nelson Railroad, Oroville, Cal., Nelson, Cal., 13.60			
Total.....			224.74 100.97

OPERATING INCOME.

The gross operating revenues of \$193,971,489.54 exceeded the earnings of the previous year by \$30,544,066.52 and are the largest in the history of the Company.

Revenue from passenger business increased \$8,267,746.42, or 22.28 per cent., as a result of the transportation of troops and the industrial activity stimulated by the war, the revenue from these sources having more than counterbalanced the falling off in tourist travel and the acute competition of automobiles.

Revenues from mail and express increased \$669,489.61, or 10.01 per cent., which is attributable to an increase of \$1,249,579.12 in the revenue from express business, resulting from increased volume, reduced by a decrease of \$580,089.51 in the revenue derived from the transportation of mail as a result of the new basis of compensation imposed upon the carrier by the United States Government.

Revenue from freight traffic increased \$20,147,640.30, or 17.92 per cent. Agricultural Products yielded an increase of \$4,277,978, which was chiefly derived from barley, fruits and vegetables, and from rice, which has passed from the experimental stage of a few years ago to that of a staple crop of California.

Forest Products contributed an increase of \$2,349,020, which is largely attributable to the construction of wooden vessels and the development of army cantonnments, accompanied by curtailment of vessel transportation. Manufactured Products yielded an increase of \$6,439,342, distributed among many important commodities.

Products of the Mines produced an increase of \$5,033,871, which consisted chiefly of revenue from fuel oil, coal, sulphur and asphaltum. The continued suspension of steamship service through the Panama Canal by the diversion of ships to Transatlantic service, and the impetus to the country's industries which has resulted from the war, have enabled our rail lines to obtain an extraordinary volume of traffic which has unimpaired your facilities to an unusual extent and permitted such economy of operation as to offset the great increases in the cost of labor, material and supplies.

Following the declaration of war, several of the vessels of your Company's coastwise fleet were impressed by the War and Navy Departments, and under an order issued by the United States Shipping Board, effective October 15, 1917, as to all vessels leaving home ports on or subsequent to that date, all of the Company's steamships were impressed. During the remainder of the year such of the steamships as were not in the service of the War and Navy Departments were operated by the Company on their regular runs by request of the United States Government for its account. The revenues and expenses accruing from the Government operation of the steamers are, therefore, excluded from the railroad operating income. The revenue for duty on the Government's equipment is included in Non-operating Income under the heading "Hire of Equipment."

The increase of \$30,544,066.52, or 18.69 per cent., in railway operating revenues was accompanied by an increase of only \$17,513,086.30, or 16.99 per cent., in railway operating expenses, notwithstanding the effect of the high cost of fuel and all materials, and increases in wage schedules, as follows:

Increased prices paid for fuel.....	\$6,190,000
Increased prices paid for other materials.....	3,690,000
Increased wages due to the Adamson Law.....	1,711,000
Other increases in wages.....	3,369,000

Total..... \$14,960,000

Excluding the effect of these higher uncontrollable costs, operating expenses show an increase of \$2,553,000 only, or an expenditure of but 8.4 cents for each additional dollar of operating revenue.

OPERATING INCOME.

Expenditures for maintenance of way, structures and equipment increased \$154,366.86, or 0.37 per cent.; and for transportation and other expenses \$17,358,719.44, or 23.24 per cent., the latter being due to shortage of labor and difficulty in obtaining delivery of rails and other material because of war requirements, the roadbed, structures and equipment have been maintained at high standards of safety and efficiency during the year. The annual maintenance of way inspection made late in the year showed about as high a rating as in 1916. The percentage of locomotives in good order was the same for both years; and, despite the heavy calls upon freight cars to move traffic, 1918 was entered with only 4.6 per cent. of them in bad order, a percentage which is below normal.

Ton miles of revenue freight haul exceeded any previous year, being 24.49 per cent. greater than in 1916, and 78.58 per cent. greater than in 1915. These large increases were successfully and economically handled by the existing facilities through increased operating efficiency, as evidenced by the following facts:

1. Average car load was 2,534 tons, an increase of 1.71 tons or 7.24 per cent. over 1916, and of 3.72 tons, or 17.30 per cent., over 1915.
2. Average freight train load was 602.98 tons, an increase of 49.39 tons, or 8.92 per cent., over 1916, and of 10.89 tons, or 25.08 per cent., over 1915. The saving through heavier train load was equivalent to the operation of 2,190,462 freight train miles, compared with 1916, and 6,156,433 freight train miles, compared with 1915. Four trains in 1917 moved the same tonnage as 1916 in 1915.
3. Daily mileage per freight car was 43.30, an increase of 4.15 miles, or 10.60 per cent., over 1916, and of 13.15 miles, or 43.61 per cent., over 1915. The ton mileage of revenue freight moved per freight car on the line increased 79.62 per cent. over 1915, five cars in 1917 performing as much service as nine cars in 1915. The increased service is equivalent to adding 40,000 cars to our equipment, which at present prices would cost about \$100,000,000.
4. The ton mileage of revenue freight moved per locomotive increased 22.77 per cent. over 1916, and 75.41 per cent. over 1915, four engines in 1917 performing as much work as seven locomotives in 1915. This increased work was equivalent to the addition of 765 freight locomotives, which at present prices would cost \$38,250,000.
5. Improved use of locomotive fuel saved \$205,435.72 over 1916, and \$48,280.66 over 1915.

From 1913 to 1917, inclusive, gross ton miles per pound of fuel increased in passenger service from 4.60 to 5.10, or 10.87 per cent., and in freight service from 5.01 to 6.11, or 21.96 per cent. The better use of fuel in 1917 compared with 1915 was equivalent to a saving of \$3,400,000.

Of the net revenue of \$73,369,666.72 from railway operations, railway tax accruals consumed \$13,792,176.17, or 18.80 per cent.; and of each dollar of increase in net revenue over 42 cents went for increased taxes. The total increase in taxes was \$5,822,883.89, or 66.79 per cent., of which \$3,613,583.12 was for war income and excess profits taxes. \$2,209,295.77

to Federal income and capital stock taxes, and \$1,525.00 to State and county taxes.

Substantially all of the Miscellaneous Operating Income (line No. 26) represents the operating results of the California Fuel Oil Department of Southern Pacific Company during the eight months following April 30, 1917, when it was taken over by Southern Pacific Company from Kern Trading & Oil Company. The practice, that prevailed during the existence of the Kern Trading & Oil Company, of charging the field market price of its produced oil to railroad operations, has been continued, and the earnings resulting from the difference between the field market price and the cost of production has reached the treasury as net revenue from these operations, instead of in the shape of a dividend of the Kern Trading & Oil Company.

NONOPERATING INCOME.

In the foregoing statement of Income there has been excluded both from Income from Funded Securities (line No. 35), and from Interest on Funded Debt (line No. 47), for this year and last, the interest paid and received on bonds of the Proprietary Companies owned by Southern Pacific Company and its Proprietary Companies.

INCOME ACCOUNT.

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES—COMMON STOCK.
(Excluding offsetting accounts.)

OPERATING INCOME.		This Year.	Last Year.	Difference.	Per Cent.	
RAILWAY OPERATING REVENUES.						
1.	Freight	\$132,608,207.37	\$112,460,567.07	+	\$20,147,640.30	17.92
2.	Passenger	45,280,193.42	37,112,446.60	+	8,267,746.42	22.28
3.	Mail and express	7,358,576.01	6,689,086.40	+	669,489.61	10.01
4.	All other transportation	3,443,374.36	2,884,099.33	+	559,275.03	19.39
5.	Incidental	5,119,897.68	4,250,538.51	+	869,359.17	20.45
6.	Joint facility—Credit	91,957.19	58,534.52	+	33,422.67	57.10
7.	Joint facility—Debit	30,716.09	25,499.11	—	2,866.68	10.29
8.	Total railway operating revenues	\$193,971,489.54	\$163,427,423.02	+	\$30,544,066.52	18.69
RAILWAY OPERATING EXPENSES.						
9.	Maintenance of way and structures	\$17,522,352.09	\$18,049,584.78	—	\$527,232.69	2.92
10.	Maintenance of equipment	24,261,506.62	23,709,002.02	+	681,599.55	2.87
11.	Total maintenance	\$41,783,858.71	\$41,629,491.85	+	\$154,366.86	.37
12.	Traffic	\$3,131,416.73	\$3,105,898.74	+	\$25,517.98	.8
13.	Transportation	68,278,180.17	52,388,389.60	+	16,390,141.47	31.29
14.	Miscellaneous operations	2,729,401.64	2,232,869.04	+	496,532.60	22.24
15.	General	4,584,981.92	4,146,810.30	+	438,171.62	10.57
16.	Transportation for investment—Credit	406,266.64	414,622.41	—	8,355.77	2.02
17.	Total railway operating expenses	\$120,601,822.82	\$103,088,736.52	+	\$17,513,086.30	16.99
18.	Net revenue from railway operations	\$73,369,666.72	\$60,338,686.50	+	\$13,030,980.22	21.60
19.	RAILWAY TAX ACCRUALS	\$13,799,176.15	7,611,444.41	+	\$5,522,893.89	72.43
20.	UNCOLLECTIBLE RAILWAY REVENUES	70,237.57	9,043.03	+	9,043.03	12.73
21.	Railway operating income	\$59,507,252.98	\$77,000,000.00	—	\$17,492,747.02	29.09
22.	REVENUES FROM MISCELLANEOUS OPERATIONS	\$12,798,435.07	—	+	\$12,798,435.07	—
23.	EXPENSES OF MISCELLANEOUS OPERATIONS	7,127,017.02	—	+	\$7,127,017.02	—
24.	Net revenue from miscellaneous operations	\$5,671,418.05	—	+	\$5,671,418.05	—
25.	TAXES OF MISCELLANEOUS OPERATING ENTERPRISES	\$99,800.00	—	+	\$99,800.00	—
26.	Miscellaneous operating income	\$5,571,558.03	—	+	\$5,571,558.03	—
27.	Total operating income	\$65,078,811.01	\$52,008,199.68	+	\$13,070,611.33	25.13
NONOPERATING INCOME.						
28.	Hire of equipment—Balance	\$1,611,312.75	—	+	\$2,604,342.35	—
29.	Joint facility rent income	474,447.08	—	+	163,544.62	32.60
30.	Income from lease of road	29,149.86	—	+	9,185.25	46.61
31.	Miscellaneous rent income	421,114.42	—	+	100,247.60	23.81
32.	Miscellaneous nonoperating physical property	263,375.18	275,217.69	—	11,842.51	4.50
33.	Separately operated properties—Profit	20,960.34	—	+	20,960.34	—
34.	Dividend income	2,358,650.65	4,384,005.32	—	1,995,354.67	45.51
35.	Income from funded securities—Bonds and notes—Affiliated and other companies	2,188,594.29	3,803,189.92	—	1,614,595.63	42.45
36.	Income from funded securities—Investment advances—Affiliated companies	—	1,056,047.38	—	513,090.20	48.66
37.	Income from unfunded securities and accounts	1,045,011.18	667,083.30	+	377,927.88	56.65
38.	Income from sinking and other reserve funds	687,337.18	672,738.84	+	14,598.34	2.17
39.	Miscellaneous income	112,926.88	774,995.27	—	187,322.15	16.60
40.	Total nonoperating income	\$10,778,032.80	\$11,636,116.36	—	\$858,083.56	7.95
41.	Gross income	\$75,856,843.81	\$63,644,316.04	+	\$12,212,527.77	19.19
DEDUCTIONS FROM GROSS INCOME.						
42.	Hire of equipment—Balance	—	\$527,669.97	—	\$527,669.97	—
43.	Joint facility rents	\$332,837.13	354,144.21	—	21,307.08	6.43
44.	Rent for leased roads	168,315.91	700,750.37	—	532,434.46	73.98
45.	Miscellaneous rents	519,068.06	—	—	519,068.06	—
46.	Miscellaneous tax accruals	626,176.48	—	—	626,176.48	—
47.	Interest on funded debt—Bonds and notes	24,219,075.12	24,378,863.52	—	159,788.40	.66
48.	Interest on funded debt—Nonnegotiable debt to affiliated companies	284,996.66	311,190.85	—	26,194.19	9.19
49.	Interest on unfunded debt	34,279.10	26,135.87	—	8,143.23	23.46
50.	Amortization of discount on funded debt	217,216.81	223,366.60	—	6,149.79	2.82
51.	Maintenance of investment organization	183,737.17	113,077.11	+	24,760.06	13.47
52.	Miscellaneous income charges	182,724.49	129,772.36	+	52,952.13	29.01
53.	Total deductions from gross income	\$26,727,426.93	\$38,221,802.08	—	\$11,494,375.15	30.30
54.	Net income	\$49,129,416.88	\$25,422,513.96	+	\$23,706,902.92	93.25
DISPOSITION OF NET INCOME.						
55.	Income applied to sinking and other reserve funds	\$978,096.81	—	—	\$978,096.81	—
56.	Income balance transferred to credit of Profit and Loss	\$48,151,320.07	—	—	\$48,151,320.07	—
57.	Per cent of net income on outstanding capital stock of Southern Pacific Company	17.65	—	—	17.65	—

* Debit.

The income for the year from Hire of Equipment—Balance (line No. 28) increased from \$1,611,312.75 to \$1,611,312.75, and equipment hire \$2,604,342.35, and the deductions from gross income (line No. 42) decreased \$527,669.97. This is an increase in income compared with last year of \$31,320,123.32.

The increase of \$163,544.62 in Joint facility Rent Income (line No. 29) is due, principally, to a debit adjustment made in this account last year in establishing a reserve for the replacement of certain terminal facilities.

The decrease of \$100,247.69 in Miscellaneous Rent Income (line No. 31) is due, principally, to the inclusion in this account last year of rental on property which has since been sold, and to certain adjustments in the account this year.

The increase of \$20,960.34 in Separately Operated Properties—Profit (line No. 33) is the result of including in this account this year, in accordance with regulations of the Interstate Commerce Commission, certain items which were included last year in Miscellaneous Income.

The decrease in Dividend Income (line No. 34) is due, principally, to the fact that last year's income included a dividend of \$2,100,000 received

from the Scott Lumber & Oil Company, the property of which was purchased this year by the Southern Pacific Company.
The decrease in Income from Funded Securities—Bonds and Notes (line No. 35) is the result, principally, of excluding from the income account this year the interest on Pacific Electric Railway Company bonds, which was not earned.

The decrease of \$513,909.20 in Income from Funded Securities—Investment Advances—Affiliated Companies (line No. 36) is the result, principally, of reductions during the year in the indebtedness of affiliated companies to Southern Pacific Company.

The increase of \$377,927.88 in Income from Unfunded Securities and Accounts (line No. 37) is due, principally, to interest received on larger balances this year, and to interest received on surplus funds invested during the year in U. S. A. Certificates of Indebtedness.

The increase in Miscellaneous Income (line No. 39) is due, principally, to the inclusion in last year's figures of certain debit adjustments on account of changes in classification.

DEDUCTIONS FROM GROSS INCOME.

The increase of \$5,244.46 in Rent for Leased Roads (line No. 44) is the result, principally, of including in said account last year \$425,949.36 paid by the Inter-Oregon Ry. Co., Phoenix & Eastern R. R. Co., Porterville Northeastern Ry. Co., and Tucson & Nogales R. R. Co., which companies Northeastern Ry. Co. and Tucson & Nogales R. R. Co., which companies last year \$45,000 paid to the Beaverton & Willburg R. R. Co., the property of which was purchased by the Southern Pacific Company on July 1, 1916, and \$866,993 paid to the Coast Line Ry. Co. and Hamilton & Summit Lake R. R. Co., the properties of which were purchased by the Southern Pacific Railroad Company as of midnight December 31, 1916.

The decrease of \$137,536.73 in Miscellaneous Rents (line No. 45) is due, principally to the fact that following the taking over of the Company's steamship by the Government, hereinafter mentioned, the rental for piers at New York, New Orleans, and Galveston was charged to the account of the Government.

The decrease of \$269,050.55 in Miscellaneous Tax Accruals (line No. 46) is the result, principally, of including this year in Railway Tax Accruals, in accordance with ruling of the Interstate Commerce Commission, certain taxes which last year were included in this account.

The decrease of \$59,788.40 in Interest on Funded Debt—Bonds and Notes (line No. 47) is the result, principally, of the acquisition by the Southern Pacific Company since December 20, 1915, of approximately \$24,727,000 par value, of bonds issued under Central Pacific Railway Company Four Per Cent. Thirty-Five Year European Loan of 1911, the interest on which has been excluded in the foregoing income statement, both from Interest on Funded Debt (line No. 47) and Income from Funded Securities (line No. 35); and of including this year a full year's interest charge on Southern Pacific Company Equipment Trust Certificates—Series D, issued in May, 1916.

The increase of \$24,760.06 in Maintenance of Investment Organization (line No. 51) is due, principally, to the payment during the year of legal expenses in connection with the suit over the Oregon & California Railroad's land grant.

The increase of \$52,952.13 in Miscellaneous Income Charges (line No. 52) is on account of an increased amount of taxes paid on tax exempt bonds, and to an increased amount of taxes paid the French Government on bonds issued under Central Pacific Railway Company Four Per Cent. Thirty-Five Year European Loan of 1911.

On December 31, 1917, the principal of advances to the Southern Pacific Railroad Company of Mexico amounted to \$40,617,228.66. Interest accruing on these advances has not been taken into the income of the Southern Pacific Company.

CAPITAL STOCK.

The capital stock of the Southern Pacific Company outstanding at the beginning of the year amounted to \$272,822,905.64. Issued during the year:

Common stock issued in exchange for a like amount of Five Per Cent. Twenty-Year Convertible Gold Bonds surrendered and cancelled. 500.00

Amount of Southern Pacific Company stock outstanding December 31, 1917. \$272,823,405.64

The common and preferred capital stocks of Proprietary Companies outstanding at the beginning of the year amounted to \$343,834,900.00

At:

Capital stocks of following companies not heretofore dealt with as "Proprietary Companies":

Inter-California Railway Co. \$2,500,000.00
Phoenix & Eastern Railroad Co. 2,381,500.00
Porterville Northeastern Railway Co. 300,000.00
Tucson & Nogales Railroad Co. 66,000.00

5,247,500.00

Total capital stock of Proprietary Companies outstanding December 31, 1917. \$349,082,400.00

Stocks of Proprietary Companies outstanding December 31, 1917, were held as follows:

In hands of public. \$81,700.00
Owned by Southern Pacific Company. \$348,700,700.00
Owned by Morgan's Louisiana & Texas Railroad & Steamship Company. 300,000.00

349,000,700.00

\$349,082,400.00

FUNDED DEBT

The funded debt and other fixed interest bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1916, was as follows:

Southern Pacific Company. \$209,482,110.00
Proprietary Companies. 453,597,429.24

Total outstanding December 31, 1916. \$663,079,539.24

First Mortgage Six Per Cent. Bonds of the Coast Line Ry. Co., the property of which was purchased by the Southern Pacific Railroad Company as of midnight December 31, 1916, subject to the mortgage indebtedness. \$700,000.00

Funded debt of the following

companies, not heretofore dealt with as "Proprietary Companies":
Inter-California Railway Company. \$870,000.00
Phoenix & Eastern Railroad Company. 2,851,810.64
Porterville Northeastern Railway Company. 300,000.00

1-1-1916

4,760,810.64

\$667,781,349.88

Purchased or retired during the year:

SOUTHERN PACIFIC COMPANY

Four Per Cent. Gold Bonds (Central Pacific Stock Collateral).

Purchased from general funds and held in the treasury. \$1,841,000.00

Four Per Cent. Twenty-Year Convertible Gold Bonds.

Purchased from general funds and held in the treasury. 67,000.00

San Francisco Terminal First Mortgage Four Per Cent. Bonds.

Purchased from general funds and held in the treasury. \$37,000.00

Purchased from payments to sinking fund and cancelled. 5,000.00

Five Per Cent. Twenty-Year Convertible Gold Bonds.

Purchased from general funds and held in the treasury. \$144,000.00

Retired in exchange for a like amount of common stock. 500.00

144,500.00

Equipment Trust Certificates:

Series A, Due March 1, 1917, paid off. \$1,011,000.00

Series R, Due September 1, 1917, paid off. 201,000.00

Series C, Due December 1, 1917, paid off. 117,000.00

Series D, Due May 1, 1917, paid off. \$11,000.00

1,841,000.00

CENTRAL PACIFIC RAILWAY COMPANY

First Refunding Mortgage Four Per Cent. Bonds:

Purchased from payments to sinking fund. \$28,000.00

Three and One-Half Per Cent. Mortgage Gold Bonds:

Purchased from proceeds of sale of lands. 978,500.00

Purchased from payments to sinking fund. 31,000.00

Central Pacific Railroad, California & Oregon Division Five Per Cent. Bonds:

Series A, Due January 1, 1918. 448,000.00

Series B, Due January 1, 1918. 41,000.00

1,526,500.00

HOUSTON & TEXAS CENTRAL RAILROAD COMPANY.

First Mortgage Five Per Cent. Bonds:

Purchased from proceeds of sale of lands. 28,000.00

OREGON & CALIFORNIA RAILROAD COMPANY.

First Mortgage Five Per Cent. Bonds:

Purchased from payments to sinking fund. 30,000.00

SOUTH PACIFIC COAST RAILWAY COMPANY.

First Mortgage Four Per Cent. Bonds:

Purchased from payments to sinking fund. 225,000.00

SOUTHERN PACIFIC RAILROAD COMPANY.

First Refunding Mortgage Four Per Cent. Gold Bonds:

Purchased from payments to sinking fund. 13,000.00

TEXAS & NEW ORLEANS RAILROAD COMPANY.

Payment to State of Texas on account of School Fund Debt. 5,088.55

Total purchased or retired during the year. \$4,632,888.55

Amount of funded and other fixed interest bearing debt of the Southern Pacific Company and of its Proprietary Companies, outstanding December 31, 1917. \$663,129,261.33

The outstanding securities are held as follows:

In the hands of the public. \$553,968,670.66

Owned by Southern Pacific Company. \$94,947,590.67

Owned by Proprietary Companies. 2,742,000.00

Held in sinking funds of Proprietary Companies. 11,471,000.00

109,160,590.67

Total. \$663,129,261.33

ROAD AND EQUIPMENT

Two ocean-going freight steamers, the El Almirante and the El Capitan, of 10,350 tons displacement, each, and the ocean-going tank steamer, Torres, of 11,110 tons displacement, were added to your Company's fleet during the year.

To replace equipment vacated and to provide for increased requirements, your Company placed orders during the year for 57 locomotives, 41 passenger-train cars, and 718 freight-train cars, for delivery in 1918; and is building at Company's shops 56 locomotives, and 3,808 freight-train cars. The cost of this rolling stock will be about \$16,650,000.

LIBERTY LOAN.

To enable the employees of your Company and of its affiliated companies to subscribe for Liberty Loan bonds, they were permitted to subscribe through the Company for an amount of such bonds not exceeding twenty-five per cent. of their yearly salaries, the Company advancing the subscription price of the bonds and charging interest on such advances at the bond rate, the amounts so advanced to be repaid to the Company by monthly salary deductions. The following statement shows the bonds of

THE SUIT INVOLVING THE RIGHT OF THE SOUTHERN PACIFIC COMPANY TO OWN THE STOCK OF THE CENTRAL PACIFIC RAILWAY COMPANY.

On March 9, 1917, the United States District Court at Salt Lake City decided this suit in favor of the Southern Pacific Company. The Government has taken an appeal from this decision to the Supreme Court of the United States, but it has not yet shown any disposition to avail itself of the right conferred by the Expedition Act to secure a prompt hearing of its appeal. It may be that the appeal will not be brought on for hearing by the Supreme Court so long as railroads are being operated by the President.

CONTROVERSY OVER THE OREGON AND CALIFORNIA RAILROAD'S LAND GRANT.

On June 9, 1916, Congress passed an act vesting in the United States the unsoled lands of the Oregon and California Land Grant. The act provided for the payment to the Oregon and California Railroad Company, its successors or assigns (or to those having liens on the land) of compensation for the lands unsold at the rate of \$2.50 per acre, less whatever amounts it might be determined, in a suit which the Attorney General was directed to bring for the purpose, the United States was entitled to offset on account of any money the grantee had received from the lands in excess of \$2.50 an acre by reason of past sales, leases or otherwise. The right of the United States to be reimbursed for payments made by the Government to the State of Oregon for taxes levied since the forfeiture decision of 1913, was another question to be presented in the contemplated suit. Such a suit was recently instituted and is now pending in the United States Court for the District of Oregon. Our counsel will do what they can to expedite the trial of this accounting suit in order that the balance due us for the unsold lands may be ascertained and paid.

THE SUITS INVOLVING TITLE TO THE OIL LANDS.

The taking of testimony in these cases has been concluded, and in April, 1918, the cases were argued and submitted to the United States District Court in California. They are now under advisement. A few days after the submission of these cases the United States Court of Appeals for the Ninth Circuit decided in our favor a suit which the Government had brought to cancel patents to certain lands alleged but not proven to be oil lands. In arriving at its decision the Court of Appeals rendered an opinion which supported our contentions in the oil land cases now under advisement in the lower court. Hence, the prospects of a decision confirming our title to the oil lands are encouraging.

GENERAL.

Dividends on the capital stock of your Company were declared during the year, payable as follows:

1 1/2 per cent paid April 2, 1917.....	\$4,092,346.42
1 1/2 per cent paid July 2, 1917.....	4,092,351.08
1 1/2 per cent paid October 1, 1917.....	4,092,351.08
1 1/2 per cent, payable January 1, 1918.....	4,092,351.08
	\$16,369,399.66

With the exception of occasional bandit and Indian raids, the revolutionary disturbances on the line of the Southern Pacific Railroad of Mexico practically ceased in the early winter of 1916-17. It is estimated that the cost of property destroyed from the beginning of the Madero Revolution, in 1910, to December 31, 1917, will approximate 4,923,241 pesos, equivalent to \$2,461,621. As stated in previous reports claims amounting to 287,953 pesos, on account of these losses, were filed with the Madero Government, and were approved, but have not been paid, and on account of unsettled conditions no further claims have been filed. The President of the United States, Mexico, under date of November 24, 1917, authorized such formation of a commission to the investigation of claims, but as yet the members of the commission have not been appointed. As soon as conditions permit, claims will be filed to the aforesaid losses, as well as for some \$2,000,000 net returned due to the United States for freight and passenger services performed but not paid for road equipment and for materials furnished to and consumed by the various military authorities. The average mileage of road operated during the year was 1,005 miles, an increase of about 221 miles over the average mileage of road operated during the year ended June 30, 1916. The only serious outbreak of the unsettled conditions, only such maintenance work was done during the year as was absolutely necessary to render it possible to operate trains over those portions of the line that were open for traffic.

In addition to the completed lines of railway reported under Priorities and Mileage, and the still incomplete line of the Southern Pacific Railroad Company of Mexico, construction is progressing on the lines of the following companies, viz:

	DESIGNED TO BE COMPLETED LINE MILES	TRUCK COM- PLETED MILES	GRADING COM- PLETED MILES	GRADING COM- PLETED MILES
SAN DIEGO & ARIZONA RAILWAY	61.3	48.36	10.31	5.66
Interference to Honolulu, Cal.				
CHICAGO & HARVESTING & SAN AN- TONIO RAILWAY	2,700	7.30	13.50	1.00
Interference to Houston, Missouri, Texas				
PAUL & ELIZABETH RAILWAY	43.07	5.07		
Interference to Lubbock, Texas				
VISUAL INSURANCE RAILROAD	16.36	16.36		
Interference to Springfield				
California Cattle Company Spur, Cal.	1.40	.97		
Interference to Phoenix, South				
* SAN DIEGO & ARIZONA RAILWAY	146.97	135.10		11.78

* 34.4 miles closed for traffic on September 10, 1917, and 1.63 miles on February 1, 1918. * Jointly controlled through ownership of capital stock in equal proportions with Spreckels Brothers.

On October 1, 1916, litigation of four years and seven months' standing, that had grown out of relations established by the late Mr. E. H. Harriman with the Spreckels Brothers, John D. and A. B., to build the San Diego & Arizona Railway from San Diego, California, to a point in the Imperial Valley on the line of your Inter-California Railway, was terminated and all differences composed by the execution of agreements which provide that:

1. Common Stock of the San Diego & Arizona Railway Company to the amount of \$2,000,000 be authorized.
2. \$6,000,000 7 per cent cumulative preferred stock, preferred both as to income and assets, be authorized.
3. \$12,000,000 6 per cent, first mortgage bonds be authorized.
4. Each party to receive \$1,000,000 of common stock at par in payment of cash advance in the same amount.
5. Each party to receive preferred stock at par in payment of other cash advances made prior to October 1, 1916, with accrued interest; the holdings, however, of the two parties to be equalized by the purchase by Spreckels Brothers of one-half the excess holdings of the Southern Pacific Company.

6. Each party to pay one-half of \$1,430,000 advanced to San Diego & Arizona Railway Company by local banks, and to receive therefor first mortgage 6 per cent bonds of equal value.

7. Southern Pacific Company to advance the funds necessary to complete the line (146.97 miles total) estimated to be about \$5,000,000. Reimbursement to be made in first mortgage 6 per cent bonds at face value.

The completion of this line of road, of which but 11.78 miles are uncompleted at this date, will enable your Company to serve San Diego, a rapidly growing seaport, at which the United States Government has recently established a large and very important naval base, with the shortest line from the middle West; and it will also connect San Diego with the rapidly developing Imperial Valley, which is now settled with 60,000 inhabitants, and 600,000 acres in cultivation, producing hay, grain, dairy products, hogs, and cattle, which will certainly create a heavy local business. The distance from El Centro, the centre of Imperial Valley, to San Diego by rail via Los Angeles, now 339 miles, will be reduced to 147 miles by the completion of this line.

Under the pension system put into effect on January 1, 1903, nine hundred and sixteen employees are carried on the pension rolls of the rail and water lines. The payments to them for the year amounted to \$393,369.59. The payments of pension allowances for the six months ended December 31, 1916, which were not mentioned in the abridged report as of the latter date, amounted to \$187,766.31.

FEDERAL CONTROL AND OPERATION.

On December 28, 1917, the President of the United States took over the possession, control, and operation of your railroad and steamship lines, under terms and conditions which thereafter were embodied in the Act of Federal Control, which the President has since amended.

1. Compensation for the use of the property taken over, to be fixed by agreement between the President and each carrier company or by suit in the Court of Claims.
2. The President is authorized to agree with each company upon an annual compensation not exceeding the sum equivalent to the average annual railway operating income of the carrier for the three years ended June 30, 1917. The railway operating income is determined by subtracting:

- (a) Operating expenses;
 - (b) Uncollectible railway revenues; and
 - (c) Railway tax accruals, excluding war taxes;
- from the revenues accruing from the carriage of freight, passenger, mail, express, etc. The railway operating income thus determined is to be increased or diminished by the net earnings or losses, as the case may be, from equipment rents and joint facility rents.
- (It is contemplated that an agreement with the President, if made, shall not only fix the compensation but shall contain adequate provisions respecting:

- (a) Upkeep;
- (b) Betterments and additions;
- (c) Accounting;
- (d) Payment of compensation;
- (e) Deductions from compensation, etc.

At this writing representatives of the President and of the railroads are conferring in the effort to agree upon appropriate standard clauses for the agreement defining their respective rights and obligations.)

3. An estimate of the annual rental to be paid by the Government, assuming that all the transportation properties stand under the head of "Properties and Mileage" on page 5 of this report are taken over by the Government, is \$41,854,320.

The net miscellaneous rents, and leased road rents, accrue to the Company. The annual rental to be provided by an amount reckoned at a reasonable interest rate to be fixed by the President, upon the cost of any additions and betterments, less retirements, and cost of road extensions made with the approval or by order of the President while the property is under Federal control.

4. War taxes to be paid by the carrier out of its corporate funds.

5. The property to be adequately maintained, repaired, renewed, and depreciation covered, so that it may be returned in substantially as good repair and as complete equipment as it was at the beginning of Federal control.

6. Electric street and interurban railroad properties are excluded from Federal control.

7. If the agreement authorized by the Act is not made, a judicial arbitration, the award of which is to be provided for, the President or the Company's claim for compensation is to be referred to a board of three referees to be appointed by the Interstate Commerce Commission; if the report of this board is satisfactory to the President and the Company an arbitrator may be named by the President, or otherwise a resort must be had to the Court of Claims to have the amount of compensation determined, in which event the report of the referees is to be taken as *prima facie* correct. Neither the referees nor the Court are bound to adopt the measure of compensation based on previous earnings. Payment of the award of the Court must await Congressional appropriation. In the meantime the President, at his option, may pay not exceeding 90 per cent. of the estimated annual just compensation due the carrier.

8. Dividends during Federal control not to exceed the regular rate of dividends during the last year.

9. The President may order any carrier to make, at its own expense, additions, betterments, or road extensions, and to provide terminals, equipment, etc. He may advance all or part of the expenditure on interest rates to be fixed by him, or he may deduct all or part from the just compensation due the carrier. Any loss claimed by the carrier, if not determined by agreement, may be submitted to a board of referees and to the Court of Claims. (The indebtedness which may be imposed upon the carrier under this paragraph is unlimited.)

10. Carriers may issue securities, secured or unsecured by mortgage, for the purpose of providing funds for maturing obligations or for other proper expenditures, as the President may approve.

11. The President to prescribe rates, fares, charges, classifications, and practices, which take effect as he may direct, subject, however, to review by the Interstate Commerce Commission.

12. The period of Federal control to continue during the war, and thereafter not to exceed 21 months following the declaration of peace.

13. Money to be operated under Federal control to be the property of the United States.

This assumption of the control and operation of the railroads of the United States by the Government, on December 28, 1917, marked an epoch in their history. On that day the era of management and control by the owners of the property, which had existed since their organization, ended, and one of indefinite duration under Government management began. The year 1917 closed with the *esprit de corps* and discipline of your working organization, the physical condition of your property, and the safety and other results of your operation, at a higher standard than ever before had been attained. Therefore the time seems appropriate to survey the achievements of 32 years, so as to form an idea of the growth of your property and the returns from its operation, by comparing data for the first calendar year of management (1917) with the corresponding data of the last year of private management (1916). The time operation since their organization, ended, and sources of information for making the following comparisons, and the balance sheets translated into ordinary conversational language give an idea

of the ownership of the property interests and financial strength of the Southern Pacific Company.

COMPARATIVE OPERATIONS OF SOUTHERN PACIFIC SYSTEM IN 1886, THE FIRST COMPLETE CALENDAR YEAR OF OPERATION, AND IN 1917, THE LAST YEAR OF OPERATION BY ITS STOCKHOLDERS.

	Year Ended Decem- ber 31, 1917.	Year Ended Decem- ber 31, 1886.	Per Cent. of In- crease.
NUMBER OF STOCKHOLDERS OF SOUTHERN PACIFIC COMPANY.			
1. Average miles of road operated.	37,088 11,137	91 4,846	129.82
2. Freight revenue	\$132,608,207	\$18,668,421	610.33
3. Tons miles of freight	14,803,735,481	1,439,113,580	928.67
4. Revenue per ton mile of freight	.923 cents	1.297 cents	(c) 28.84
5. Freight train miles	24,550,167	(a) 9,616,218	155.30
6. Tons of freight per loaded and empty car	17.76	8.07	110.07
7. Revenue per freight train mile	\$5.04	(b) \$1.94	159.80
8. Tons of freight per train mile	602.98	149.66	302.90
9. Passenger revenue	\$45,380,193	\$8,464,727	436.11
10. Passengers carried one mile	2,024,390,972	398,031,884	408.60
11. Passenger train miles	31,085,797	(a) 5,953,054	422.18
OPERATING INCOME.			
12. Total operating revenue	\$193,971,490	\$31,797,882	510.01
13. Net revenue from miscellaneous operations, hire of equipment, and net rentals	8,080,390	284,797	2,737.25
14. Total revenue	\$202,051,880	\$32,082,679	529.79
15. Total operating expenses and uncollectible revenue	\$120,672,060	\$18,514,656	551.77
16. Railway tax accruals	13,792,176	888,623	1,452.08
17. Total expenses and taxes	\$134,464,236	\$19,403,279	593.00
18. Operating income including hire of equipment and net rentals	\$67,587,644	\$12,679,400	433.05
OTHER INCOME.			
19. Interest and dividends received on securities owned, and other income	\$7,248,979	\$544,535	1,231.22
20. Total gross income	\$74,836,623	\$13,223,935	465.92
DEDUCTIONS FROM GROSS INCOME.			
21. Interest on funded debt	\$24,219,075	\$8,754,810	176.64
22. Other payments	1,488,131	358,131	315.53
23. Total deductions from gross income	\$25,707,206	\$9,112,941	182.10
24. Net income	\$49,129,417	\$4,110,994	1,095.07
DISPOSITION OF NET INCOME.			
25. Income applied to sinking and other reserve funds	\$978,097	\$1,196,772	(c) 18.27
26. Income balance transferred to credit of Profit and Loss	\$48,151,320	\$2,914,222	1,552.29
27. Per Cent. of net income on outstanding capital stock of Southern Pacific Co.	17.65	3.27	439.76
28. Cost of road and equipment	\$983,482,275	\$396,626,000	147.96

(a) Figures for 1886 represent locomotive miles, train miles not obtainable.
(b) Based on freight locomotive miles, freight train miles not obtainable.
(c) Decrease.

In the ten years ending December 31, 1917, the Company transported 422,000,000 passengers with but one fatality in a train accident.

By the exercise of greater care in inspecting and purchasing, the failures of rails per 100 miles of track, equated as to traffic borne, have fallen 35 per cent. in eight years, and in number are but one-fourth as many as those on all railroads in the United States and Canada, based on the latest available data.

Nineteen per cent more gross ton miles per pound of fuel consumed, 45 per cent more ton-miles per freight car, and 86 per cent more ton-miles per freight locomotive owned were moved in 1917 than in 1900.

On December 31, 1917, the combined obligations (debts), of the description of your Company, consisting of the property interests, consisting of amounts owed to security holders, employees, tradesmen, connecting lines, tax collectors, and others (not including \$51,874,598.08 of accrued depreciation on road, equipment, and miscellaneous physical property) amounted to \$1,382,264,737 57

The companies held to meet such obligations assets (property) amounting to \$1,685,075,159 29 as follows:

(1) Book value of the investment in transportation property carried on the books of the companies forming the Southern Pacific steam transportation system, consisting of 11,164 miles of first main track, 561 miles of additional main track, 4,150 miles of yard track and sidings, 25 ocean steamships, 5 river steamships, 18 ferry boats and car transfers, 10 tugs, 63 barges, and 19 other vessels, the whole forming a transcontinental system extending from New York City, via New Orleans and Galveston to San Francisco, Cal., and Portland, Ore., with a line extending from Ogden, Utah, to San Francisco, Cal.	983,482,275 20
(2) Sinking funds for the redemption of outstanding funded debt, consisting of interest-bearing securities, and cash in the hands of trustees, the income from which, for the year amounted to \$687,322.39.	13,711,547 27
(3) Investments in miscellaneous physical property consisting principally of (a) the California Fuel Oil Department of Southern Pacific Company with an annual production of about 9,500,000 barrels of oil, and annual gross earnings of approximately \$17,000,000, and (b) terminal and other real estate acquired in anticipation of future use.	30,778,341 24

41. Investment in affiliated companies.

These investments in affiliated companies are represented by property as follows:

Stocks and bonds of proprietary companies of the par value of \$446,690,290.67, included in the outstanding obligations hereinbefore mentioned but which are owned by the Southern Pacific Company and its proprietary companies.

ELECTRIC RAILWAYS.

	Miles of Road Operated
Fresno City Railway and Fresno Traction Company	26.71
Pacific Electric Railway Company	612.39
Peninsular Railway Company	63.60
San Jose Railroads	28.46
Stockton Electric Railroad Company	12.74
Visalia Electric Railroad Company	36.58
Total	780.48

STEAM RAILWAYS—FULL OWNERSHIP

	Miles of Road Operated
Southern Pacific Railway Company	37,088
STEAM RAILWAYS—HALF OWNERSHIP	
San Diego & Arizona Railway Company	146.97
Independence & Monmouth Railway Company	2.50
Northwestern Pacific Railroad Company	507.30
San Diego & Arizona Railway Company (11.78 miles under construction)	11.78
Sunset Railway Company	59.66
Total	716.43
Grand Total	1,496.91

OTHER COMPANIES.

Allison Lumber Company. 23,019 acres redwood timber, with saw mill and logging roads.
Associated Oil Company. 50.48 per cent. of authorized stock owned by S. P. Co.; annual gross earnings, \$28,000,000; annual production, including subsidiaries, 10,000,000 barrels of oil.
Associated Pine Line Company. (One-half of authorized stock owned by S. P. Co. and one-half by Associated Oil Company); 561 miles of eight inch oil pipe lines, 50,000 barrels daily capacity.
Beaver Hill Coal Company. 924 acres coal lands, Coos County, Oregon.
East Coast Oil Company. Annual gross earnings \$1,300,000; annual production 3,150,000 barrels of oil; development of oil near Tampico, Mexico, on leased lands.
Pacific Fruit Express Company. Owned half by Southern Pacific Company and half by Union Pacific Railroad. 14,233 ventilated refrigerator cars.
Rockaway Pacific Corporation. 563.95 acres on Jamaica Bay, near Brooklyn, N. Y.
Rio Bravo Oil Company. Annual production 320,000 barrels of oil.
Southern Pacific Building Company. Office building, Houston, Texas.

(5) Other investments in affiliated companies.

(6) Current, deferred, and unadjusted assets consisting of:

Cash assets	27,319,549 20
Material and supplies	24,406,115 91
Deficit assets and unadjusted items	25,352,674 22

Grand total of assets. \$1,685,075,159 29

which exceeds all debts and obligations, including the outstanding capital stock, by an amount of \$302,810,421.72, of which \$51,874,598.08 represents reserves for accrued depreciation and \$250,935,823.64 represents an invested surplus which is equivalent to nearly 92 per cent. of the outstanding capital stock.

In addition the net income of the companies for the year ending December 31, 1917, was allocated thus:

(a) Central Pacific Railway Company	7,076,215 acres
(b) Houston & Texas Central Railroad Company	18,658 "
(c) Southern Pacific Land Company	3,883,915 "

and have a claim against the United States for the value of 2,353,446 acres of unsold lands of the Oregon & California Railroad land grant taken over by the Government under Act of Congress passed June 9, 1916, as more fully explained above.

Prior to 1905, when the first dividend was paid, the surplus accruing each year from the date of the organization of the Company in 1884 was reinvested in the property, and the same course has been followed with the surplus remaining each year, from 1906 to date, after the payment of dividends. As a result of this policy, 46 cents of each dollar of surplus earned during the Company's existence have been paid in dividends and 54 cents of each dollar have been put back into the property.

The Board is grieved to announce the death, on May 13, 1918, of Mr. William Mahl, formerly Vice-President and Controller of your Company. Mr. Mahl was connected with the Southern Pacific Company in various capacities of responsibility and trust, all of which he filled with conspicuous ability and fidelity from the date of its organization in 1884 to April 1, 1913, when he was retired on pension.

The Board takes pleasure in conveying to the officers and employees of the Company its appreciation of their loyal and efficient service, which has produced results far exceeding in excellence any ever attained in the history of the Company.

Financial and Construction

Railway Financial News

ALABAMA, TENNESSEE & NORTHERN.—This property has been bought by the bondholders' committee for \$225,000.

BALTIMORE & OHIO.—Speyer & Co. and Kuhn, Loeb & Co., both of New York, have arranged for the extension for 60 days of \$8,000,000 Baltimore & Ohio notes. These notes are secured by deposit of Reading common and preferred stock and were placed in January. They became due July 31. Besides these \$8,000,000 notes which are due October 1, there are \$10,500,000 notes sold about a month ago, which will also mature on October 1.

CHICAGO, MILWAUKEE, & ST. PAUL.—The following is from a circular sent out by A. J. Earling, chairman of the board of directors of the Chicago, Milwaukee & St. Paul: There have been many inquiries respecting the non-payment of dividends on the capital stock of the company, the last dividend having been declared in July, 1917, and paid in September, 1917. The government on December 28, 1917, took over the possession and operation of the company's railroad and system of transportation, including all balances then due from its agents and conductors, all cash on hand as working capital and all materials and supplies. On March 21, 1918, Congress passed the so-called Federal Control Act, which provides, among other things, for the payment of compensation by the government for the possession and operation of railroads and systems of transportation taken over, not exceeding the average annual railway operating income for the three years ended June 30, 1917. The amount of this average annual railway operating income has not yet been certified to the President by the Interstate Commerce Commission as provided by the act, and the agreement between the government and the railway companies, also provided for in the act, has not yet been concluded. The board of directors, therefore, do not deem it advisable at this time to take any action respecting dividends.

SOUTHERN RAILWAY.—The Carolina & North Western, with lines from Chester, S. C., to Edgemont, N. C., 134 miles, has been taken over for operation by the Southern Railway. The company will remain a separate corporation, subsidiary to the Southern.

TOLEDO & CINCINNATI.—This company, which is the successor to the Cincinnati, Hamilton & Dayton, has been granted an extension of time of three months within which to decide on carrying out leases and contracts of the Cincinnati, Hamilton & Dayton.

Railway Construction

CHICAGO GREAT WESTERN.—This company has given a contract to T. S. Leak & Company, Chicago, for a 150-ft. extension to the freight house at Omaha to provide space for the Rock Island. The extension will have brick walls, concrete floor and foundation and Johns-Manville prepared roof, and will be tapering in shape 40 ft. wide at one end and 22 ft. at the other. The extension with additional track facilities will cost about \$20,000. The Great Western also let contracts to the Railroad Water & Coal Handling Company, Chicago, for a 100-ton frame coaling station at Kansas City, to be equipped with Ogle hoist and operated by Fairbanks Morse type Y oil engine, and for a 100-ton frame coaling station at Talmadge, Iowa; also awarded contracts for two 50-ton frame coaling stations same type to the Ogle Construction Company, Chicago, one for Rochester, Minn., and the other for Mason City, Iowa, to cost about \$10,000 apiece.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has given contracts to the Railroad Water & Coal Handling Company for a 600-ton coaling station with 44-ft. hopper and sand drying plant at Burr Oak, Ill.

Railway Officers

Executive, Financial, Legal and Accounting

(OVERSIGHT)

A. H. Plant.—See Operating Officers.

H. G. Morison, general solicitor of the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio of South Carolina, has been appointed assistant general solicitor, with headquarters at Johnson City, Tenn.

D. W. Cooke, vice-president of the Erie, has been appointed federal fuel administrator for New York. To assume his new duties, Mr. Cooke has resigned as chairman of the Traffic Executive Committee of the Allies, but will remain a member of that organization, and will represent it on the Exports Control Committee.

W. C. Mason has been appointed assistant general solicitor of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at Philadelphia, Pa.; **A. H. Elder,** assistant general counsel of the Central of New Jersey, has been appointed assistant general solicitor and **W. A. Barkalow,** assistant general counsel, has been appointed counsel of all the above named roads; both with headquarters at New York.

Theodore H. Burgess, whose appointment as general solicitor of the Erie, with headquarters at New York, has already been announced in these columns, was born September 20, 1882, at Auburn, N. Y., and was educated at Auburn High School, Hamilton College and Albany Law School. He began railway work with the Erie as a law clerk in 1908, and in September, 1911, became assistant to general solicitor. Two years later he was appointed assistant general solicitor, serving in that capacity until his recent appointment as general solicitor of the same road, the New York, Susquehanna & Western, the New Jersey & New York and the Chicago & Erie.

Charles Norris Rambo, whose appointment as manager of the Insurance and Fire Protection Section, Division of Finance and Purchases, of the United States Railroad Administration,

with office at Washington, has already been noted, was born in Norristown, Pa., July 13, 1873, where he has since resided. He graduated from Norristown High School, and began his business career with the Pencoyd Iron Works. In 1895 he entered the employ of the Pennsylvania Railroad under the auditor of freight receipts. In 1898 he was transferred to the Insurance Department, and helped to start the Mutual Fire, Marine and Inland Insurance Company, which was organized by the Pennsylvania, the Baltimore &



C. N. Rambo

Ohio, the Norfolk & Western and other prominent eastern railroads. In 1903 he was elected secretary and superintendent of that company. Its field of usefulness has spread practically over what is known as the Eastern railroad systems. It was organized for the purpose of placing with it a part of the large fire and marine insurances on railroad properties, and through its inspection bureau and educational work it has greatly promoted fire prevention on railroad properties. Mr. Rambo in 1913 was one of the organizers of the Railway Fire Protection

*Refers to appointments under United States Railroad Administration.

Association. He has resigned his place with the Mutual Fire, Marine and Inland Insurance Company and will devote his entire time to his new work.

CORPORATE†

W. F. Turner, controller of the Spokane, Portland & Seattle, was elected president of the Spokane, Portland & Seattle, the Oregon Trunk, the Pacific & Eastern and the Oregon Electric July 18. Mr. Turner succeeds **L. C. Gilman**, who was recently appointed district director of the Puget Sound district.

Changes on the Chicago, Rock Island & Pacific to look after the interest of the corporation are announced as follows: **Charles Hayden**, chairman of the finance committee has been elected president; **N. L. Amster**, director, has been elected chairman of the executive committee succeeding **J. E. Gorman**; **A. C. Riegway** continues as vice-president; **George H. Crosby** continues as vice-president; **M. L. Bell** continues as general counsel; **Frank Nay** continues as controller; and **M. L. Bell** has been elected a director to succeed Mr. Gorman.

S. Davies Warfield, chairman of the board of the Seaboard Air Line, with headquarters at Baltimore, Md., has been elected also president of the corporation to succeed **W. J. Harahan**, who resigned to become federal manager; **Martin J. Caples**, vice-president of the Hocking Valley, with office at Columbus, Ohio, and until recently also vice-president of the Chesapeake & Ohio, has been elected vice-president and a director of the Seaboard Air Line; **Robert L. Nutt**, treasurer, with office at Portsmouth, Va., has been elected secretary and treasurer, and **F. L. Nellis** has been elected assistant secretary. The corporation's headquarters is at Baltimore, Md., with branch office in New York.

Operating

GOVERNMENT

C. E. Timpson has been appointed superintendent of car service of the Long Island Railroad, with office at Jamaica, N. Y.

R. V. Taylor, federal manager of the Mobile & Ohio and the Southern Railway in Mississippi, has been appointed federal manager also of the Delta Southern, with office at Mobile, Ala.

A. M. Calhoun, assistant to the president of the Kansas City Southern, with office at Kansas City, Mo., has been appointed assistant to the federal manager, **J. A. Edson**, with the same headquarters.

J. H. Young, federal manager of the Norfolk Southern and the Virginian Railway, has been appointed federal manager also of the Carolina Railroad and the Kinston Carolina Railroad, with office at Norfolk, Va.

E. H. Coapman, federal manager of the Southern Railway and the roads mentioned in the issues of July 19, page 153, and July 26, page 194, has been appointed federal manager also of the State University Railroad, with office at Washington, D. C.

A. J. Chapman has been appointed general agent of the Southern Railway System, with office at New Orleans, La., vice **E. T. Steele**, resigned, and **Walter Shipley** has been appointed general agent, with office at Memphis, Tenn., vice **R. B. Pegram**, promoted.

C. G. Burnham, federal manager of the Chicago, Burlington & Quincy and the Quincy, Omaha & Kansas City, has had his jurisdiction extended over that portion of the Toledo, Peoria & Western, west of Peoria, including the Peoria terminals, the Rockport, Langdon & Northern and the Rapid City, Black Hills & Western.

A. B. Woodward, chief despatcher on the Utah Lines of the Denver & Rio Grande, at Salt Lake City, Utah, has been ap-

pointed trainmaster at Salt Lake, succeeding **C. E. Leverich**, who has been granted a leave of absence to enter government service. **E. Standiford** succeeds Mr. Woodward. **S. E. Willis** has been appointed night chief despatcher, succeeding Mr. Standiford, effective July 22.

J. W. Kelly, Jr., general manager of the Dayton & Union, and superintendent of the Dayton Union Railway, with office at Dayton, Ohio, has been appointed assistant superintendent of the Toledo division of the Baltimore & Ohio, with office at Dayton, vice **E. J. Correll**, transferred. The Dayton Union Railway is now operated as a part of the Toledo division of the Baltimore & Ohio.

C. O. Bradshaw, superintendent of the Illinois and the Racine & Southwestern divisions of the Chicago, Milwaukee & St. Paul, has been appointed general superintendent of the middle district, with headquarters at Milwaukee, Wis., succeeding **P. C. Eldredge**. The latter has been appointed superintendent of the La Crosse division, with headquarters at Milwaukee, succeeding **L. T. Johnston**, who has been transferred to Savannah, Ill., to take the place of Mr. Bradshaw, promoted, effective August 1.

Willis Edward Maxson, whose appointment as general manager of the Gulf, Colorado & Santa Fe, the Ft. Worth & Rio Grande, the St. Louis, San Francisco & Texas, the



W. E. MAXSON

Texas Midland and the International & Great Northern (from Spring to Ft. Worth and Madisonville branch), with headquarters at Galveston, Tex., was announced in the *Railway Age* on July 12, was born at Mapleton, Kansas. Mr. Maxson was educated at the Baker University at Baldwin, Kansas, and entered the service of the Atchison, Topeka & Santa Fe, as clerk and telegraph operator at Girard, Kansas, in February, 1885. From December, 1886, to December, 1889, he was

employed in the engineering department on construction work. The following two years he was relief agent of the Southern division, at Wellington, Kansas, and Wichita. From February, 1891, to October, 1897, he was joint agent for the Atchison, Topeka & Santa Fe, and the Gulf, Colorado & Santa Fe, at Purcell, Okla. On October 1, 1897, he was appointed agent and superintendent of terminals at Galveston, Tex., and in January, 1901, he was appointed superintendent of the Beaumont division, at Beaumont, Tex. From August, 1906, to July 1, 1918, he was general superintendent of the Gulf, Colorado & Santa Fe, at Galveston, which position he held at the time of his appointment as noted above.

C. H. Stein, superintendent of the Central of New Jersey, with office at Jersey City, N. J., has been appointed assistant to general manager of the same road, also of the Philadelphia & Reading, the New York & Long Branch, the Atlantic City and the Port Reading; **O. W. Stager**, superintendent of transportation of the Philadelphia & Reading, with office at Philadelphia, Pa., has been appointed superintendent of transportation of all the above named roads; both with headquarters at Philadelphia, Pa.

C. A. Beach, division superintendent of the Philadelphia & Reading, at Philadelphia, Pa., has been appointed assistant general superintendent of that road and also of the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading, with office at Philadelphia, Pa.; **R. B. Abbott**, superintendent of the Harrisburg division, with office at Harrisburg, Pa., has been appointed superintendent of the New York division; **J. C. Peters**, trainmaster,

†Refers to appointments made by railway corporations or by railroad not under federal control.

at Philadelphia, has been appointed superintendent of the Philadelphia division; all with offices at Philadelphia; **I. T. Tyson**, superintendent of the Reading division, at Reading, Pa., has been appointed superintendent of the Reading and Harrisburg divisions, with office at Reading, and **C. E. Chamberlin**, acting trainmaster at Harrisburg, has been appointed assistant superintendent of the Harrisburg division, with office at Harrisburg.

C. E. Taylor, superintendent of terminals of the Atchison, Topeka & Santa Fe, at Chicago, has been appointed operating assistant to the terminal manager of the Chicago Terminal district; **Fred Zimmerman**, vice-president, in charge of traffic of the Chicago, Indianapolis & Louisville, has been appointed traffic assistant and **D. I. Forsyth**, acting chairman of the Chicago committee, of the Car Service Section, has been appointed car service assistant. These three with Mr. Taylor as chairman will also constitute a committee to supervise the introduction of a sailing day plan in Chicago. **T. Q. Proctor**, assistant general freight agent of the Chicago, Milwaukee & St. Paul, at Chicago, has been appointed chairman of a committee to supervise operation of a sailing day plan in all terminals of the Northwestern region except Chicago.

Martin Harvey Clapp, whose appointment as manager of the telegraph section of the United States Railroad Administration, with headquarters at Washington, D. C., was announced in the *Railway Age* on July 12, was born at Montague, Mass., on August 9, 1874. He graduated from the electrical engineering course at the Worcester Polytechnic Institute in 1895, following which he was employed in the shop of the General Electric Company at Schenectady, N. Y. Later he went with the American Telephone & Telegraph Company and was employed as inspector, district inspector, special agent, etc., covering a period of about 8 years, following which he entered the service of an independent telephone company in the middle west, serving first as consulting engineer of a conference committee composed of representatives of the Kansas City Long Distance Telephone Company, the Kinloch Long Distance Company, the Independent Telephone & Telegraph Company of Louisville, Ky., the United States Telephone Company and the Pittsburgh & Allegheny Company. For a short period after that he was chief engineer of the Kinloch Long Distance Company, at St. Louis, and then chief engineer of the Rochester Telephone Company, at Rochester, N. Y., following which he returned to the Bell telephone interests in 1907, and served for one year as supervisor of maintenance for the American Telephone & Telegraph Company, at Chicago, and for two and a half years as division superintendent for the same company, at Chicago. From August 1, 1910, to August 1, 1911, he was division superintendent of the Western Union Telegraph Company, at Chicago, following which he entered the service of the Northern Pacific, as superintendent of telegraph, which position he held until his appointment, as mentioned above.

W. N. Foreacre, federal general manager of the Southern Railway, lines east, the Carolina, Clinchfield & Ohio, and the Carolina, Clinchfield & Ohio of South Carolina, with headquarters at Charlotte, N. C., has been appointed federal general manager also of the Baltimore & Ohio (segregated line between Harrisonburg & Lexington, Va.); Asheville & Craggy Mountain; Asheville & Southern; Atlantic & Yadkin; Blue Ridge; Carolina & Northwestern; Carolina & Tennessee Southern; Cumberland Railway; Danville & Western; Hartwell Railway; High Point, Randleman, Asheboro & Southern;

Lawrenceville Branch; Roswell Railroad; Sievern & Knoxville, State University Railroad; Tallulah Falls; Tennessee & Carolina Southern and the Yadkin Railroad. **Horace Baker**, federal general manager of the Southern Railway, lines west; the Georgia Southern & Florida and the Alabama & Vicksburg, with headquarters at Cincinnati, Ohio, has been appointed federal general manager also of the Northern Alabama; Ensley Southern; Cincinnati, Burnside & Cumberland River; Harriman & Northeastern; Hawkinsville & Florida Southern and the Louisiana & Mississippi Transfer (at Vicksburg, Miss.)

The authority of the following officers of the Southern Railway has been extended over the Asheville & Craggy Mountain; Asheville & Southern; Atlantic & Yadkin; Blue Ridge Railway; Carolina & Northwestern; Carolina & Tennessee Southern; Cincinnati, Burnside & Cumberland River; Cumberland Railway; Danville & Western; Ensley Southern; Harriman & Northeastern; Hartwell Railway; Hawkinsville & Florida Southern; High Point, Randleman, Asheboro & Southern; Lawrenceville Branch Railroad; Northern Alabama Railway; Roswell Railroad; Sievern & Knoxville; State University Railroad; Tallulah Falls; Tennessee & Carolina Southern; Yadkin Railroad, and Louisiana & Mississippi Transfer (at Vicksburg, Miss.): **A. H. Plant**, comptroller; **G. W. Taylor**, staff officer, transportation; **J. Hainen**, staff officer, mechanical; **F. W. Brown**, staff officer, headquarters; **H. H. Loughton**, staff officer, materials and supplies; **W. H. Gatchell**, staff officer, loss and damage prevention; **E. H. Shaw**, assistant traffic manager; **Alex. Grant**, mail traffic manager; **W. M. Netherland**, manager, dining cars; **S. R. Prince**, general solicitor; **E. F. Parham**, federal treasurer; **W. H. Wells**, consulting engineer construction; **E. M. Durham, Jr.**, chief engineer construction, and **R. B. Pegram**, general purchasing agent; all with headquarters at Washington, D. C.

The following changes on the Chicago, Rock Island & Pacific became effective August 1: **A. W. Towsley**, assistant to the vice-president in charge of operation and construction, has been appointed transportation assistant to the general manager, with headquarters at Chicago. **H. G. Clark**, assistant to the vice-president in charge of operation and construction, at Chicago, has been appointed maintenance of way assistant to the general manager, with the same headquarters. The office of the superintendent of car service has been abolished, and **J. R. Pickering**, who has held that office, has been appointed superintendent of transportation. **C. W. Jones**, general manager, first district, at Des Moines, Iowa, has been appointed manager of the same district with the same headquarters. **A. B. Warner**, division superintendent, at Ft. Worth, Tex., has been appointed manager, second district, at El Reno, Okla. Officers heretofore reporting to the vice-president in charge of operation and construction will report to the general manager. **D. Coughlin**, division superintendent at Rock Island, Ill., has been appointed transportation assistant to Mr. Jones, at Des Moines, Iowa. **A. B. Ramsdell**, assistant general manager, first district, at Des Moines, Iowa, has been appointed assistant to Mr. Jones, at Des Moines, Iowa. **C. L. Ruppert**, division superintendent at Trenton, Mo., has been appointed superintendent of the Illinois division, at Rock Island, Ill. **H. F. Reddig**, division superintendent at Herington, Kan., has been transferred to the Missouri division, with headquarters at Trenton, Mo. Officers heretofore reporting to the district general manager will report to the manager. **H. L. Reed**, acting assistant general manager of the second district, at El Reno, Okla., has been appointed transportation assistant to Mr. Warner, at El Reno. **E. P. Kelly** has been appointed assistant to Mr. Warner, at El Reno. **C. B. Pratt**, division superintendent at El Reno, Okla., has been transferred to the Kansas division, at Herington, Kan.; **H. R. Saunders**, division superintendent, at Amarillo, Texas, has been appointed superintendent of the Oklahoma division, at El Reno; **C. H. Hubbell**, who has been engaged in special work in the vice-president's office at Chicago, has been appointed superintendent of the Amarillo division, at Amarillo, Tex. **H. J. Sewell**, division superintendent at El Dorado, Ark., has been transferred to the southern division, at Ft. Worth, Texas, and **J. G. Bloom**, division engineer at Herington, Kan., has been appointed



M. H. Clapp

superintendent of the Louisiana division, at El Dorado, Ark. Officers heretofore reporting to the general manager will report to the manager.

Traffic

GOVERNMENT*

E. H. Shaw.—See Operating Officers.

Charles G. Clark, assistant general passenger agent of the Michigan Central, at Chicago, has been appointed manager of the Consolidated Ticket Offices at Chicago, for Eastern and Southern roads.

Louis H. McCormick, general agent in the passenger department of the Chicago, Rock Island & Pacific, at Chicago, has been appointed manager of the consolidated ticket office in that city, for the northern and the western roads.

E. D. Brigham, assistant freight traffic manager of the Chicago & North Western, with office at Chicago, has been appointed by the regional director, manager of ore, coal and grain traffic, of Lake Superior and Upper Lake Michigan ports, with headquarters at Duluth, Minn.

R. L. Russell, general freight agent of the Philadelphia & Reading, has been appointed assistant freight traffic manager of the same road, and also of the Central of New Jersey. New York & Long Branch, the Atlantic City and the Port Reading, with office at Philadelphia, Pa.; **E. B. Crosley**, general coal freight agent of the Philadelphia & Reading, has been appointed coal traffic manager, with office at Philadelphia, and **A. Hamilton**, general freight agent of the Central of New Jersey, has been appointed general freight agent of all the above named roads, with office at New York.

William C. Hope, whose appointment as passenger traffic manager of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at New York, has already been announced in these columns, was born on June 13, 1859, at Somerville, N. J. He was educated at Wyckoff's Preparatory School, Elizabeth, N. J., and Dr. Chapin's Collegiate School, New York. On May 1, 1878, he began railway work with the Central of New Jersey, and has been in the continuous service with that road ever since. He was appointed assistant general passenger agent in July, 1901, and was promoted to general passenger agent in September, 1906, which position he held at the time of his recent appointment as passenger traffic manager of the railroads mentioned above.



W. C. Hope

Engineering and Rolling Stock

GOVERNMENT*

W. H. Wells.—See Operating Officers.

T. J. Clayton has been appointed master mechanic of the Texarkana & Fort Smith, with headquarters at Texarkana, Texas, succeeding **A. D. Williams**, resigned.

H. K. Christie, air brake inspector and instructor of the Pere Marquette, with headquarters at Grand Rapids, Mich., has left the service of that company to enter advertising work with a Chicago agency.

L. W. Strayer, assistant division engineer of the Baltimore & Ohio, with office at New Castle, Pa., has been appointed division engineer of the New Castle division, with headquarters at New Castle, vice **D. W. Cronin**, deceased.

E. J. Correll, assistant division superintendent of the Baltimore & Ohio, with office at Dayton, Ohio, has been appointed division engineer of the Toledo division, with office at Dayton, Ohio, vice **F. J. Parrish**, assigned to other duties.

M. A. Gleeson, general foreman, locomotive department, of the Baltimore & Ohio, with office at New Castle Junction, Pa., has been appointed master mechanic of the New Castle division, with office at New Castle Junction, vice **A. H. Hodges**, transferred.

H. Clewer, superintendent fuel economy of the Chicago, Rock Island & Pacific, at Chicago, has been appointed regional supervisor of fuel conservation of the Pocahontas region for the United States Railroad Administration, with headquarters at Roanoke, Va.

C. H. Mattier, assistant engineer in the chief engineer's office of the Illinois Central, who has been engaged on terminal work in Chicago, has been appointed assistant engineer, with the same headquarters, succeeding **L. P. Kimball**, who has entered the service of the Baltimore & Ohio, as mentioned elsewhere in these columns.

A. H. Griffith has been appointed engineer of construction; **A. B. Scowden** has been appointed engineer of bridges; **L. P. Kimball** has been appointed engineer of buildings, and **E. T. Ambach** has been appointed engineer of signals of the Baltimore & Ohio, western lines, the Dayton & Union Railroad and the Dayton Union Railway, all with headquarters at Cincinnati, Ohio.

Leland P. Kimball, assistant engineer in the office of the chief engineer of the Illinois Central, at Chicago, has been appointed engineer of buildings of the Baltimore & Ohio, western lines, with headquarters at Cincinnati, Ohio, effective July 16. Mr. Kimball entered the employ of the Illinois Central, in August, 1904, and for one year was a clerk in the operating department. He was then transferred to the engineering department as an apprentice on the Chicago division; later he was employed as rodman, instrument man, inspector and assistant engineer in the maintenance, construction and bridge departments. From October, 1915, to May, 1918, he was chief draftsman in the building department, and on the latter date was appointed assistant engineer in the chief engineer's office, which position he held until his appointment as mentioned above.

Edward M. Durham, Jr., whose appointment as chief engineer of construction of the Southern Railway System, the Alabama & Vicksburg, the Georgia, Southern & Florida, the Carolina, Clinchfield & Ohio and the Carolina, Clinchfield & Ohio of South Carolina, with headquarters at Washington, D. C., has already been announced in these columns, was born on October 23, 1875, at Memphis, Tenn., and was educated at Lehigh University. He began railway work in 1899, with the Chicago & North Western and subsequently served on the Southern Railway as assistant engineer at Selma, Ala. In 1901, he was appointed resident engineer at Birmingham, Ala., and in 1905, became principal assistant engineer at Birmingham, of the same road. He went to the Atlanta, Birmingham & Atlantic in 1914 as special valuation engineer, with office at Atlanta, Ga., and in 1916, returned to the service of the Southern Railway as general agent, at Chattanooga, Tenn. The following year he was appointed assistant chief engineer of construction, with office at Washington, D. C., which position he held until his recent appointment as chief engineer construction with office at Washington, as above noted.

A. J. Davis, master mechanic of the Erie, at Hornell, N. Y., has been transferred to the New York division and side lines, having charge of passenger equipment, with headquarters at Jersey City, N. J., succeeding **F. H. Murray**, promoted; **Leo R. Laizure**, shop superintendent, at Hornell, N. Y., has been appointed master mechanic of the New York division and side lines, in charge of freight equipment, with headquarters at Secaucus, N. J., succeeding **Thomas S. Davey**, transferred; **Clarence H. Norton**, master mechanic of the Susquehanna, Tioga and Jefferson divisions, at Susquehanna, Pa., has been transferred as master mechanic to the Allegheny and Bradford divisions, with headquarters at Hornell, N. Y., succeeding **A. J. Davis**; **William Moore**, master mechanic of the Erie, at Kent, Ohio, has been transferred as

master mechanic to the Susquehanna, Tioga and Jefferson divisions, with headquarters at Susquehanna, Pa., succeeding Mr. Norton, transferred; **William E. Harmison**, assistant master mechanic of the Mahoning division at Brier Hill (Youngstown), Ohio, has been appointed master mechanic, with headquarters at Kent, succeeding Mr. Moore; **Ralph R. Munn** has been appointed assistant master mechanic of the Mahoning division, with headquarters at Brier Hill (Youngstown), Ohio, succeeding Mr. Harmison, and **Thomas S. Davey** has been appointed shop superintendent at Hornell, N. Y., vice L. R. Laizure, promoted.

Jacob Edgar Mechling, whose promotion to superintendent of motive power of the Pennsylvania Railroad, western lines, was announced in the *Railway Age*, July 26, was born at Butler, Pa., on November 29, 1863. Mr. Mechling was educated in the high school at his native town and in 1880 he entered the employ of the H. A. Porter Locomotive Works, at Pittsburgh, Pa., as a machinist's apprentice. In April, 1882, he entered the service of the Pennsylvania Railroad at Pittsburgh, as special apprentice. The following year and until May, 1886, he was employed by the Chicago, Milwaukee & St. Paul, following which he returned to the service of the Pennsylvania. Three months later he was promoted to gang foreman of the erecting shop, at Pittsburgh, and subsequently became assistant foreman at the shop, where he was first employed. Later he was made foreman of the new engine house at Wall, Pa., where he remained until May, 1902, at which time he was promoted to assistant master mechanic of the Pittsburgh division, with headquarters at Pittsburgh. Two years later he was promoted to master mechanic of the Vandalia, with headquarters at Terre Haute, Ind., which position he held until his appointment as superintendent of motive power as mentioned above.



J. E. Mechling

Purchasing

GOVERNMENT*

R. B. Pegram.—See Operating Officers.

J. W. Gerber, general storekeeper of the Southern Railway, with office at Washington, D. C., has been appointed general storekeeper also of the Alabama & Vicksburg, the Carolina, Clinchfield & Ohio, the Carolina, Clinchfield & Ohio of South Carolina, the Georgia Southern & Florida, and the St. Johns River Terminal, with headquarters at Washington, D. C.

Railway Officers in Military Service

R. W. Kennedy, assistant valuation engineer of the Atchison, Topeka & Santa Fe., at Topeka, Kan., has resigned to enter the United States army.

A. H. Rowan, assistant to vice president, traffic department, of the New York Central Lines, has been commissioned a Major in the Engineer Reserve Corps, U. S. Army, assigned to the Thirty-Sixth Engineers, and leaves immediately for service overseas.

J. M. Grant, engineer maintenance of way of the Chicago, Peoria & St. Louis, with headquarters at Springfield, Ill., has left that company, having been commissioned captain in the Engineer Officers' Reserve Corps and assigned to Camp Lee, Va. Mr. Grant has been with the Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Chicago, Burlington & Quincy and since 1917 with the Chicago, Peoria & St. Louis.

Obituary

Charles Allen Goodnow

Charles Allen Goodnow, vice-president of the Chicago, Milwaukee & St. Paul, with office at Chicago, died at Seattle, Wash., on July 26, following a brief illness. Mr. Goodnow had

been in active railway work for nearly half a century and was well-known as the man who was in charge of the greatest railroad electrification project so far undertaken. This work, outlined in considerable detail in the *Railway Age* of February 7, 1917, is remarkable for the rapid progress made and the results achieved in a relatively short period. The contracts for equipment and material for the first unit of the project, the line between Three Forks, Mont., and Deer Lodge, were awarded in November, 1914. This was the first

step in the scheme involving the electrification of 440 miles of main line between Harlowton, Mont., and Avery, Idaho. The first 282-ton electric locomotive was placed on a test track in September, 1915, and in February, 1917, steam engines were removed from the entire electrified section. At the present time the electrification of the lines from Othello, Wash., to Seattle and Tacoma, is under construction. The electrification of this part of line is progressing very satisfactorily and according to statements issued by Mr. Goodnow shortly before his death, this section may be expected to be in service within less than a year.

Mr. Goodnow was widely known in the north Pacific territory as an operating officer. He made his first visit to Puget Sound in 1908, and developed an original plan for hauling cars on barges to nearby Puget Sound points. This installation proved so successful it was extended to Bellingham, Wash., Port Angeles, and Port Townsend, so that now the St. Paul's peninsula business is handled entirely by the barge system developed by Mr. Goodnow. He also constructed the Gallatin Valley Railway, a subsidiary of the St. Paul, which runs from Three Forks, Mont., to Bozeman, and he was president of that line. Among other interesting features of his active career were the making of the first time table for operation through the Hoosac tunnel; the introduction of two English staff machines for the protection of train movements over the Mississippi river bridge at Savannah, Ill., and the perfection of the manual block system as now in use on the St. Paul.

Mr. Goodnow was born at Baldwinsville, Mass., on December 22, 1853. He entered railway service in 1868 with the Vermont & Massachusetts as a telegraph operator. In 1875, he became train dispatcher of the Troy & Greenfield and four years later was appointed trainmaster on the same road. From 1881 to 1886, he was superintendent of the New Haven & Northampton and in the latter year went to the Chicago, Milwaukee & St. Paul as superintendent of construction. In 1888, he was promoted to division superintendent, with headquarters at Dubuque, Iowa. He was later assistant general superintendent and general superintendent of the same road, and in April, 1902, was appointed general manager of the Chicago, Rock Island & Pacific. In November, 1903, he became general manager of the Chicago & Alton, with which line he remained about four years. From January 1, 1908, to January 1, 1913, he was assistant to the president of the Chicago, Milwaukee & Puget Sound. In this position he was in charge of various projects in connection with the extension of the Puget Sound lines, chief among which were the entrance of the St. Paul into Spokane, Wash., and into Great Falls, Mont. In 1913 he became assistant to the president of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, and in July, 1917, he was appointed vice-president of the same road at Chicago, which position he held until his death.



C. A. Goodnow

EDITORIAL

Railway Age

EDITORIAL

With the approval by the director general of the recent increases in the wages for shop men, labor has scored another victory. The Railroad Administration in giving the shop craftsmen a minimum of 68 cents an hour places the railroad mechanic in the plutocrat class of working man. This pay to

A Complete Victory for Labor

way shop men is better than that paid the ship builders (who are considered the best paid mechanics) for several reasons. While there may be higher rates in the shipbuilding industry, the men have to work harder and longer hours, they have not congenial living conditions and their work is somewhat dependent upon the weather. In December, 1915, the date on which the Railroad Wage Commission based its calculations, the railroad mechanic received a rate varying between 32 and 38 cents an hour. He now receives 68 cents an hour as a minimum. The first part of this year a canvass of 21 roads showed that at that time the railroad mechanic's hourly wage varied between 44½ and 56 cents per hour. Taking 52 cents as a fair average, his wage has therefore been increased over 30 per cent this year. Our railroads should not now find it difficult to hold their shop forces!

It is so easy to criticize the railways; so easy to tell how they should be operated and to back up such statements with all sorts of statistics, good, bad and indifferent—that is, it is easy to do so from a comfortable arm-chair miles and miles away from the actual operations, from the dirt and grime and grind of the daily detail operations. It would be a good thing if some of those who are long on the theories of railway operation, management and regulation could take a few days off occasionally, and not simply visit or inspect a railroad, but really get into the spirit of its every-day operation. What a treat it would be to get an honest confession from such a one. It might parallel the following sentences taken from the letter of a friendly critic—indeed, there would undoubtedly be more friendly and less unfriendly critics than there are at the present time: "I think that all of us started with very interesting theories, many of which had to be discarded as we went along. I know that I had to 'unlearn' a lot of things that looked like gospel, once upon a time, and I suppose that many others have had the same experience. I recall, in particular, one assignment that required visits to a number of engine terminals. Conversations with master mechanics, roundhouse foremen and others right down to the wipers, together with observation of the handling and assignment of power and minor repairs to it, woke me up in a hurry. I believe that contact with the hard facts of everyday railroad gives a man a breadth of view and tolerance of general attitude that is beneficial to one and gratifying to his friends, neighbors and associates. It is, therefore, with the greatest sincerity and best of feeling that I recommend this course to any critic of the railways who is acquainted with even the rudiments of the business. After he has 'washed up' and had a good night's sleep—he will need both—he will return to his desk with an inspiration before him that will last for many a day. It is this occa-

Good Advice to Critics of Railways

sional contact with realities that has helped to preserve my enthusiasm and sustain my interest in the great industry that is so close to the hearts of us all."

A number of magazines are publishing notices in current issues requesting subscribers to be patient in case their

Hanging It on the Railroads

copies do not arrive in time and adding the explanation that "it is probably because railroad traffic, congested by war needs has delayed it. Please wait a few days before you write us." This is not only an unwarranted indictment of the Railroad Administration and the officers and employees of the roads, but an attempt to shift the responsibility for this delay from the shoulders upon which it rightly belongs. The railroads at present are dealing with a traffic that is enormous as compared to pre-war times, but except in restricted localities congestion does not exist. Mail trains may be frequently delayed a few minutes and occasionally several hours, but even under the trying blockades of last winter they were very rarely "days" behind schedule. Therefore if mail is often delivered one or more days late the delays to mail trains will account for but an insignificant portion of the lost time. Why should not the readers of current periodicals be apprised of the real cause of delays in their mail, i. e., the policy of the Post-Office Department, under which reduced working forces and inadequate car space are used on mail trains and (what is not common knowledge) much second-class matter is sent by freight. The Western Union Telegraph Company recently was heavily fined for sending telegraph messages by train. The postal deficit would be greatly increased if the department were fined every time delays to mail now occur due to the general policy being followed by the present incompetent management of the department.

The observation balloons—or "sausages," as they are more familiarly called—are giving excellent service on the other

Looking Down On a Freight Terminal

side by helping to keep our forces posted as to the movements of the enemy and assisting the gunners to reach the vital points. The suggestion has been made that the erection of a high tower in the center of a large freight terminal with an observer stationed on top of it, having telephone connection to the yardmaster's office, would result in a startling increase in yard efficiency and capacity. The movements of the switching crews could be followed and studied, and avoidable delays and lost motion could be located and eliminated. Bad practices could be corrected and the yardmaster would have his vision broadened to consider the operation of the yard as a whole, instead of continually focusing his attention on small parts of the work and having his vision obscured in whole, or in part, as to the larger aspects of the game. You may smile at the suggestion; it may seem wholly impracticable, and yet this must be accomplished in effect if the best and most efficient results are to be obtained. The real solution to the problem is to so control and adjust the human element or the human rela-

tionships that each man in the organization will be keyed up to study his work and its relation to the movements of others, eliminating all superfluous movements and unnecessary expenditure of energy. This is no small task, and yet it must be tackled promptly and energetically if the railroads are to make good in the emergency that now confronts them. The restricted capacity of the freight terminals is one of the limiting factors in the amount of traffic that can be handled. It is therefore strictly up to those in charge of these terminals to speed up the work and get enthusiastic and intelligent co-operation from every member of the organization. Fix a goal toward which to strive and inspire your men to reach it!

Six millions tons of fuel are required annually to maintain train line leakage on the freight trains operated in the United States. This striking fact was brought

Better Air Brake

Maintenance

Will Save Fuel

out by a committee appointed by the Air Brake Association to co-operate with the fuel conservation section of the Railroad Administration in devising

measures to reduce locomotive fuel consumption. When considered in relation to the total amount of coal used by the railroads annually this waste loses its significance, as it represents not more than three or four per cent of this total. Considered by itself, however, the possibilities for saving which it represents are great enough to offer a magnificent return for all the energy required to reduce it to a practicable minimum. At \$2.50 per ton of coal the loss amounts to \$15,000,000. Through its co-operation with the Fuel Conservation Section, the Air Brake Association has performed a real national service in focussing the attention of railroad men throughout the country and in all departments of the service on the existing conditions, and in suggesting definite measures which should be taken to reduce this waste. The measures are simple. The real problem lies in putting them into universal practice. A number of the suggestions involve the correction of evil practices which are of long standing and have consistently defied all previous efforts which have been made toward their correction. The opportunity presented to the Fuel Conservation Section is a great one and in the hands of the strong national organization such as this is, the prospects of securing results are better than ever before. The fact should not be overlooked that the advantages which will accrue from the consistent application of these suggestions are by no means confined to the saving of fuel. Train line leakage is a most serious obstacle to satisfactory brake operation, especially in long freight trains, and some of the most potent causes of excessive train line leakage also result in excessive deterioration of other parts of the equipment. Successful efforts to reduce the waste of fuel incident to excessive train line leakage will also result in improvement in train operation as well as in the general condition of rolling stock.

Freight yard facilities are crowded to the limit in these days and there is great need for energetic measures to get the greatest possible service from them.

Damaging Equipment Helps

the Kaiser

Nothing can be gained, however, and much may be lost, by putting the cars over the hump without riders or by rushing the work beyond the point where it can be properly done. Consider, for instance, the statement of the Southern regional director to the effect that the number of cars damaged in yard switching service in his district had increased from 7,625 for the week ending May 4 to 15,265 for the week ending June 1. Undoubtedly the switching crews felt that they were making a big record in rushing the cars through the

yards; in reality delays caused by later handling of the damaged equipment not only entirely offset this apparent gain, but resulted in a distinct loss compared with slower and more careful switching movements. Unfortunately this was only the beginning of a chain of delays and expense, which, if it could be presented to the crews in the form of an itemized bill at the end of each day's work, would startle them. In many instances the lading was damaged; this will result not only in claims for loss and damage, but in disappointment and delay to the consignees and their clients. In some cases the damage might even be irreparable, particularly in these days of scarcity of materials. The equipment itself might have to lie idle for days, at a time when the needs of the nation and our allies require that it be in service every possible moment. Doubling the number of damaged cars in the above case required the services of hundreds of extra car repairmen and yet it is practically impossible to maintain the car repair forces even at their normal strength in these days. A low estimate for the time lost by the additional cars out of service would amount to thousands—yes, hundreds of thousands—of dollars. The issuing of orders or circulars will be helpful, but the real solution of the problem is an immediate, enthusiastic and aggressive campaign of education to emphasize the seriousness of such damage, which is often the result of either excessive zeal or thoughtlessness. There may be disloyal men who are responsible for some of it. If so, their fellow workmen should hunt them out and hand them over to the federal authorities. Damaging a car or interfering with the efficiency of the transportation machine during time of war is just as much an offense and may have just as serious results as going to sleep on duty at the front, and yet the latter offense is punishable by death.

Reducing Maintenance Costs

ANY PLAN that can reduce the cost of maintenance is worthy of consideration by the officers of the railroads. Measures tried out and found successful on one road may contain information of interest for other lines similarly situated.

In 1915 the Chicago, Rock Island & Pacific reorganized its signal department by lengthening the territory assigned to signal maintainers, this being accomplished by furnishing the signalmen with motor cars. Under the new organization the maintainers were assigned helpers who were also provided with motor cars. The territory assigned to a maintainer prior to the reorganization was on single track 12 to 15 miles and on double track 20 miles. This was increased to 35 miles for single track and 28 miles for double track.

A saving of approximately \$23,700 per annum has been effected through the use of the motor car. In addition an intangible economy has been effected on which it would be hard to place a value in dollars and cents, for since the use of the motor cars, signal failures have been cleared up with less delay to trains than perhaps was accomplished formerly.

Any plan that may be developed for reducing maintenance costs will be of little or no benefit if the reduction is made at the cost of efficiency, but an arrangement that will increase efficiency and at the same time provide for the education of new men, as worked out on the Rock Island, is constructive. An article covering the reorganization on the Rock Island appears elsewhere in this issue.

It would seem that other departments having occasion to use track cars could apply a similar arrangement to advantage, but before motor cars are used extensively the men who will use them should be instructed thoroughly as to their proper operation, otherwise an increase in accidents may occur.

The Causes of Increases in Operating Expenses

THE ENORMOUS increases which are occurring in railway expenses are beginning to attract nation-wide attention. The Railroad Administration directed that the general wage increases granted since January 1, excepting those to the shop employees made by the recent order of the director general, should be included in the reports of operating expenses for June. The reports of individual roads regarding their earnings and expenses in June are now being made public and of course they show enormous additions to expenses.

In an editorial in its issue of July 26 the *Railway Age* said: "It would appear that even in the absence of any general advance in wages the increase in operating expenses in 1918 would be around \$600,000,000." Apparently there is no reason for revising this estimate unless it should be revised upward. The actual increase in operating expenses reported by the Interstate Commerce Commission in the first five months of the year was \$262,000,000. This did not include any general advance in wages. The original general advance granted by the director general and the supplementary advance recently granted by him to the shop employees will amount to at least \$35,000,000 a month. These wage advances, added to the other increases in operating expenses will make the total increase in the operating expenses during the first five months of the year about \$437,000,000. At this rate the increase in expenses during the first six months of the year will be approximately \$520,000,000 and in the entire year \$1,400,000,000.

Never in the history of the railways of the United States did there occur any increase in expenses which even approached this. In fact, it would appear that never before in any entire year was the increase in expenses as large as it was in the first six months of 1918. In the highly prosperous year 1910 the increase in expenses over 1909 was \$225,000,000. In the record-breaking year 1916 the increase over 1915 was \$190,000,000. In the calendar year 1917, when the advances in expenses were coming so fast that both the railway managements and government officers saw that many, if not most, of the railway companies would be reduced to bankruptcy unless unprecedented measures were adopted to save them, the total increase in expenses was about \$475,000,000.

These enormous increases in expenses will, and should, become a subject of keen interest and great concern to the railway companies, the Railroad Administration and the public. If the railways are to be returned to private management it is desirable from the standpoint of the companies that no effort shall be spared while the roads are in the hands of the government to keep down expenses, because the higher the expenses are when the roads are returned to them the more difficult the problem of the companies will be. It is extremely important to the Railroad Administration to hold down expenses, because, of course, the director general and his lieutenants desire to be able to give a good account of their stewardship, and efficiency in operation consists not merely in rendering good service, but in rendering it as economically as may be practicable in the circumstances. The question of railway expenses deeply concerns the public, because at the present time the public is burdened with taxes levied to carry on the war, and every increase in such expenses means the imposition of an additional burden upon the public either in the form of higher railway rates or higher taxes.

What, then, are the causes of these enormous increases in expenses? They are not largely due to an increase in the amount of business handled, since the increase in business handled thus far during the present year has been small. They are very largely due to advances in wages and

in the prices of fuel and materials; but there were also large advances in wages and prices in 1916 and 1917, especially the latter year. The Railroad Wage Commission has shown that the advance in wages in 1917 over 1915, due entirely to advances in the rates of pay, was \$350,000,000. That the advances in the unit costs of labor, fuel and materials in 1918 have been greater than in 1917 is beyond question. On the other hand the increase in the amount of traffic handled in 1918 has thus far been less than it was in 1917. On the whole, therefore, it would appear, in the absence of opportunity for a thorough investigation, that in proportion to the increase in business handled and to the advances in unit costs, the increase in operating expenses during the first six months of 1918 under government operation has been, not only absolutely, but relatively much greater than it was in the first six months of 1917 under private operation; and this in spite of the fact that the government has had opportunity to operate the railways without all the hampering restrictions which federal and state laws imposed upon operation when it was conducted by private companies. If this conclusion is correct—and we have no doubt that a thorough investigation would sustain it—the question arises—and it is a very important question—as to why the increase in expenses has been relatively greater than heretofore. Is it due to government operation? If so, wherein has government operation failed?

Every intelligent person now recognizes the fact that at the end of 1917 it had become necessary for the government to come to the rescue of the railway companies. The government chose to guarantee the returns of the companies and to take the operation of their properties out of their hands. It is now clear that if government operation was to be adopted it was necessary to put some non-railroad man representing the national administration in charge. If any railroad man had been appointed director general he would long ere this have been torn to pieces by shippers, the press and the public. Since, as we can now clearly see, it was desirable to put a public man in charge, it is safe to say that President Wilson could not have selected a better man than Mr. McAdoo. Mr. McAdoo undoubtedly has made mistakes, some of them great ones, but there are certain far greater mistakes which a man in his position might have made, but which he has not made. He has not made the mistake of putting incompetent or inexperienced men in important positions. On the contrary, he has put in almost all important positions men who are eminently fitted for them by experience and ability. He has not made the mistake of showing want of courage. If he has shown courage to do some things which are open to criticism, he has also shown the courage in most cases to hold the politicians at arm's length, and he has made advances in rates which are larger than any railway man would have dared to make, but which experience is rapidly showing are not larger than are needed. So far as moving business is concerned, the railways undoubtedly are being efficiently operated.

If, in case government operation was to be adopted, Mr. McAdoo was the right man to make director general, and if he has selected most of his lieutenants wisely, and if political interference with the railroads has been kept at the minimum possible under government operation, what reason is there, if any, in addition to the advances in unit costs, why operating expenses are so greatly increasing? We believe there is another reason of great importance, and that it ought to be obvious to anybody who has closely followed developments in the railway field. That reason is that on the day government operation was adopted the principal incentive to economical operation was destroyed. Private companies operate railways for profit. Governments ordinarily do not. The profits—or losses—of the companies depended very largely on how economically their properties

were operated, and every officer of a company knew that his future depended largely on his success in getting good results at a low cost. Consequently, when the roads were taken over, every operating officer was exerting himself to the utmost, not only to handle all the business possible, but to handle it at the least expense possible.

Under government operation, on the other hand, while as much stress as ever has been put on the need for handling the maximum amount of business, comparatively little stress has been put on economy, except as it might be secured by unified operation, standardization, etc. Now, systems and formulas are valueless as means of keeping down and reducing expenses in any business unless the entire personnel of the organization, and especially the official personnel, is kept driving constantly to keep them down and reduce them. Here, as elsewhere, the human element is the vitally important element; and in our opinion one of the principal causes of the increases in railway operating expenses, if not the principal cause, is that the human element is not taking the intense interest in expenses that it formerly did.

But is this condition to be remedied? Doubtless the Railroad Administration can partly remedy it by making a special "drive" on the subject of expenses. But it can be only partially remedied under government operation. It is an inevitable feature of government operation that it largely destroys the incentive to economy. A large increase in operating expenses has occurred on every system of railways the operation of which has ever been assumed by any government, whether in war or peace. Such an increase should have been foreseen in this country, and it was foreseen by everybody except persons of a socialistic tendency. Our railways will never again be operated relatively as economically as they were under private management until they are restored to private management, with its despised incentive to try to save money in order to make a profit or avoid losses. Government operation and minimum economy in operation always have been incompatible, and always will be, simply because governments cannot afford the same incentives to their officers and employees to economize that private companies not only can and do, but must, if they are to prosper.

Increasing Locomotive Capacity

IT IS UNDERSTOOD that the Railroad Administration is negotiating with the locomotive builders to add considerably to their output for the year 1919. The delay in building the standard locomotives which have been ordered by the government, aggravated by the need of sending 500 locomotives to General Pershing without delay, has made it necessary to study next year's building program critically. The special effort that is being made to get the power now in service into good condition for the fall and winter months, when the traffic will be greatly increased, is a move in the right direction. There is a serious question as to whether it would not be wiser to plan on going still further in this direction and at the same time improving the performance of the locomotives now in service, thus virtually increasing the number of locomotives, rather than to try to get the builders to increase the capacity of their plants next year. It is becoming more and more apparent each day that neither steel nor skilled mechanics should be used on other than absolutely essential work. Operating the railroads is essential, but in the interests of winning the war it will be advisable to get greater service from our present locomotives, rather than to plan on increasing the production of new locomotives beyond a reasonable point.

A time study of the movements of a locomotive today ought to make even as inanimate and hardened object as a locomotive blush for shame. In many cases the locomotives could be run over two or three divisions with the same train,

by simply changing the crews and cleaning the fires at the division points. This has been tried and has proved a success, and yet the practice is not being extended nearly as rapidly as it should be. Enginehouse methods and practices and facilities should be thoroughly gone over, so that the power can be maintained in first-class condition. One of the most expensive practices is that which overlooks wear and tear and allows them to develop to a point where they must be remedied if the power is to be kept in service. It is well known that those roads which watch their power most closely and keep it in the best condition from day to day are those whose unit costs for maintenance are the lowest.

Co-operation is such a hackneyed expression that we hesitate to use it because it has largely lost its force. What is most greatly needed, however, to improve locomotive performance is 100 per cent co-operation between the mechanical and the operating departments and between various elements in the operating department. It is ridiculous, for instance, to call several engines for a certain time and needlessly rush the engine house forces when there is no possibility of having more than one crew ready at that time. A locomotive also deteriorates rapidly lying idle under steam at a terminal or on a side track, and will waste a large amount of coal. If the yard-masters, dispatchers and division superintendents will get out of the rut and study and strive as a unit to make the best possible use of each locomotive, every minute of the time, it would undoubtedly result in an increased capacity of the locomotives now in service to such a degree that it would be possible to get along with the normal number of new locomotives which can be supplied by the builders until the emergency is past.

Delaware & Hudson

A BANKER who has been a close student of present tendencies of railroad investments remarked recently that the only attractive railroad stocks were coal company stocks. Some of the railroad companies did remarkably well in 1917 in their earnings from railroad operation purely and simply. Most of these roads, however, were in the west, and, as the banker quoted above implied, the eastern railroad companies which have had good net earnings in 1917 and which now look attractive as stock investments are those with some other sources of income than purely operation as a railroad company. The Delaware & Hudson is such a railroad company. In 1917 more than a third of the income of the company came from sources other than railway operation. Net railway operating income amounted to \$5,644,000 in 1917, comparing with \$7,782,000 in 1916. Income from other sources amounted to \$4,790,000, comparing with \$2,396,000 in 1916. The gross income, therefore, available for interest and dividends was a little better in 1917 than in 1916, amounting to \$10,434,000. In 1917, after the payment of interest and rentals, there was equivalent to 11.75 per cent remaining available for dividends. The company pays 9 per cent and in 1916 had only 9.78 per cent available for dividends.

Up to the issuance of the 1917 annual report, the income account furnished stockholders showed separately the operations of the coal mining department and the railroad department. The 1917 annual report, however, contains only the income account arranged in accordance with the form prescribed by the Interstate Commerce Commission, which form does not show the separate operations of the coal mining department. However, under miscellaneous income the Delaware & Hudson received \$2,713,000 in 1917 as against \$127,000 in 1916. Since, however, the operating income of the coal mining department was \$123,000, as shown in the 1916 annual report, comparing with \$127,000 miscellaneous income in 1916, as shown by the 1917 annual

report, it may be assumed that the greater part of this miscellaneous income is net revenue from coal mining. The Delaware & Hudson carries on its balance sheet its unmined coal owned and controlled at \$17,810,000, but this is not a measure of the value of the coal mining department of the Delaware & Hudson. This might be more truly approximated by capitalizing the income received from this source in 1917 which would put a capital value of approximately \$40,000,000 on this asset of the company.

The costs of mining coal increased greatly. Miners' wages were advanced 25 per cent, and contract miners' wages were advanced 30 per cent. Some other classes of labor received even greater advances and at the close of

increase is almost entirely accounted for by the increase in revenue from hauling coal. The revenue from the transportation of coal amounted to \$14,807,000 in 1917, an increase over 1916 of \$3,038,000. In 1916 the Interstate Commerce Commission ordered a reduction in rates on anthracite and this reduced the 1917 revenues from the transportation of coal to the Delaware & Hudson Company by \$448,000 as compared with the revenue which would have been obtained under the higher rate. In March, 1918, the commission permitted increases in freight rates, including rates on anthracite, but none of the benefits of this increase are reflected in the 1917 annual report.

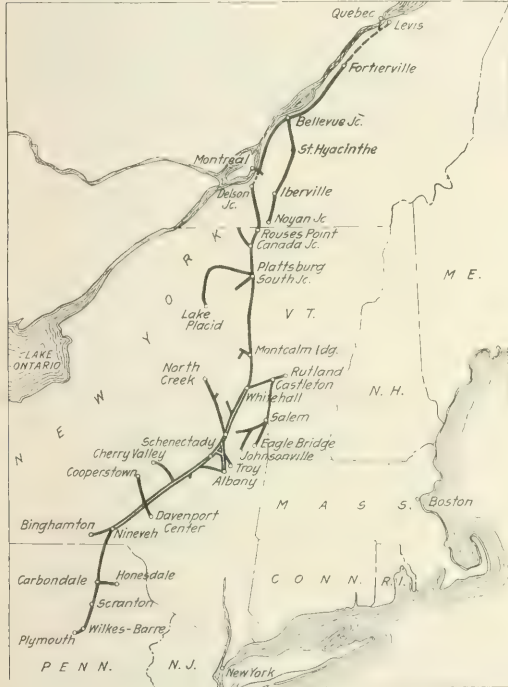
The increase of \$3,355,000 in revenue was much more than offset by an increase of \$5,339,000 in expenses; total operating expenses amounting in 1917 to \$23,450,000. Increases in the amount spent for maintenance of equipment and in transportation (out-of-pocket cost of moving the business) are principally responsible for the increases in expenses. Maintenance of way and structures cost \$2,522,000 in 1917, an increase of only \$394,000; while maintenance of equipment cost \$6,662,000, an increase of \$1,691,000, and transportation expenses amounted to \$12,746,000 in 1917, an increase of \$3,232,000. The cost of fuel increased out of proportion even to the increases in costs of other materials and of labor. Fuel for freight train locomotives in 1917 cost \$3,846,000 or \$1,601,000 more than the cost in 1916. In the case of the Delaware & Hudson, however, this does not represent a complete loss to the stockholders since a part of the increased cost for fuel is paid by the railroad department to the coal mining department and some of it is returned to the company in the form of miscellaneous income.

In 1917 the Delaware & Hudson carried 27,017,000 tons of freight, comparing with 24,506,000 carried in 1916. Of this 67.62 per cent was products of mines in 1917, and 63.34 per cent was products of mines in 1916. The average length of haul was 159 miles for each ton, an increase of a little less than 7 miles over 1916. The total ton mileage of revenue freight in 1917 was 3,954,000,000, an increase of 468,000,000 or 13.5 per cent. The freight train mileage totalled 5,289,000, an increase of 148,000 or 2.9 per cent. The average train load was 748 tons, an increase over the previous year of 69 tons, and the average number of tons per loaded car was 31.48 in 1917, an increase of 3.59 tons. Both the increase in train loading and in car loading are remarkably good.

During 1917 the Delaware & Hudson sold \$9,000,000 5 per cent three-year secured notes due August 1, 1920, and with the proceeds paid off the \$5,000,000 first mortgage bonds which matured in 1917. At the end of the year the company had \$1,204,000 loans and bills payable, comparing with \$3,204,000 loans and bills payable at the end of 1916, and had \$1,904,000 cash on hand, comparing with \$1,166,000 cash on hand at the end of 1916. During the year the company spent for additions and betterments to both road and equipment and charged to capital account \$2,542,000. One of the principal items of expenditure was on the enlargement of the yard at Carbondale and the completion of the new general office building at Albany.

The following table shows the principal figures for operation in 1917 as compared with 1916:

Revenue	Operating expenses	Maintenance of way and structures	Maintenance of equipment	Transportation	Fuel	Labor	Depreciation	Interest	Taxes	Profit
\$14,807,000	\$23,450,000	\$2,522,000	\$6,662,000	\$12,746,000	\$3,846,000	\$1,601,000	\$1,204,000	\$1,904,000	\$2,542,000	\$2,542,000
1916	1917	1917	1917	1917	1917	1917	1917	1917	1917	1917



The Delaware & Hudson

1917 wage rates were 35 per cent higher than those in effect in the same period in 1916. In fixing the price of coal the government has quite properly taken into consideration the increased cost of production. The anthracite coal produced by the Delaware & Hudson in 1917 was 8,644,000 tons, an increase of over 20 per cent over 1916. Since maintenance of steady output is a large factor in the holding down of costs in coal mining, the greatly increased total year's production of the Delaware & Hudson indicates a much better condition in the coal mining department in 1917 than in 1916. Apparently the coal miners have readjusted themselves to the shorter hours of labor for their helpers, and, although it was necessary to use extraordinary efforts to retain at the mines a sufficient number of workers, it would appear that the Delaware & Hudson quite successfully made such efforts. As President L. F. Loree says, "Scarcity of labor and unprecedented need of heavier production are principal characteristics" with the production and sale of anthracite at present.

In the railroad department the company earned \$29,989,000 in 1917 or \$3,355,000 more than in 1916. This



Steam shovel working on the Erie.

Interesting Reconstruction Work on the Erie

A 35-Mile Section of Double Track Line in Indiana
Includes Some Heavy Grade Revision

IN ACCORDANCE with a general program for the improvement of its entire main line from New York to Chicago, which has been under way ever since F. D. Underwood was made president of the road in 1902, the Erie is now completing the construction of second track between Lomax, Ind., and Griffith, a distance of 35 miles. This is the last gap in the double tracking undertaken in 1913 between Marion, Ohio, and Chicago, a distance of 269 miles, and except for a few miles of single track in New York state,

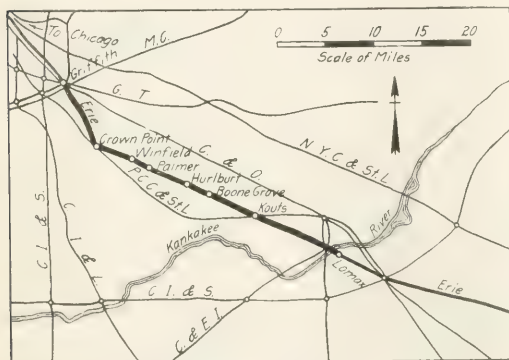
a capacity of 100 cars, instead of 85 cars as on the earlier work.

The construction work which was relatively heavy, considering the country traversed, was carried on under the heavy traffic conditions prevailing during the last two years. Contrary to common practice the work assigned to the general contractor included not only the grading and all bridge work except the erection of the steel, but also the ballasting, track laying and surfacing. The entire improvement represents an expenditure of something over \$2,000,000.

The Marion division of the Erie extends from Marion, Ohio, 248.7 miles west to Hammond, Ind., from which point the trains continue into Chicago over the tracks of the Chicago & Western Indiana. In general the traffic has consisted of a total of 12 first-class trains (including one 12-car eastbound express train and three 10-car westbound express trains) and about 12 freight trains eastbound and 11 westbound. About one-half of the eastbound freight trains and 30 per cent of the westbound freight trains are time freight.

The tonnage hauled over this line has been heavy. For example, in one month during 1917 the net tons of freight hauled one mile on the Marion division amounted to 96,647,329 westbound, and 66,496,564 eastbound. In this same month the average net tons per train was 962, while the record monthly average is 1,007 tons. This record is particularly favorable in view of the fact that relatively light engines were being used on this division, the heaviest locomotive being a superheater Consolidation weighing 200,700 lb. with 176,400 lb. on the drivers and a drawbar pull of 29,968 lb. on a 0.2 per cent grade, and 29,630 lb. on a 0.3 per cent grade.

Since the completion of the second track and improvement work as far west as Lomax several years ago the engines for the tonnage trains have been rated for ruling grades of 0.2 per cent westbound and 0.3 per cent east bound, with pushers for both the eastbound and the westbound 0.5 per cent grades between Lomax and Griffith. The loading of the engines for the time freights has been such that they could haul their trains over the 0.5 per cent grades without assistance. The pusher service has required the use of one west-

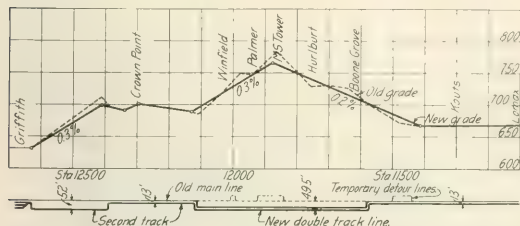


Map of Erie Between Griffith and Lomax, Ind.

the completion of this work will give the Erie double-track operation all the way from New York to Chicago.

The work now nearly finished involves a reduction of grades from 0.5 per cent in each direction to 0.2 per cent westbound and 0.3 per cent eastbound for the Marion division, these being the ruling grades established when the reconstruction work previously carried out on this division was started. A single departure from the standards established for the work previously completed on the Marion division consists in the provision for passing tracks having

bound and one eastbound pusher engine and three crews, and an average of 10 trains in each direction have been assisted over the grades. With the completion of the work now in progress, this pusher service is being done away with and since the mileage for the eastbound pusher engine was 24



Condensed Profile of the District on Which Reconstruction Work Was Done

miles for each train assisted and for the westbound pusher 11 miles, a total daily pusher mileage of about 350 miles will be eliminated.

Physical Characteristics

The location of the 35-mile section between Griffith, Ind., and Lomax consists essentially of a climb over a summit at MS Tower, which is located about midway in the section and is about 120 ft. higher than the track at Griffith and 90 ft. higher than Lomax. However, only about one-half of the distance is embraced in the approach grades to this summit. There is a 12-mile stretch of practically level track at the

grade were required except to make a ballast raise, and the second track in consequence was placed on the south side of the old line at 13-ft. centers. The grade revision at the summit necessitated a lowering of the grade line 20-ft. with a continuous 0.3 per cent approach grade from the west for a distance of 4¾ miles and a 0.2 per cent approach grade from the east for 8¾ miles. Besides this difference of 20-ft. in the elevation of the two grade lines at the summit there were other places where the new grade line is from 10-ft. to 12-ft. higher or lower than the old one, and it was decided in consequence to build a new double track line on an offset of 49½-ft. south from the center line of the old track for a



Typical Progress Sections of the Summit Cut

distance of 11 miles, the old line being abandoned after the new one was completed. From Griffith east the old line makes a climb of four miles on a 0.5 per cent grade to an intermediate summit about two miles west of Crown Point. In the reconstruction, a second or eastbound track was put in on a 0.3 per cent grade, leaving the old track for westbound trains. As this plan implied a material difference



A Blanket of Earth 10 ft. Thick Was Used to Counterweight One of the Fills

east end and one of five miles in the vicinity of Crown Point about half way up the west approach to the summit. These 17 miles consist almost entirely of light work, most of the heavy work being on the approach grades.

The alignment is tangent throughout except for a curve at Crown Point and one at Kouts, the former being a 1-deg. 50-min. curve with a total angle of 45 deg. In consequence no change of alignment was made in revising the grades except as it was found desirable to offset the new center lines as determined by the construction procedure.

On the two-level portions of the district no changes of

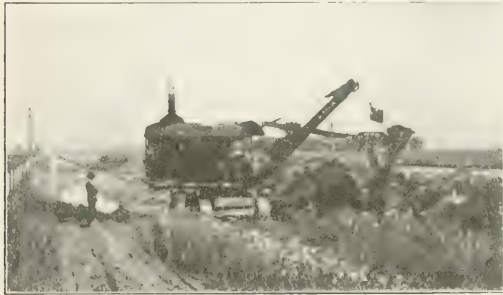
in the elevation of the two tracks in some places the second track was constructed 52-ft. south of the old center line.

Construction Methods

The construction work involved moving about 1,200,000 cu. yd. of earth. The grade line provided for a reasonable balance of excavation and embankment, although involving some long hauls on account of the preponderance of excavation for several miles each side of the summit. Some borrow was required for the yard excavation at Griffith, and at the east end where the work consisted very largely of a low em-

bankment for the second track adjacent to the old one the new fill was formed from borrow pits alongside. The Robert Grace Contracting Company, Pittsburgh, had the general contract and carried on nearly all of the work with its own forces, except for the side borrow work mentioned above and a small amount of work near the west end of the section, both of which were sublet to F. J. Mann, Wauwatosa, Wis.

The heavy work included a summit cut containing a total of 450,000 cu. yd., one near Palmer containing 137,000 cu. yd., one at Boone Grove of 22,000 cu. yd. and one west of Crown Point containing 104,000 cu. yd. There are fills



Revolving Shovel Making an Embankment from Side Borrow

of 131,000 cu. yd. and 207,000 cu. yd. west and east of the summit cut respectively, and one of 204,000 cu. yd. at the foot of the west approach grade.

At MS Tower the top width of the excavation was so great that it was necessary to throw the operated main track several feet to the north for a distance of 8,000 ft. entailing an excavation of 19,000 cu. yd. and a fill of 16,000 cu. yd. Of the total material in the M.S. cut, 200,000 cu. yd. was moved west and 250,000 cu. yd. east. A 70-ton and a 75-ton shovel were used in this cut, one working from each end. In the west end 4-yd. dump cars on a 36-in. gage track were used in 12-car trains handled by dinky locomotives. At the



Loading Wagons With a Revolving Shovel

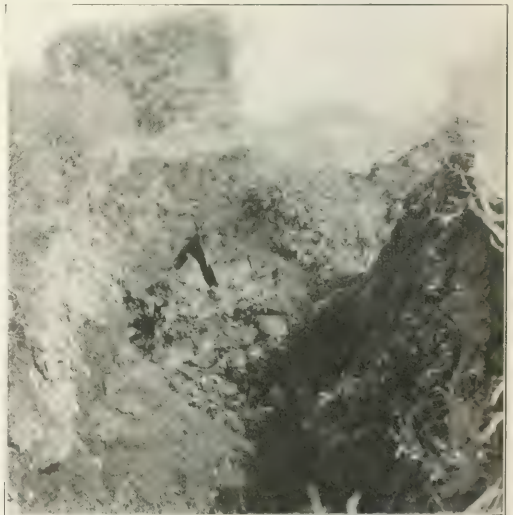
east end, standard-gage equipment was used, eighty 12-yd. Western dump cars being provided to haul the material. Of this material 207,000 cu. yd. was placed in a fill near Hurlburt within a distance of 3 miles, and about 25,000 cu. yd. was hauled east over the main line for a distance of 16 miles to be used in embankments.

The diagram illustrates a typical section of the summit cut and shows the manner in which the material was removed in the successive passages of the shovel. By taking independent cuts on each side of the center line with a portion

between untouched it was possible to operate the material cars on a ground surface track for a considerable time before shifting to a location in the cut.

The cut at Palmer is 2500 ft. long and has a maximum depth of 32 ft. All of the material from this point was moved west with standard gage 12-yd. dump cars handled in 12-car trains a maximum distance of four miles. In the 100,000 cu. yd. cut on the Griffith hill two 60-ton and one 70-ton steam shovels were used with narrow-gage hauling equipment.

One of the most interesting features of the work was the borrow pit excavation made by the sub-contractor, involving a total of 130,000 cu. yd. placed in embankments from 5 ft. to 7 ft. high formed from a borrow pit alongside. Two 20-ton Bucyrus revolving shovels were used, each equipped with $\frac{7}{8}$ -cu. yd. buckets, one on a 15-ft. boom and the other on a 12-ft. boom. One of the shovels made an average of 600 cu. yd. per day with a record of 750 cu. yd. per 10-hour shift for nearly one month. As the embankment formed by this method was rather rough, a considerable amount of dressing by hand and teams was required, but even including the cost of this work, the embankment was formed with considerable economy over other methods suggested. One of the



A Crack Six Feet Wide in Heaving Peat Near Griffith

illustration shows an 18-ton shovel of the revolving type used by the same contractor to handle 38,000 cu. yd. of material taken from a borrow pit west of Crown Point for the embankment approaches to an overhead highway crossing. The material was hauled by seven teams and dump wagons.

Special Features

The construction season was more than ordinarily dry and the contractor experienced no difficulty with wet cuts, although the drainage of some of the longer ones had to be carried as much as $1\frac{3}{4}$ miles in side ditches. In fact, considerable expense was incurred because of a lack of water, since it was necessary to haul that required for the contractor's locomotives and steam shovels from beyond the limits of the construction district for a considerable portion of the season.

Soft foundations were the source of considerable expense in two of the embankments, although experience with the

embankments for the original track made it possible to institute preparatory measures which resulted in savings, although not entirely eliminating the difficulties. The weight of the old embankment just east of Palmer had resulted in marked upheavals of the ground on either side, with accompanying settlements of the roadbed, and this action had been a source of considerable trouble when the original track was constructed. With this knowledge the ground on the low side of the new embankment was counterweighted with a layer of earth about 10-ft. thick and extending out a distance of 50 ft. from the toe of the embankment. This is shown in one of the photographs. In spite of these precautions considerable settlement took place.

Near Griffith a sink hole was encountered where the embankment rested on a soft black peat which settled heavily under the weight of the new fill and produced a swell or wave about 100 ft. from the track. This reached the height of 15 ft., actually higher than the unfinished embankment and broke into large fragments with fissures 6 ft. or more in width and depth as shown in one of the photographs.

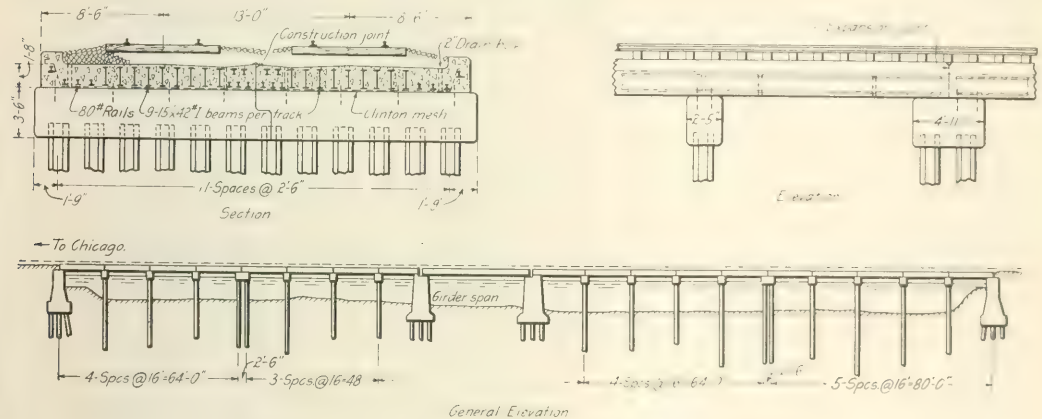
Structures

The bridge work on the line is relatively light and aside from bridges over two channels of the Kankakee river near

the bottom flanges of the beams and extends up into the parapets on each side.

The bents consist of pre-cast concrete piles capped with a reinforced concrete girder built in place. There are 12 piles to each bent. Owing to the necessity of maintaining traffic on the original timber trestle during the construction of the new bridge, constructive joints were made in the caps on the center line between tracks. Under the plan of construction adopted, the slabs were cast in place on the bents and were secured rigidly in position in groups of four or five by four one-in. dowel bars per track extending into the slabs and the caps. Expansion joints were provided on one end of each group of four or five slabs and in cases where this expansion joint does not come on one of the abutments or masonry piers a double concrete pile bent was provided, consisting of two rows of piles covered by a wide cap. These double bents also provide additional rigidity in the structure.

The piles are 25 ft. long, octagonal in shape, 16 in. on the short diameter, and were driven by a No. 1 Vulcan 5-ton steam hammer. The driving was difficult and the best day's work was eight piles. A number of piles had to be cut off because they could not be driven to the pre-determined penetration. A No. 3 Union Iron Works steam hammer was employed to drive the sheet piling used for the cofferdams for



Elevation and Typical Details of One of the Kankakee River Bridges

Lomax they consist of I-beam and rail spans encased in concrete, arch and pipe culverts, several highway over-crossings, one under-crossing and a few girder spans over small streams. The masonry work involved a total of 12,884 cu. yd. of concrete.

The highway over-crossings consist of plate girder spans directly over the tracks, supported on concrete bents or steel columns on low concrete pedestals with approach spans on either side over the slopes of the cuts. These approach spans consist of reinforced concrete slabs in most cases and the abutments are mainly of the skeleton type set in the top of the slope.

The two Kankakee river bridges are reinforced concrete pile trestles, consisting respectively of eighteen and ten 16-ft. panels of concrete slabs, with the addition, in the longer structure, of a skew through girder span 58 ft. face to face of piers, which was provided to permit the ready passage of dredges used in drainage work. The trestle slabs consist of nine 15-in. 42-lb. I-beams placed directly under the track ties with a number of T-rails in the portions of the slabs between the tracks and outside of them, all steel being encased in concrete. No other reinforcing is provided, except a layer of Clinton welded wire fabric which is spread below

the pier and abutment foundations which were supported on timber piles. The abutments are of the pier type to permit the ready extension of the concrete trestles in either direction should it subsequently be found necessary to provide additional waterway. In order to cast the slabs in place and to maintain traffic during construction it was necessary to complete the second track side of the bridge first, and as soon as this could take traffic, train operation was shifted to it while the side of the bridge to carry the original track was completed.

Track Standards

The new track is laid with 100-lb A. R. A. Type A rail, which is used also in all the crossovers in the old line. Side tracks are laid with 90-lb. relay rail. Zinc-treated red oak ties 8½ ft. long are laid 18 to a 33-ft. rail in main tracks, and 8 ft. long laid 16 to the rail in side tracks. Joints are slot spiked, with anti-creeper on the opposite ends of the joint ties. Additional rail anchors are provided in track approaching stations, interlocking plants and the entrances to sidings. Stone ballast is used to a depth of 1 ft. below the bottoms of the ties, 220,000 cu. yd. being provided in all for this work. The roadbed standards provide for a base width

on embankments of 19 ft. for single track and 32 ft. for double track; the base width in cuts is 27 ft. for single track and 40 ft. for double track, except where extra large ditches are required. Double passing sidings are provided at intervals and located in most places away from towns to avoid blocking the streets with standing trains. Each siding is 4,725 ft. long over-all and will hold a 100-car train.

This work has been carried on under the direct supervision of C. R. Hughes, district engineer, Huntington, Ind., with M. W. Manz, W. A. Scott and F. E. Welsh as resident engineers. The entire work was under the direction of R. S. Parsons, chief engineer, and R. C. Falconer, assistant chief engineer.

Save Coal by Reducing the Train Line Leaks

A LETTER, addressed to Eugene McAuliffe, manager of the fuel conservation section of the division of operation, United States Railroad Administration, was drafted by a committee of 27 members of the Air Brake Association, in which are contained a number of concrete recommendations for reducing train pipe leakage and thereby effecting a material saving in locomotive fuel consumption. These recommendations were drafted at a meeting of the Air Brake Association committee, held in Chicago on July 31, and were presented at a meeting of railroad officers convened by Mr. McAuliffe in Chicago the following day, to consider measures for fuel conservation.

The letter is as follows:

Realizing our country's present urgent need of fuel saving to the highest degree, and being actuated by a patriotic desire to be genuinely useful in its particular way, the Air Brake Association, through its president, F. J. Barry, has proffered its active assistance to the Railroad Administration's division on fuel conservation, of which you have been made the official head. Your acceptance of this assistance resulted in the convening of a special committee of supervising air brake men from 24 of the largest railroads of the United States. This committee's deliberations resulted in the consensus of opinion that its greatest and most needful help in fuel saving could be rendered through a materially decreased leakage in brake pipes on freight trains, which, according to careful expert estimate, is now the cause of a wastage of more than 6,000,000 tons of coal annually. This wastage can be materially cut down in the opinion of the Air Brake Association Committee quickly and with little additional cost, if the following recommendations be diligently and faithfully followed by the railroads and the government alike.

(1) In switching cars in hump yard service, hand brakes must be known to be in operative condition before dropping over the hump. Each cut should be ridden home and not be allowed to hit cars on make-up track at a speed exceeding three miles per hour, as excessive shocks result in loosened brake pipe and cylinder connections with attendant leakage at joints. Same conditions apply to general yard switching, and similar care should be exercised.

(2) When hose are uncoupled, they must be separated by hand and not pulled apart. Pulling hose apart is not only the most prolific cause of brake pipe leakage, but the damage annually due to train parting, account of hose blowing off nipples, also bursting, due to fiber stress, results in damage running into thousands of dollars. Angle cocks first must be closed if brake pipe is charged.

(3) Ample time must be allowed properly to inspect the air brakes and place them in good working order before leaving terminals.

(4) Freight terminals where conditions and business handled justifies, should be provided with a yard testing plant, piped to reach all outbound trains. At all freight houses, loading sheds, team tracks and other places where cars in quantity are spotted for any purpose long enough to make repairs and test brakes, air should be provided to do such work.

(5) On shop and repair tracks provided with air, brakes should be cleaned and tested in accordance with M. C. B. rules and instructions. Weather permitting, hose and pipe connections shall be given soapsuds test. Hose showing porosity shall be removed and all leaks eliminated before car is returned to service.

(6) Freight trains on arrival at terminals where inspectors are stationed to make immediate brake inspection and repairs, shall have slack stretched and left with brakes fully applied.

(7) Brake pipe leakage on outbound freight trains shall not exceed eight pounds per minute and preferably should not exceed five pounds per minute following a fifteen-pound service reduction from standard brake pipe pressure, with brake valve in lap position.

(8) A suitable pipe wrench must be furnished each caboose to enable trainmen to remove and replace hose and to tighten up leaks developing enroute. Instructions directing its use should be posted in each caboose.

(9) A rule should be put into effect that trainmen must apply an M. C. B. standard air brake defect card in cases where defects develop enroute, or for brakes cut out by them, defect to be checked off on back of card.

(10) Air compressor strainers must be known to be free of foreign matter before each trip and removed for cleaning if necessary. Steam pipe to compressor to be lagged outside of cab or jacket.

(11) Special effort must be made to reduce the leakage of the various air-operated devices on locomotives.

(12) In mounting air hose, the coupling should be gaged with an M. C. B. standard gage, and the couplings and coupling packing rings known to be standard.

(13) Special attention should be given to maintaining brake pipe, brake cylinder, reservoir, retaining valves and pipe secure to car.

(14) The importance of competent air brake supervision successfully to cope with existing conditions cannot be over estimated.

(15) In the recommendations submitted it is not the intent in any way to abrogate existing instructions or rules that are now in force that are more stringent than those recommended, as these recommendations are intended to represent maximum conditions.

The letter was signed by the members of the committee: L. P. Streeter, I. C., chairman; L. H. Albers, N. Y. C.; M. S. Belk, Sou. Ry. Lines; R. C. Burns, Penn. R.R.; H. A. Clark, Soo Line; H. A. Flynn, D. & H.; M. E. Hamilton, St. L.-S. F.; C. M. Kidd, N. & W.; Mark Purcell, N. P.; H. L. Sandhas, C. R. R. of N. J.; C. Terwilliger, N. Y., N. H. & H.; Robert Wark, No. Pac.; W. W. White, M. C.; L. S. Ayer, Sou. Pac.; J. A. Burke, Santa Fe; T. L. Burton, N. Y. C.; T. W. Dow, Erie; H. A. Glick, Bangor & Aroostook; E. Hartenstein, C. & A.; P. J. Langan, D. L. & W.; R. M. Long, P. & L. E.; C. H. Rawlings, D. & R. G.; H. S. Walton, Boston & Albany; C. H. Weaver, N. Y. C.; Geo. H. Wood, Santa Fe; H. F. Wood, Boston & Maine; F. M. Nellis, secretary.

KAISER ASKS SWEDISH AIR ROUTE.—The Germans have applied to the Swedish government for permission to establish an air route between Berlin and Stockholm, which may possibly be opened by a German company this summer, according to a consular report.

The Recent Increases in Wages of Shopmen

Supplement No. 4 to Order 27 Defines Trades, Names New Rates and Contains Statement by Mr. McAdoo

THE FULL TEXT of Supplement No. 4 to General Order No. 27 providing for additional increases to shopmen was given out in Washington on the afternoon of July 31, following its approval by the director general a week earlier, as briefly noted in the *Railway Age* of July 29, page 168. The supplement provides for increases to shopmen of nearly all classes, but a further increase is expected for some of the higher skilled trades which have hitherto enjoyed a differential, such as pattern makers, passenger car repair men, oxy-acetylene, thermit and electric welding, car repair work, etc. These trades have requested a further hearing and their case will be taken up before the Board of Railroad Wages and Working Conditions.

The full text of Supplement No. 4 follows:

In the matter of wages, hours, and other conditions of employment of employees in the mechanical departments (specified herein) of the railroads under Federal control it is hereby ordered:

ARTICLE I. CLASSIFICATION OF EMPLOYEES.

SECTION 1.—Machinists.—Employees skilled in the laying out, fitting, adjusting, shaping, boring, slotting, milling, and grinding of metals used in building, assembling, maintaining, dismantling, and installing locomotives and engines (operated by steam or other power), pumps, cranes, hoists, elevators, pneumatic and hydraulic tools and machinery, scale building, shafting and other shop machinery; ratchet and other skilled drilling and reaming, tool and die making, tool grinding and machine grinding, axle, wheel and tire turning and boring; engine inspecting; air equipment, lubricator and injector work; removing, replacing, grinding, bolting and breaking of all joints on superheaters, oxy-acetylene, thermit and electric welding on work generally recognized as machinists' work; the operation of all machines used in such work, including drill presses and bolt threads using a facing, boring or turning head or milling apparatus, and all other work generally recognized as machinists' work.

1-A.—Machinist apprentices.—Include regular and helper apprentices in connection with the above work.

1-B.—Machinist helpers.—Employees assigned to help machinists and apprentices. Operators of all drill presses and bolt threads not equipped with a facing, boring or turning head or milling apparatus, bolt pointing and centering machines, wheel presses, bolt threads, nut tappers and facers; crane-men, helpers, tool-room attendants, machinery oilers, box packers and oilers; the applying of couplings between engines and tenders, locomotive tender and draft rigging work, except when performed by carmen.

SECTION 2.—Boilermakers.—Employees skilled in laying out, cutting apart, building or repairing boilers, tanks and drums, inspecting, patching, riveting, chipping, caulking, flanging and flue work; building, repairing, removing and applying steel cabs and running boards; laying out and fitting up any sheet iron or steel work made of 16 gage or heavier, including fronts and doors; grate and grate rigging, ash pans, front and netting and diaphragm work; engine tender steel underframe and steel tender truck frames, except where other mechanics perform this work; removing and applying all stay bolts, radials, flexible caps, sleeves, crown bolts, stay rods and braces in boilers, tanks and drums, applying and removing arch pipes; operating punches and shears for shaping and forming, pneumatic stay bolt breakers, air rams and hammers; bull, jam and yoke riveters; boilermakers' work in connection with the building and repairing of steam shovels, derricks, booms, housings, circles and coal buggies; eye beam, channel iron, angle iron and tee iron work; all drilling, cutting and tapping, and operating rolls in connection with boilermakers' work; oxy-acetylene, thermit and electric welding, on work generally recognized as boilermakers' work; and all other work generally recognized as boilermakers' work.

2-A.—Boilermaker apprentices.—Include regular and helper apprentices in connection with the above.

2-B.—Boilermaker helpers.—Employees assigned to help boilermakers and apprentices. Operators of drill presses and bolt cutters in the boiler shop, punch and shear operators (cutting only bar stock and scrap).

SECTION 3.—Blacksmiths.—Employees skilled in welding, forging, shaping, and bending of metal; tool dressing and tempering; spring making, tempering, and repairing; potshaping, case and bichloride hardening; flue welding under blacksmith foreman; operating furnaces, bulldozers, forging machines, drop-forging machines, bolt machines and Bradley hammers; hammersmiths, drop hammers, trimmers, rolling mill operators; operating punches and shears doing shaping and forming in connection with blacksmiths' work; oxy-acetylene, thermit and electric welding on work generally recognized as blacksmiths' work, and all other work generally recognized as blacksmiths' work.

3-A.—Blacksmith apprentices.—Include regular and helper apprentices in connection with the above.

3-B.—Blacksmith helpers.—Employees assigned to helping blacksmiths and apprentices; heaters, hammer operators, machine helpers, drill press and bolt-cutter operators, punch and shear operators (cutting only bar stock and scrap), in connection with blacksmiths' work.

SECTION 4.—Sheet-metal workers.—Sheet-metal workers shall include

tinners, copersmiths and pipe fitters employed in shop yards and buildings and on passenger coaches and engines of all kinds, skilled in the building, erecting, assembling, installing, dismantling and maintaining parts made of sheet copper, brass, tin, zinc, white metal, lead and black planished and pickled iron of less than 16 gage, including brazing, soldering, tinning, bending and babbiting; the bending, fitting, cutting, threading, brazing, connecting and disconnecting of air, water, gas, oil and steam pipes; the operation of babbitt fires and pipe-threading machines; oxy-acetylene, thermit and electric welding on work generally recognized as sheet metal-workers' work, and all other work generally recognized as sheet-metal-workers' work.

4-A.—Sheet metal worker apprentices.—Include regular and helper apprentices in connection with the above.

4-B.—Sheet metal worker helpers.—Employees regularly assigned as helpers to assist sheet metal workers and apprentices.

SECTION 5.—Electrical workers, first class.—Employees skilled in repairing, rebuilding, installing, inspecting and maintaining the electric wiring of generators, switchboards, motors and controls, rheostats and control, static and rotary transformers, motor generators, electric head-lights and headlight generators; electric welding machines, storage batteries and axle lighting equipment; pole lines and supports for service wires and cables, catenary and monorail conductors and feed wires, overhead and underground winding armatures, fields, magnet coils, rotors, stators, transformers and starting compensators; all outside and inside wiring in shops, yards, and on steam and electric locomotives, passenger train and motor cars, and include wiremen, armature winders, switchboard operators, generators attendants, motor attendants, substation attendants, electric crane operators for cranes of 40 tons capacity or over; cable splicers, linemen and groundmen, signalmen and signal maintainers, where handling wires and apparatus carrying 240 volts or over, or in dense traffic zones, and all other work properly recognized as first-class electrical workers' work.

5-A.—Electrical workers, second class.—Operators of electric cranes of less than 40 tons capacity; linemen and groundmen, signalmen and signal maintainers, where handling wires and apparatus carrying less than 240 volts, and in normal traffic zones, and all other work properly recognized as second-class electrical workers' work.

5-B.—Electrical worker apprentices.—Include regular and helper apprentices in connection with the above.

5-C.—Electrical worker helpers.—Employees regularly assigned as helpers to assist electrical workers and apprentices, including electric lamp trimmers who do no mechanical work.

SECTION 6.—Carmen.—Employees skilled in the building, maintaining, dismantling, painting, upholstering, and inspecting of all passenger and freight train cars, both wood and steel; planing mill, cabinet and bench carpenter work, pattern and flask making, and all other carpenter work in shop and yards; carmen's work in building and repairing motor cars, lever cars, hand cars, and station trucks; building, repairing, removing, and applying locomotive cabs, pilots, beam trucks, running boards, foot and headlight boards, tender frames and beams; pipe and inspection work in connection with air-brake equipment on freight cars; applying patented metal roofing; repairing steam-heating hose for locomotives and cars; operating punches and shears doing shaping and forming, hand forges and heating torches, in connection with carmen's work; painting, varnishing, surfacing, lettering, decorating, cutting of stencils and removing paint; all other work generally recognized as painters' work under the supervision of the locomotive and car departments; joint car inspectors, car inspectors, safety appliance, and train-car repairers, wrecking derrick engineers, and wheel-record keepers; oxy-acetylene, thermit, and electric welding on work generally recognized as carmen's work, and all other work generally recognized as carmen's work.

6-A.—Carmen apprentices.—Include regular and helper apprentices in connection with the above.

6-B.—Carmen helpers.—Employees regularly assigned to help carmen and apprentices; car oilers and packers, material carriers, and rivet heaters; operators of bolt threads, nut tappers, drill-presses, and punch and shear operators (cutting only bar stock and scrap).

SECTION 7.—Molders.—Include molders, cupola tenders, and core makers.

7-A.—Molder apprentices.—Include regular and helper apprentices in connection with the above.

7-B.—Molder helpers.—Employees regularly assigned to help molders, cupola tenders, core makers and their apprentices.

ARTICLE II. HOURLY RATES OF COMPENSATION.

SECTION 1. For the above classes of employees (except carmen, second-class electrical workers, and all apprentices and helpers), who have had four or more years' experience and who were on January 1, 1918, receiving less than 55 cents per hour, establish basic minimum rate of 55 cents per hour, and to this basic minimum rate and all other hourly rates of 55 cents per hour and above, in effect as of January 1, 1918, add 13 cents per hour.

SECTION 2. For carmen and second-class electrical workers who have had four or more years' experience and who were on January 1, 1918, receiving less than 45 cents per hour, establish a basic minimum rate of 45 cents per hour, and to this minimum basic rate and all other hourly rates of 45 cents and above, in effect as of January 1, 1918, add 13 cents per hour, establishing a minimum rate of 58 cents per hour.

SECTION 1-B. Rates of compensation exceeding the minimum rates established herein to be preserved; the entering of employees in the service or the changing of their classification or work shall not operate to establish

Section 1-C. The Director General recognizes that the minimum rates established herein may be exceeded in the case of men of exceptional skill, who are doing special high-grade work, which has heretofore enjoyed a differential. Such cases would include pattern makers, passenger car repair men, oxy-acetylene, thermite, and electric welding in car repair work, etc., and should be presented to the Board of Railroad Wages and Working Conditions for recommendation as provided in General Order No. 27.

Section 2. The above classes of employees (except carmen, second-class electrical workers, and all apprentices and helpers) who have had less than four years' experience in the work of their trade will be paid as follows:

- (a) One year's experience or less, 50 cents per hour.
- (b) Over one year and under two years' experience, 53 cents per hour.
- (c) Over two years' and under three years' experience, 57 cents per hour.
- (d) Over three years' and under four years' experience, 62 cents per hour.

Section 2-A. Carmen and second-class electrical workers who have had less than four years' experience in the work of their trade will be paid as follows:

- (a) One year's experience or less, 48½ cents per hour.
- (b) Over one year and under two years' experience, 50½ cents per hour.
- (c) Over two years' and under three years' experience, 52½ cents per hour.
- (d) Over three years' and under four years' experience, 54½ cents per hour.

Section 2-B. At the expiration of the four-year-period the employees mentioned in section 2 and section 2-A shall receive the respective minimum of their craft.

ARTICLE III.

Section 1. Regular apprentices between the ages of 16 and 21, engaging to serve a four-year apprenticeship, shall be paid at follows: Starting-out rate and for the first six months, 25 cents per hour, with an increase of 2½ cents per hour for each six months thereafter up to and including the first three years, 5 cents per hour increase for the first six months of the fourth year and 7½ cents per hour for the last six months of the fourth year.

Section 1-A. If retained in the service after the expiration of their apprenticeship, apprentices in the respective trades shall receive not less than the minimum rate established for their craft.

Section 2. Helpers in the basic trades herein specified will be paid 45 cents per hour.

Section 3. Helper apprentices will receive the minimum helper rate for the first six months, with an increase of 2 cents per hour for every six months thereafter until they have served three years.

Section 3-A. Fifty per cent of the apprentices may consist of helpers who have had not less than two consecutive years' experience in their respective trades in the shop on the division where advanced. In the machinist, sheet metal worker, electric and molder trades the age limit for advancement will be 25 years; in the boilermaker, blacksmith, and carmen trades 30 years.

Section 4. In the locomotive and car departments gang foremen or leaders and all men in minor supervisory capacity and paid on an hourly basis will receive 5 cents per hour above the rates provided for their respective crafts.

Section 5. The supervisory forces of the locomotive and car departments, paid on a monthly basis and exercising supervision over the skilled crafts, will be paid an increase of \$40 per month in addition to the monthly rate as of January 1, 1918, with a minimum of \$155 per month and a maximum of \$250 per month.

ARTICLE IV.—GENERAL APPLICATION.

Section 1. Each railroad will in payments to employees on and after July 1, 1918, include these increases therein.

Section 1-A. The increases in wages and the rates established herein shall be effective as of January 1, 1918, and are to be paid according to the time served to all who were then in the railroad service, or who have come into such service since, and remained therein. A proper ratable amount shall also be paid to those who for any reason since January 1, 1918, have been dismissed from the service, but who have left the railroad service to enter the military service of the Army or Navy shall be entitled to the pro rata increase accruing on their wages up to the time they left, and the same rule shall apply to those who have been transferred from one branch of the railroad service, or from one road, to another.

Section 2. The hourly rates named herein are for an eight-hour day, and one and one-half time will be paid for all overtime, including Sundays and the following holidays: New Year's Day, Washington's Birthday, Decoration Day, Fourth of July, Labor Day, Thanksgiving and Christmas.

Section 3. While the specific rates per hour named herein will be retroactive to January 1, 1918, the special overtime provisions established in section 2 of this article will be effective as of August 1, 1918, with the provision that in computing overtime to determine back pay to January 1, 1918, overtime will be paid at a pro rata rate for all overtime worked in excess of the hours constituting the recognized day or night shift, except where higher overtime rate basis exists, or has been applied, in which event the more favorable condition shall be the basis of computing back pay accruing from this order.

Section 4. Employees, except monthly salaried employees, coming within the scope of this order, sent out on the road for emergency service, shall receive continuous time from the time called until their return as follows: Overtime rates for all overtime hours whether working, waiting, or traveling, and straight time for the recognized straight time hours at home stations, whether working, waiting, or traveling, except that after the first 24 hours, if the work is completed or they are relieved for 5 hours or more, such time shall not be paid for, provided that in no case shall an employee be paid for less than 8 hours on week days and 8 hours at one and one-half time for Sundays and holidays for each calendar day. Where meals and lodging are not provided by the railroad an allowance will be made for each meal or lodging. Employees will receive

allowance for expenses not later than the time when they are paid for the service rendered.

Section 5. Employees specified herein when sent from home point to temporarily fill vacancy or perform work at outside division points, will be paid straight time and overtime rates as per shop rules, including going and return trip, in addition to which they will be paid pro rata at the rate of \$2 per day for meals and lodging.

Section 6. Carmen stationed at points requiring only one employee on day shift or night shift, or day and night shifts, shall be paid eight hours at not less than the hourly rate provided herein.

Section 7. Mechanics now regularly assigned to perform road work and paid on a monthly basis shall be paid for eight hours at not less than the hourly rate provided herein.

Section 8. Employees on a piecework basis shall receive not less than the minimum rate per hour awarded to the hourly workers, including time and one-half for overtime as hereinbefore provided; otherwise piecework rates provided in General Order No. 27 shall apply.

Section 9. The application of this order shall not, in any case, operate to establish a less favorable wage rate than in effect January 1, 1918.

ARTICLE V.—PAYMENTS FOR BACK TIME.

Section 1. As promptly as possible the amount due in back pay from January 1, 1918, in accordance with the provisions of this order, will be computed and payment made to the employees, separately from the regular monthly payments, so that employees will know the exact amount of these back payments.

Section 2. Recognizing the clerical work necessary to make these computations for back pay, and the probable delay before the entire period can be covered, each month, beginning with January, shall be computed as soon as practicable, and, as soon as completed, payments will be made.

ARTICLE VI.—INTERPRETATION OF THIS ORDER.

Section 1. Railway Board of Adjustment No. 2 is authorized by Article IX of General Order No. 27 to perform the following duty:

"Wages and hours, when fixed by the Director General, shall be incorporated into existing agreements on the several railroads, and should differences arise between the management and the employees of any of the railroads as to such incorporation, such questions of difference shall be decided by the Railway Board of Adjustment No. 2 when properly presented, subject always to review by the Director General."

Section 2. In addition to the foregoing other questions arising as to the intent or application of this order in respect to the classes of employees within the scope of the Railway Board of Adjustment No. 2 shall be submitted to such board, which board shall investigate and report its recommendations to the Director General.

Section 3. All rates applied under this order shall be filed by the Regional Directors with the Board of Railroad Wages and Working Conditions.

Section 4. The rates, increases, and other conditions of employment herein established for the classes of employees herein specified shall supersede the rates, increases and other conditions established by General Order 27, except as provided in section 8, Article IV.

The concluding section of the supplement is a statement by Mr. McAdoo reading as follows:

In reaching the conclusions upon which this order is based, I have been keenly conscious not alone of the interests of the large number of railway employees who are greatly benefited thereby, but also of my solemn duty to the American people to see to it that the trust they have committed to me is discharged faithfully, with justice to them as well as to the railroad employees concerned. No right decision can be made which considers only the demands and interests of any class of men apart from the paramount interest of the public and the supreme necessity of winning this war.

Now that the decision has been made, the American people, whose servants we are, expect every railroad employee to devote himself with new energy to his work, and by faithful and efficient service, to justify the large increases of pay and the improvement in working conditions hereby granted. The American people have a right to expect this and they will be content with nothing less.

It is of the utmost importance that motive power and cars shall be kept in repair and that the output of railroad shops throughout the country shall be greatly increased in the future. Unless this is done, the railroads can not efficiently perform the increased duties imposed upon them by the war, and the fighting power of our armies in France and of our navies on the high seas will be seriously impaired.

I am proud of the loyal service the great body of railroad men throughout the country have rendered to their Government since the railroads have come under Federal control. It is a genuine pleasure to make this acknowledgment, but I should not fail to say at the same time that

there are instances where agitations and disturbances in some of the locomotive and car shops have been extremely hurtful to the country. The loyal and patriotic employees, who constitute the great majority of the army of railroad workers, have not yielded, be it said to their credit and honor, to these disturbances. But the few who have, have done their country a grievous injury by impairing the efficiency and reducing the output of the shops where these disturbances have occurred.

The loyal and patriotic employees can render a new

and powerful service to their country by using their influence to expose any who may become slackers in their work, by co-operating with their officers in the enforcement of discipline, and by increasing, to the utmost limit of their capacity, the output of locomotives and cars which are so essential to the efficient operation of the railroads of the country and to the success of our armies in the field. I know I can count on the patriotism and devotion to duty of every true American engaged in the railway service of the United States.



B. F. Bush,
Southwestern Regional Director



W. B. Bidde, Traffic Assistant to
Southwestern Regional Director.



E. A. Hadley, Engineering Assistant
to Southwestern Regional Director



F. G. Pettibone
District Director of Lines in Texas

Organization of the Southwestern Railway Region

The Economic Character of the Territory; the Mileage, Equipment and Revenues of the Railways

THE SOUTHWESTERN RAILROAD REGION which was created recently when the Western region was divided into three parts, includes railroads operating from 35,000 to 40,000 miles of line. Although the various regions overlap to some extent by virtue of the control of lines which penetrate other territories, the Southwestern region consists approximately of the southern half of the state of Missouri, southeastern Kansas, most of Oklahoma, Louisiana west of the Mississippi river, most of Texas and all of the state of Arkansas. The area of this region is about 430,000 square miles, making it third in size among the railroad operating territories, it being exceeded in extent of territory by the Central Western and the Northwestern regions.

Some of the roads in the Southwest are in the hands of receivers and others have recently emerged from receivership. Among those in the hands of receivers are the Texas & Pacific, the Missouri, Kansas & Texas lines and the International & Great Northern, while those which recently have emerged from receiverships include the Missouri Pacific, the St. Louis-San Francisco, the Gulf Coast Lines, and the Rock Island Lines. Not having received compensation for service rendered, as a result of their inability to secure authority to increase their rates to reasonable figures, the southwestern lines are not as well equipped or as well maintained as those in other parts of the country. In fact, there is no strong trunk line in this entire region comparable with those in the two other western regions. This condition is no reflection on the ability of the officers who have directed the affairs of the railways, but is the inevitable result of the

short-sighted and rigorous policy pursued for a long time by the states through which the roads run.

The Southwestern region has few large cities and little manufacturing except in the centers near or on its borders. The principal war materials produced by it are oil, timber and cotton. In addition, considerable grain for shipment abroad passes through the territory, but most of this originates in the states north and northwest of the region.

Ever since the friction with Mexico a few years ago, the Southwest, and particularly the state of Texas, has been the scene of much military activity. The region contains more training camps and military posts of various kinds than the other two western territories, and probably ranks second only to the Southern region in this regard, if it does not surpass that section of the country. The transportation of troops to and from these camps has, of course, added considerably to the passenger traffic of southwestern lines.

The trend of traffic in the southwest is fanlike, both with respect to the movement of raw materials and the distribution of the manufactured products. The former move east to New Orleans, northeast to Memphis and St. Louis, and north to Kansas City, while the latter radiate throughout the region from the cities just mentioned. An increasing amount of business is now moving direct to Galveston and New Orleans for shipment overseas to supply the needs of our troops and the allied nations. Shipbuilding activity has sprung up at various points on the Gulf of Mexico, and this industry, also, is creating a more pronounced trend of traffic towards the South and Southwest. With the ex-

ception of the Southern Pacific lines, the Southwestern region contains no transcontinental lines. It is largely out of the zone of the great overland routes, most of which are situated in the regions to the north.

The Southwest is not a large producer of earnings. Data secured from the statistical abstract of the Interstate Commerce Commission for the fiscal year ended June 30, 1916, (and from the I. C. C. statistics for the previous year for some of the shorter lines) show operating revenues for the southwestern railroads totalling about \$300,000,000. These statistics, of course, represent a mere approximation of the business done by those lines, as they were arrived at by making estimated deductions and additions for parts of systems which have been added to or cut off from this region by the Railroad Administration. In general, they probably give a fairly accurate idea of the relation of this region to the remainder of the country. The figures do not include some small lines recently added to the list of government-controlled roads.

Operating expenses for the southwestern lines in 1916 amounted to nearly \$220,000,000 and net revenues from railway operation were over \$80,000,000, or about nine per cent of those last reported for all railroads in the country by the Interstate Commerce Commission. It will be noted that the mileage of the railroads in the Southwestern region is from 14 to 16 per cent of the total railway mileage in the country, while the net revenues of the region are somewhat less in relation to those reported for all lines in the United States.

While it is difficult to ascertain accurately the amount of equipment owned by the railways in the Southwestern region because of the division of certain lines among the different regions, reference to Interstate Commerce Commission statistics, with due allowances for the interregional location of roads, shows approximately 180,000 freight cars, 5,600 locomotives and 2,700 cars in passenger service. In other words, the railways in the Southwestern region own nearly eight per cent of the freight equipment of the country, nearly nine per cent of the locomotives and approximately five per cent of the cars in passenger service.

The more important lines included in the Southwestern region are the Gulf, Colorado & Santa Fe, the Gulf Coast Lines, the Southern Pacific lines in Louisiana and Texas, the Missouri Pacific system, the Missouri, Kansas & Texas, the St. Louis-San Francisco, the St. Louis, Southwestern, the Texas & Pacific, the International & Great Northern, the Kansas City Southern, and the Rock Island Lines (South of Herington, Kans.; Tucumcari, N. M., to Memphis, Tenn., and branches; and St. Louis to Kansas City.) While the Southwestern region contains railroads running into Kansas City, railway operation in the Kansas City terminal district has been placed under the control of the director of the central Western region. The St. Louis and East St. Louis terminals, however, are under the control of the regional director of the Southwestern lines and under the immediate charge of A. S. Johnson, terminal manager, who was previously assistant general manager of the Terminal Railroad Association of St. Louis.

So far only one operating district has been created in the Southwestern region; this comprises the railroads in Texas and is under the authority of F. G. Pettibone, district director, and formerly vice-president and general manager of the Gulf, Colorado & Santa Fe. It is in this district that the most radical rearrangement of lines has been effected. Old roads have been broken up and lines regrouped to form new systems with the evident idea that an officer can supervise a series of lines in one locality more efficiently than an equivalent mileage stretched out as the average railway system has been developed for strategic and traffic reasons. In the development of this plan the Cotton Belt has been merged with the Missouri Pacific, while the Frisco and the

Katy north of the Red river have been grouped under one federal manager. The readjustment has been even more radical in Texas where the lines of the Southern Pacific, Santa Fe, Texas & Pacific, Frisco, Katy, International and Great Northern and a number of short lines have been combined into four groups, entire lines being placed in one group in some instances and distributed between two and three groups in others.

The regional director of the Southwestern region and the members of his staff are all men who are familiar, as a result of long experience on individual railroads in that section of the country with the territory in which they will control operation. It was logical to select Benjamin F. Bush as the operating head of the railroads in the Southwest, as the road of which he has been the chief executive is unquestionably the strongest in that region in terms of mileage and earnings. Mr. Bush was president and receiver of the Missouri Pacific system from May 1, 1911, until the time of his appointment as regional director this year. His experience with that line, and particularly that part of it formerly known as the St. Louis, Iron Mountain & Southern, has put him in close touch with conditions in the territory in which he directs railroad operations. Although he was president and receiver of the Western Maryland from 1907 to 1911, he was with the Missouri Pacific during the four previous years as fuel agent, and practically all of his railway career before that was also in the West.

William G. Vollmer, assistant regional director of the southwestern railroads, is well suited for his position as an aid to Mr. Bush by virtue of association with him as assistant to the president of the Missouri Pacific and by previous experience on that road dating back to 1905. Mr. Vollmer's work has been both in the engineering and operating departments.

William G. Biddle, traffic assistant to the regional director, has spent the past seven and a half years with the St. Louis-San Francisco, during the last year of which he was president. His railroad experience has been largely in the traffic department. Previous to his election as president he was first vice-president in charge of traffic and chief traffic officer under the receivers on the Frisco. In addition, he has been vice-president in charge of traffic of the Chicago, Rock Island & Pacific and freight traffic manager of the Atchison, Topeka & Santa Fe.

E. A. Hadley, engineering assistant to Mr. Bush, was chief engineer of the Missouri Pacific system from May, 1915, up to the time of his recent appointment on the regional staff. The duties of that position put him in close touch with railway conditions throughout the Southwest. His selection as engineering assistant was therefore a logical one. In the five years previous to his appointment as chief engineer of the Missouri Pacific, Mr. Hadley was consecutively engineer of design and assistant engineer in charge of special engineering investigations for the president's office.

C. A. How, chairman of the regional purchasing committee, is acquainted with the needs of this area through his experience as general purchasing agent of the Missouri Pacific. Previous to the creation of the Southwestern region, Mr. How was chairman of a similar committee in the Western district and has been connected with the government purchasing organization since its inception. Associated with him on this committee is J. L. Cowan, purchasing agent of the San Antonio & Aransas Pass.

G. W. Briece, supervisor of transportation, is another Missouri Pacific officer, having been in the transportation department of that railroad since December 1, 1902. He served as passenger and freight car distributor and chief clerk to the superintendent of transportation up to October 1, 1913, on which date he was promoted to car accountant,

which position he held until his appointment as supervisor of transportation on the staff of the regional director.

W. E. McGarry, supervisor of car service on the staff of the regional director, has been intimately connected with the terminal situation of St. Louis for over 12 years. After being employed for some time on the Baltimore & Ohio and the Frisco, he was made chief clerk to the general manager of the Terminal Railroad Association of St. Louis on November 1, 1905, and was made a special representative in the operating department of the same company in February, 1915. On August 1, 1917, he was made vice-chairman of the St. Louis committee of the commission on car service, remaining in that position until he was selected as supervisor of car service by Mr. Bush, on July 1, 1918.

Frank G. Pettibone, district director of the lines in Texas, has been identified with the Gulf, Colorado & Santa Fe in that state ever since January 1, 1901. For the past 12 years he has been in charge of the operation of that road as second vice-president and general manager. Previous to that he was general superintendent on the same line. His long railway experience in Texas has given him an

excellent knowledge of the roads in that state and a thorough familiarity with the resources and products of that part of the country.

Freight Operations in May

THE FIGURES compiled by the Operating Statistics Section of the Railroad Administration showing freight train operation in May, 1918, do not show as good results as were obtained in May, 1917. As explained in a note to the tables herewith, this results from the fact that the revenue ton miles and the averages based thereon (train load, car load, and ton miles per locomotive and per car) in May, 1918, are somewhat understated. This is due to the adoption of the universal interline waybill on May 1, 1918, which has increased the proportion of freight moving on original billing. The ton miles on such freight are ordinarily not taken into account until the revenue is reported back by the delivering carrier. Consequently the "lap-over" of tons actually moved by the train miles and car miles of May, but not taken into account until June, is larger this year than last year.

FREIGHT TRAIN OPERATION—MONTH OF MAY, 1918, COMPARED WITH SAME MONTH OF PREVIOUS YEAR
SUMMARY

UNITED STATES*									
Item	1918	1917	Increase or decrease		1918	1917	Increase or decrease		
			Amount	Per cent			Amount	Per cent	
Freight train-miles	55,061,974	56,708,276	d 1,646,302	d 2.9	22,791,002	23,471,600	d 680,598	d 2.9	
Loaded freight car-miles	1,323,969,011	1,443,384,748	d 119,415,838	d 8.3	600,478,777	648,369,322	d 47,890,545	d 7.4	
Empty freight car-miles	658,058,256	615,571,885	d 42,486,371	d 6.9	307,449,766	282,154,637	d 25,295,129	d 9.0	
Total freight car-miles—loaded and empty	1,982,027,266	2,058,956,733	d 76,929,467	d 3.7	907,928,543	930,523,959	d 22,595,416	d 2.4	
Freight locomotive-miles	64,078,607	65,313,761	d 1,235,154	d 1.9	28,227,286	28,564,215	d 336,929	d 1.2	
Revenue ton-miles	33,718,905,439	35,443,351,627	d 1,725,044,188	d 4.9	16,634,691,269	17,397,151,573	d 762,460,304	d 4.5	
Non-revenue ton-miles	3,002,480,335	3,108,871,766	d 106,391,431	d 3.4	871,998,355	942,011,930	d 70,013,575	d 7.4	
Average number of freight locomotives in service	30,791	30,321	470	1.6	13,269	12,844	425	3.3	
Average number of freight locomotives in or awaiting shop	4,555	4,357	198	4.5	2,081	1,684	397	23.5	
Average number of freight cars in service	2,418,399	2,288,446	129,953	5.7	1,318,401	1,244,446	72,955	5.9	
Average number of freight cars in or awaiting shop	129,464	128,809	655	0.5	75,019	69,163	5,856	8.5	
Home	71,507	98,212	d 26,705	d 27.2	39,324	51,962	d 12,638	d 24.3	
Foreign	57,957	30,597	27,360	89.4	35,695	17,201	18,494	107.5	
Tons per train	667	680	d 13	d 1.9	768	781	d 13	d 1.7	
Tons per loaded car	27.7	26.7	1.0	3.7	29.2	28.3	0.9	3.2	
Average miles per locomotive per day	67.1	69.5	d 2.4	d 3.5	68.6	71.7	d 3.1	d 4.1	
Average miles per car per day	26.4	29.0	d 2.6	d 9.0	22.3	24.2	d 1.9	d 8.3	
Per cent of empty car-miles	33.2	29.9	3.3	11.0	33.9	30.3	3.6	11.9	
Per cent of freight locomotives in or awaiting shop	14.8	14.4	0.4	2.8	15.5	18.9	d 3.4	d 22.6	
Per cent of freight cars in or awaiting shop	5.4	5.6	d 0.2	d 3.6	1.5	5.6	d 4.1	d 73.6	
Revenue ton-miles:									
Per freight locomotive per month	1,095,070	1,168,937	d 73,867	d 6.3	1,253,651	1,354,496	d 100,845	d 7.8	
Per freight car per month	13,942	15,488	d 1,546	d 10.0	12,646	14,003	d 1,357	d 10.4	
Average miles operated—single track	221,688.73	221,396.81	291.92	0.1	57,738.54	57,892.27	d 153.73	d 0.3	

SOUTHERN DISTRICT									
Item	1918	1917	Increase or decrease		1918	1917	Increase or decrease		
			Amount	Per cent			Amount	Per cent	
Freight train-miles	10,347,921	9,545,109	802,812	8.4	21,923,051	23,691,567	d 1,768,516	d 7.5	
Loaded freight car-miles	1,938,705	2,251,258	d 312,553	d 13.6	498,611,528	569,494,268	d 70,882,740	d 12.4	
Empty freight car-miles	123,624,238	104,047,495	19,576,743	18.8	22,984,252	23,369,753	d 385,501	d 1.6	
Total freight car-miles—loaded and empty	347,502,943	329,568,753	17,934,190	5.4	726,595,780	798,864,021	d 72,268,241	d 9.0	
Freight locomotive-miles	11,663,879	10,797,592	866,287	8.0	25,951,954	27,641,512	d 1,689,558	d 6.1	
Revenue ton-miles	5,790,912,418	5,725,347,871	65,564,547	1.1	11,292,703,752	12,320,852,183	d 1,028,148,431	d 8.3	
Non-revenue ton-miles	507,510,125	535,344,264	d 27,834,139	d 5.2	1,822,971,855	1,631,515,572	d 1,951,283	d 12.0	
Average number of freight locomotives in service	5,250	5,106	144	2.8	12,272	11,000	1,272	11.6	
Average number of freight locomotives in or awaiting shop	591	570	21	3.7	2,992	2,992	0	0.0	
Average number of freight cars in service	346,888	283,208	63,680	22.5	1,318,401	1,244,446	72,955	5.9	
Average number of freight cars in or awaiting shop	16,223	16,408	d 185	d 1.1	38,222	43,238	d 5,016	d 11.6	
Home	9,234	13,130	d 3,896	d 42.3	22,949	33,120	d 10,171	d 30.7	
Foreign	6,989	3,278	3,711	113.2	15,273	10,118	5,155	50.9	
Tons per train	609	656	d 47	d 7.8	880	880	0	0.0	
Tons per loaded car	28.0	27.8	0.2	0.7	25.9	28.7	d 2.8	d 10.8	
Average miles per locomotive per day	71.7	68.2	3.5	5.1	64.6	71.7	d 7.1	d 11.0	
Average miles per car per day	32.3	37.5	d 5.2	d 13.9	31.0	31.4	d 0.4	d 1.3	
Per cent of empty car-miles	35.3	31.6	3.7	11.7	31.4	28.7	2.7	9.4	
Per cent of freight locomotives in or awaiting shop	11.3	11.2	0.1	0.9	15.3	18.9	d 3.6	d 19.1	
Per cent of freight cars in or awaiting shop	4.7	5.8	d 1.1	d 19.0	1.5	5.6	d 4.1	d 73.6	
Revenue ton-miles:									
Per freight locomotive per month	1,103,031	1,121,256	d 18,225	d 1.6	920,201	995,946	d 75,745	d 7.6	
Per freight car per month	16,694	20,216	d 3,522	d 21.8	14,935	17,118	d 2,183	d 12.7	
Average miles operated—single track	37,152.79	36,967.37	185.42	0.5	18,544.17	126,537.17	d 108,000.00	d 582.5	

COMPARATIVE MONTHLY STATISTICS, JANUARY TO MAY, INCLUSIVE

Item	EASTERN DISTRICT				WESTERN DISTRICT			
	1918		1917		1918		1917	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
Empty freight car-miles.....	1,607,750	100	1,607,750	100	1,607,750	100	1,607,750	100
Empty freight car-miles.....	2,620,147,014		2,664,267,262		2,620,147,014		2,664,267,262	
Empty freight car-miles.....	8,234,441		8,234,441		8,234,441		8,234,441	
Revenue ton-miles.....	154,195,764,273		155,066,696,398		154,195,764,273		155,066,696,398	
Non-revenue ton-miles.....	14,156,151,131		14,311,931,038		14,156,151,131		14,311,931,038	
Average number of freight locomotives in service.....	30,655		30,264		30,655		30,264	
Average number of freight locomotives in or awaiting shop.....	4,676		4,455		4,676		4,455	
Average number of freight cars in service.....	2,379,553		2,382,737		2,379,553		2,382,737	
Average number of freight cars in or awaiting shop.....	122,085		122,085		122,085		122,085	
Home tonnage.....	76,083		96,525		76,083		96,525	
Foreign tonnage.....	640		640		640		640	
Tons per train.....	28.8		28.8		28.8		28.8	
Average miles per locomotive per day.....	65.7		69.1		65.7		69.1	
Average miles per car per day.....	30.7		26.4		30.7		26.4	
Per cent of empty car-miles.....	15.3		14.7		15.3		14.7	
Per cent of freight locomotives in or awaiting shop.....	5.1		5.6		5.1		5.6	
Per freight locomotive per month.....	1,006,007		1,024,754		1,006,007		1,024,754	
Per freight car per month.....	12,960		13,586		12,960		13,586	
Average miles operated—single track.....	222,670.79		222,510.37		222,670.79		222,510.37	

Item	EASTERN DISTRICT				WESTERN DISTRICT			
	1918		1917		1918		1917	
	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
Empty freight car-miles.....	1,607,750	100	1,607,750	100	1,607,750	100	1,607,750	100
Empty freight car-miles.....	2,620,147,014		2,664,267,262		2,620,147,014		2,664,267,262	
Empty freight car-miles.....	8,234,441		8,234,441		8,234,441		8,234,441	
Revenue ton-miles.....	154,195,764,273		155,066,696,398		154,195,764,273		155,066,696,398	
Non-revenue ton-miles.....	14,156,151,131		14,311,931,038		14,156,151,131		14,311,931,038	
Average number of freight locomotives in service.....	30,655		30,264		30,655		30,264	
Average number of freight locomotives in or awaiting shop.....	4,676		4,455		4,676		4,455	
Average number of freight cars in service.....	2,379,553		2,382,737		2,379,553		2,382,737	
Average number of freight cars in or awaiting shop.....	122,085		122,085		122,085		122,085	
Home tonnage.....	76,083		96,525		76,083		96,525	
Foreign tonnage.....	640		640		640		640	
Tons per train.....	28.8		28.8		28.8		28.8	
Average miles per locomotive per day.....	65.7		69.1		65.7		69.1	
Average miles per car per day.....	30.7		26.4		30.7		26.4	
Per cent of empty car-miles.....	15.3		14.7		15.3		14.7	
Per cent of freight locomotives in or awaiting shop.....	5.1		5.6		5.1		5.6	
Per freight locomotive per month.....	1,006,007		1,024,754		1,006,007		1,024,754	
Per freight car per month.....	12,960		13,586		12,960		13,586	
Average miles operated—single track.....	222,670.79		222,510.37		222,670.79		222,510.37	

d Decrease. * The returns included in the monthly statement represent about 96 per cent of the total operated mileage of the roads in Class I.



Hurrying Supplies of Shells to the Front

Doings of the United States Railroad Administration

Universal Mileage Script; Freight Situation Improved; Advances Now Total \$203,000,000

THINGS HAVE BEEN RATHER QUIET in the offices of the Railroad Administration this week, pending the return of the director general. Mr. McAdoo, who was in Chicago on Tuesday on his way east from his recent western trip, is expected back at his office next week, when it is supposed that he will give his attention to the compensation contract. Prior to his return to Washington he was expected to spend a short time at White Sulphur Springs. As briefly noted in last week's issue several of the directors who went west with him were back at their offices a week ago.

Property Protection Section Showing Results

The vigorous campaign inaugurated by Director General McAdoo to stop thefts of railroad property is beginning to show gratifying results. Since the Property Protection Section of the Division of Law of the Railroad Administration was established on March 26, 1918, 1,098 prosecutions of thieves operating against railroad property have been brought, 592 convictions have been secured and 244 penitentiary sentences have been imposed. This section is receiving the cordial co-operation of the Federal authorities, of local police organizations throughout the country, of the courts, and of a number of civic organizations. Railroad police agencies already in existence are being utilized and new railroad police agencies are now being organized at various railroad centers for the purpose of more effectively stamping out thefts from railroads entering those points. Successful efforts are being made completely to co-ordinate railroad police and other public agencies at the principal centers.

Several statutes are in effect under which prosecutions for thefts from railroads can be brought. They include the Act of Congress of February 13, 1913, to punish unlawful breaking of seals of railroad cars, stealing freight and express packages or baggage, etc., in process of transportation in interstate shipment, etc.; the act of March 21, 1918, to empower the president to take over and operate the railroads during the period of the war; the act of August 10, 1917, amending Section 1 of the act to regulate commerce, which provides for punishment for obstructing, retarding, or interfering with make-up of any train, car, locomotive, or other vehicle in the movement of interstate commerce; the act of April 20, 1918, known as the Sabotage Act, to punish the wilful injury or destruction of war material, or of war premises or utilities used in connection with war material, etc. There are a great many state statutes which may also be invoked. In enforcing these statutes the Railroad Administration and the police forces of the various railroads have proved successful in co-operation with local police authorities in carrying on vigorous campaigns to stop the theft of railroad property in several of the principal centers.

In St. Louis a force of city detectives was assigned to give exclusive attention to the work, and uniformed policemen were sent upon the railroad premises as a part of their regular duty, to prevent offenses of this class. As a result of this co-operative work, more than 100 employees and others have been indicted by the Federal Grand Jury in cases of thefts of goods of large value. Shipments to a value of more than \$75,000 have already been recovered.

Other large cities have taken similar measures.

Among other very important results of the work of this bureau are significant and helpful warnings from the bench by some of the judges of the United States district courts of their intention to impose severe sentences in this class of cases.

Such warnings in themselves are efficacious. They exercise a very strong deterring influence. An instance of this kind follows: On July 30, U. S. District Court at Toledo, O., in continuing for sentence a case in which there was a strong plea for leniency because of the large families of the defendants, made a very impressive statement from the bench that "in any new case no plea for leniency would receive any consideration, but in all such new cases conviction would mean a sentence to the penitentiary for a considerable time, and that no small bonds would be accepted."

As result of campaign inaugurated by the Railroad Administration many reports of improved conditions have been received.

The assistance of the public in building up a healthy sentiment against this kind of crime is sought by the Railroad Administration. In the past there has been a tendency on the part of the public to minimize the seriousness of thefts from railroads, and in many cases trifling penalties have been imposed by courts for offenses of this kind. This probably was due in part to anti-corporation sentiment. At the present time the railroad properties of the country are under the control of the United States Government and therefore anyone stealing from a railroad is robbing the United States.

Advances Now Total \$203,000,000

The Railroad Administration during July made advances to railroads totaling \$43,205,050, over half of which was to cover back wages from January 1, according to the award of the Wage Board a couple of months ago. The total advances to the railroads up to August 1 totaled \$203,714,050.

The statement authorized by the director general, July 31, said that the \$43,205,050 advanced during July either as loans or on account of standard rentals or back wages was distributed to 37 different railroads.

The amount advanced to all roads for the month of July, advanced to all railroads throughout the country by the director general on August 1, was \$43,205,050. The money thus dispensed was obtained as follows:
From the United States treasury revolving fund \$180,559,000
From surplus balances of certain railroads... 23,155,050
Total.....\$203,714,050

Of the \$43,205,050 disbursed in the month of July, the larger portion, or approximately \$23,269,000, was advanced to the federal managers of certain railroads to pay up the back wages due to their employees from January 1 to May 31 in accordance with award submitted in June by the Arbitration Committee, and for other operating needs; \$6,328,775 was advanced to railroads on account of their standard estimated rentals; and \$13,607,275 was advanced in the shape of loans, on demand, at six per cent per annum interest.

The railroad lines to which advances were made during the month of July were as follows:

Chicago, Milwaukee & St. Paul.....	\$5,725,000
Pennsylvania Railroad.....	5,500,000
New York Central.....	5,000,000
Southern Railway.....	3,695,000
Lehigh Valley.....	3,500,000
Chicago, Rock Island & Pacific.....	3,000,000
Missouri, Kansas & Texas.....	2,420,000
Illinois Central.....	2,000,000
Denver & Rio Grande.....	1,400,000
Wabash.....	1,375,000
Seaboard Air Line.....	1,150,000
Missouri Pacific.....	1,000,000
Hudson & Manhattan.....	1,000,000
Central of Georgia.....	750,000
Chesapeake & Ohio.....	750,000
Chicago & Alton.....	600,000
Terminal R. R. Association of St. Louis.....	\$25,000

St. Louis Southwestern.....	500,000
Galveston, Harrisburg & San Antonio.....	500,000
Chicago, Indianapolis & Louisville.....	325,000
Indiana Harbor Belt.....	220,000
San Antonio & Aransas Pass.....	200,000
Chicago Junction.....	200,000
Buffalo, Rochester & Pittsburgh.....	200,000
Norfolk Southern.....	190,000
Atlanta, Birmingham & Atlanta.....	189,000
Belt Railway of Chicago.....	155,000
Duluth, South Shore & Atlantic.....	150,000
New York, Chicago & St. Louis.....	132,275
New Orleans Great Northern.....	120,000
Kansas City, Mexico & Orient.....	120,000
Chicago & Western Indiana.....	115,000
Minneapolis & St. Louis.....	100,000
Ann Arbor.....	75,000
St. Louis-San Francisco.....	60,000
Washington, Brandywine & Point Lookout.....	50,000
Detroit, Toledo & Ironton.....	38,775

The total advances made to date, including the loans to railroad corporations, compensation, and also advances made by the Director General to the federal managers aggregated \$203,714,050, which was distributed as follows:

New York, New Haven & Hartford.....	\$46,643,000
New York Central.....	10,000,000
Pennsylvania Railroad.....	30,500,000
Chicago, Milwaukee & St. Paul.....	14,725,000
Illinois Central.....	7,500,000
Baltimore & Ohio.....	9,000,000
Eric.....	7,500,000
Chicago, Rock Island & Pacific.....	6,000,000
Denver & Rio Grande.....	4,100,000
Southern Railway.....	3,645,000
Lehigh Valley.....	3,500,000
Chesapeake & Ohio.....	2,750,000
Wabash.....	2,500,000
Southern Pacific.....	2,350,000
Shoard Air Line.....	2,000,000
Delaware & Hudson.....	1,500,000
Chicago, Burlington & Quincy.....	1,325,000
Chicago, Indianapolis & Louisville.....	1,000,000
Missouri Pacific.....	1,000,000
Hudson & Manhattan.....	1,000,000
Minneapolis & St. Louis.....	850,000
St. Louis-San Francisco.....	810,000
Buffalo, Rochester & Pittsburgh.....	800,000
Central of Georgia.....	750,000
Chicago & Alton.....	600,000
Norfolk Southern.....	540,000
Terminal R. R. Association of St. Louis.....	525,000
Long Valley.....	500,000
Central Vermont.....	285,000
Ann Arbor.....	275,000
Detroit, Toledo & Ironton.....	233,775
Indiana Harbor Belt.....	220,000
San Antonio & Aransas Pass.....	200,000
Chicago Junction.....	200,000
Illinois Southern.....	160,000
Belt Railway of Chicago.....	155,000
Duluth, South Shore & Atlantic.....	150,000
New York, Chicago & St. Louis.....	132,275
Kansas City, Mexico & Orient.....	120,000
New Orleans Great Northern.....	120,000
Chicago & Western Indiana.....	115,000
Washington, Brandywine & Point Lookout.....	50,000

Of the above, all were in the shape of loans to railroad corporations or advances on account of compensation, except \$23,269,000, which was advanced to the federal managers for the purpose of meeting operating needs, principally for back wages.

The \$30,777,870 deposited with the director general between April 1 and July 31, by various railroads from their surplus funds was received from the following railroads:

Atlantic Coast Line and Louisville & Nashville.....	\$6,000,000
Southern Pacific.....	3,500,000
Atchison, Topeka & Santa Fe.....	3,000,000
Denver & Rio Grande.....	2,150,000
Chicago, Burlington & Quincy.....	1,500,000
Norfolk & Western.....	1,500,000
Northern Pacific.....	1,500,000
Hudson & Manhattan.....	1,100,000
Missouri Pacific.....	1,000,000
Colorado & Southern.....	850,000
Illinois Central.....	750,000
St. Louis-San Francisco.....	750,000
Fort Worth & Denver City.....	700,000
Albany, Great Southern.....	691,195
Chicago & Northwestern.....	500,000
El Paso & Southwestern.....	500,000
Galveston, Harrisburg & San Antonio.....	500,000
Kansas City Southern.....	500,000
Elgin, Joliet & Eastern.....	500,000
Chicago Great Western.....	400,000
Duluth, Missabe & Northern.....	400,000
Cinn., New Orleans & Texas Pac.....	386,675
Spokane, Portland & Seattle.....	300,000
Houston & Texas Central.....	300,000
Central of Georgia.....	300,000
Gulf Coast Lines.....	200,000
Vicksburg, Shreveport & Pacific.....	200,000
Alabama & Vicksburg.....	200,000
International & Great Northern.....	150,000
New York, Ontario & Western.....	150,000
New Orleans & Northeastern.....	100,000
Little Rock & St. Louis.....	100,000
Duluth & Iron Range.....	100,000

In accordance with the provisions of the director general's General Order No. 37 issued under date of June 19, the working balances of all railroad companies under government control are being transferred from the corporate treasurers to the federal treasurers and practically all railroad operating bank accounts will hereafter be kept in the name of the United States Railroad Administration.

Universal Mileage Scrip

The illustrations show the outside and inside, respectively, of the new mileage scrip book which the Railroad Administration will soon be ready to place on sale. The plan of the book as it has finally been worked out differs in several ways

UNITED STATES RAILROAD ADMINISTRATION
W. G. MCADOO,
 Director General of Railroads

ISSUED BY
MOBILE & OHIO RAILROAD.

\$30.00 SCRIP BOOK
 (\$32.40 including 4¢ per Tax)

GOOD FOR ONE OR MORE PASSENGERS.

Form U.S.S. No. _____

1. THIS SCRIP BOOK, WHEN OFFICIALLY STAMPED AND ISSUED, WILL BE HONORED BY ALL RAILROADS UNDER FEDERAL CONTROL, SUBJECT TO TARIFF REGULATIONS.

2. THE COUPONS CONTAINED HEREIN WILL BE ACCEPTED AT AUTHORIZED TARIFF FARES AND CHARGES AS FOLLOWS:

(A) FOR PASSENGER TRIP, IN COACH, 1.35; FIRST CLASS, 1.45; PARLOR OR SLEEPING CAR, TO THE EXTENT OF FARE COLLECTED IN TARIFF HELD BY CONDUCTOR TO WHOM TENDERED.

TO SECURE BENEFIT OF SHORT LINE FARE TO POINTS NOT COVERED BY TARIFF, HOLD ON TO CONDUCTOR, HOLDER MUST EXCHANGE COUPONS FOR TICKET OFFICE FOR TICKET, 1¢.

(B) FOR BAGGAGE CHARGES (EXCESS WEIGHT, EXCESS SIZE, EXCESS VALUATION AND TRANSFER), 1¢ PER 100 LBS. FOR EACH EXCESS.

3. WAR TAX MUST NOT BE COLLECTED WHEN DETACHMENTS ARE MADE, SUCH AS HAVING BEEN PAID WHEN SCRIP BOOK WAS SOLD.

(Continued on back cover.)

4. IF BOOK CONTAINS INSUFFICIENT COUPONS THE DIFFERENCE WILL BE COLLECTED IN CASH.

5. COUPONS WILL NOT BE ACCEPTED UNLESS DETACHED BY TICKET AGENT, CONDUCTOR, BAGGAGE AGENT OR OTHER AUTHORIZED EMPLOYEE.

6. COUPONS NOT BEARING SAME NUMBER AS THIS BOOK OR DETACHED COUPONS PRESENTED WITHOUT A COVER, WILL BE HONORED.

7. THIS BOOK WILL BE GOOD ONE YEAR FROM DATE OF SALE AS STAMPED HEREON, THE DATE OF EXPIRATION BEING INDICATED BY PUNCH MARKS IN MARGIN.

8. UNUSED COUPONS ATTACHED TO COVER OF SAME NUMBER WILL BE REDEMED THROUGH THE GENERAL PASSENGER OFFICE IF PRESENTED TO ISSUING CARRIER WITHIN SIX MONTHS FROM DATE OF EXPIRATION.

9. IN SELLING THIS BOOK FOR PASSAGE OVER OTHER LINES, AND IN EXCHANGING BAGGAGE HEREON, THE SELLING CARRIER ACTS ONLY AS AGENT AND IS NOT RESPONSIBLE BEYOND ITS OWN LINE.

E. B. Sharple
 General Passenger Agent,
 ST. LOUIS, MO.

STAMP

HERE

\$3.12 W. G. MCADOO, DIRECTOR GENERAL OF RAILROADS

\$3.15 So Ry 0.00

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\$3.21 UNITED STATES RAILROAD ADMINISTRATION

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\$3.42 W. G. MCADOO, DIRECTOR GENERAL OF RAILROADS

\$3.45 So Ry 0.00

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\$3.51 UNITED STATES RAILROAD ADMINISTRATION

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\$3.57 W. G. MCADOO, DIRECTOR GENERAL OF RAILROADS

\$3.60 So Ry 0.00

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\$3.66 UNITED STATES RAILROAD ADMINISTRATION

\$3.69 So Ry 0.00

COUPON 5 UNITED STATES RAILROAD ADMINISTRATION W. G. MCADOO DIRECTOR GENERAL OF RAILROADS 1935 1 CENT

COUPON 4 UNITED STATES RAILROAD ADMINISTRATION W. G. MCADOO DIRECTOR GENERAL OF RAILROADS 1935 1 CENT

COUPON 3 UNITED STATES RAILROAD ADMINISTRATION W. G. MCADOO DIRECTOR GENERAL OF RAILROADS 1935 1 CENT

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COUPON 1 UNITED STATES RAILROAD ADMINISTRATION W. G. MCADOO DIRECTOR GENERAL OF RAILROADS 1935 1 CENT

Covers and Inside of \$30 Scrip Book

Cover should be marked So. Ry. instead of Mobile & Ohio in order to agree with scrip.

from the original idea announced about a month ago (See the *Railway Age* of July 12, page 53). The books will contain \$29.40 worth of strip coupons, each of a value of 3 cents and there will also be 60 cents worth of one cent tickets for use in

making up odd amounts. The books will be good on any road controlled by the Railroad Administration. They will be sold by the originating road for \$30, plus the war tax of \$2.40, which will be collected at the time the book is sold. They will be payable only for transportation whether in coach, sleeping or parlor car, and for baggage charges, but not for dining car or for Pullman berth or seat tickets, as was originally intended. Under the original plan also it would have been necessary to collect the tax on the train because of the difference in the tax on tickets and Pullman charges.

The books are not meant quite to fill the position occupied by the former mileage books as there is no reduced rate, but it is expected that they will be used for the convenience they will offer. The books carry a notation to the effect that "To secure benefit of short line fare to points not covered by tariff held by conductor, holder must exchange coupons at ticket office for ticket." This accrues to the advantage of the holder in cases where the through fare is less than the aggregate of the local fares which the several conductors would collect in scrip on the trains.

Car Service Section Busy on Sailing Day Plans

The Car Service Section has announced the names of the chairmen of committees appointed in each of the regions to make a detailed study of the sailing day plan with a view to extending its use and co-ordinating the work that has already been done by individual railroads.

The committee chairmen appointed by the regional directors are as follows:

Eastern: C. H. Ketcham, inspector of transportation on the staff of the regional director.

Allegheny: J. R. Kearney, assistant to vice-president of the Baltimore & Ohio.

Packhontas: J. A. Talbot, superintendent of car service of the Norfolk & Western.

Southern: E. A. DeFuniak, formerly general freight agent of the Louisville & Nashville at Montgomery, Ala.

Northwestern: T. W. Proctor, formerly assistant general freight agent of the Chicago, Milwaukee & St. Paul.

Central Western: George Morton, assistant general freight agent of the Chicago, Burlington & Quincy at Chicago.

Southwestern: F. M. Lucore, assistant general manager of the Southern Pacific, Louisiana Lines.

These general regional committees will be assisted by various sub-committees. It will be their duty to make a survey covering a period of 10 to 15 days and to formulate sailing day plans for the various shipping centers in their territory. One of the chief objects aimed at is to co-ordinate the various sailing day plans already in effect so as to secure routings over the lines to which traffic most naturally belongs, thereby avoiding in so far as possible transfers from road to road at transfer points. The committees will be expected further to discuss the matter with chambers of commerce, shippers, etc.

The results expected are these:

More expeditious handling of freight.

Saving in expense.

Satisfaction and service to the public.

Elimination of claims for loss and damage, etc.

Increased car loading and resulting saving from the car conservation standpoint.

General Improvement in Freight Situation

Advices to the Railroad Administration report a general improvement in the freight situation, according to a statement issued last Saturday. Cars are in abundant supply and are being moved promptly.

The statement quotes the Georgia Fruit Exchange of Atlanta, Georgia, as writing:

We are glad to be able to advise you that we are now about to complete the movement of the largest crop of fresh peaches ever shipped out of the State, or in fact any State in the Union. Shipment to and including July 17 was 7,432 cars, and probably 400 more to move. The largest single day's shipment amounted to practically 600 cars.

The general service rendered by the railroads in the movement of the crop, viewed in the light of existing transportation and labor conditions,

has been such that we desire to express our gratification and congratulation upon the successful outcome.

It also quotes the weekly bulletin of the West Coast Lumbermen's Association as follows:

Production for the week ended July 20 at a group of 124 mills reporting to the West Coast Lumbermen's Association was 76,260,629 feet, which was within 2,631,371 feet, or 3.33 per cent of the normal.

Another notable element in the situation for the week was the continued abundance of freight cars. The mills shipped a total of 52,140,000 feet or 1,738 cars during the week, leaving a balance of only 8,119 cars of unshipped business on the books of the mills. This places the West Coast industry in better condition, so far as car business is concerned, than it has been in for nearly a year.

The remainder of the statement follows:

A letter from Seattle, Wash., published in the Philadelphia Ledger of Friday, August 2, says that Eastern retail lumber dealers have become somewhat indifferent about replenishing their fall stocks with promptitude as they are relying upon the idea that cars will be in plentiful supply during the winter and that they will be able to get delivery as they may need it. The directors of the Transportation and Traffic Divisions of the United States Railroad Administration assert that those who are likely to require goods during the coming winter will do well to have them shipped while cars are in abundant supply and prompt transportation can be relied upon. They say that while every effort will be made to meet any legitimate demand for transportation it is well not to forget that priority will have to be given to the shipment of coal and many other essentials during the winter, and that those who are likely to require goods that must be shipped from distant points by rail will do well to lay in the necessary stocks while the transportation facilities of the country are in good working order, and before the rigors of a possibly severe winter shall interfere as they must with the movement of trains and the loading and unloading of cars.

328,959 More Cars of Coal Handled This Year

The Railroad Administration is now issuing to the press a weekly statement showing the coal car movement, similar to that on coal production issued by the Geological Survey. The report issued August 2 covers the week ended July 20 and shows a total movement during the week of 270,434 cars, compared with 237,531 in the same week of last year. The figures are divided as follows:

	1918	1917
Total cars bituminous.....	225,771	192,147
Total cars anthracite.....	40,664	46,613
Total cars lignite.....	3,999	2,544
Grand total cars all coal.....	270,434	237,531

A summary of the decreases and increases in coal loaded since January 1, 1918, up to and including the third week of July, 1918, as compared with the same periods of 1917 follows:

	Decrease	Increase
January.....		
February.....		31,150 cars
March.....		46,613 cars
April.....		18,000 cars
May.....		18,000 cars
June.....		18,000 cars
First three weeks of July.....		83,022 cars
Increase, 1918 over 1917, 328,959 cars.		

The Car Service Section announces the appointment, effective August 1, of H. J. German as acting manager, Eastern Railroads Car Pool, with office in the Union Arcade building, Pittsburgh, Pa., to succeed F. G. Minnick, resigned to accept appointment as operating assistant of the Pittsburgh & Lake Erie, the Lake Erie & Eastern Railroad, and the Monongahela Railway.

The car ferry lines on Lake Michigan operated by the Pere Marquette, the Grand Trunk and the Ann Arbor have all

been placed in charge of Frank H. Alfred, federal manager of the Pere Marquette.

L. G. Scott, comptroller of the Wabash, has been appointed acting treasurer of the United States Railroad Administration, succeeding A. D. McDonald (vice president and comptroller of the Southern Pacific), acting treasurer, resigned, effective July 26.

* * *

The Central Advisory Purchasing Committee, Henry B. Spencer, chairman, has moved its offices from room 614, Interstate Commerce Commission building, to room 704, Southern Railway building.

Results of Signal Department Reorganization on Rock Island

By J. Arthur Hofmann

Chief Clerk, Signal Department, C. R. I. & P., Chicago, Ill.

PRIOR to 1915 the general organization of the signal department of the Chicago, Rock Island & Pacific provided for each operating division one signal supervisor who reported to the division superintendent. This signal officer had as assistants from one to three maintenance foremen who were in direct charge of the maintainers, battery-men and lampmen in the territory assigned to their jurisdiction. Supervisors had jurisdiction over more than one operating division on some of the outlying territories where comparatively little signalling was in effect. These territories ranged from a mileage of 430 to 2,741, while the territories under the jurisdiction of a signal supervisor east of the Missouri River ranged from 24 miles up to as high as 1,564. The maintenance foreman had on an average 130 miles of territory to look after.

On double track territory maintainers were assigned an average of 20 miles of territory, including approximately 24 automatic block signals, one 24-lever mechanical interlocking plant and 4 crossing bells. They were given a longer territory where they had no interlocking plants

were assigned no regular help. Under the organization as outlined above the line and track circuits were operated from gravity cells and the maintainers were not using motor cars to any great extent, although some did buy their own cars in 1914.

By introducing the use of motor cars and using Lalande cells on line and track circuits it appeared feasible to reorganize the signal department forces, the reorganization being made effective for the system on May 1, 1915. This reorganization reduced the number of maintenance foremen and the practice was discontinued of using them as chief maintainers, as under the new plan they were then assigned as division inspectors to watch such details of maintenance and cover that part of the work with which the signal supervisor could not keep constantly in personal touch.

The reorganization provided for no change in the supervisor's territory. On double track territory the maintenance foreman was assigned approximately 170 miles, having 225 signals with an average of 2 mechanical interlocking plants and 57 crossing bells. A maintainer was assigned approximately 28 miles with 35 signals and an average of 1 mechanical interlocking plant and 6 crossing bells.

On single track territory the maintenance foreman was assigned approximately 360 miles with 440 signals and an average of 6 mechanical interlocking plants and 27 crossing bells. A maintainer was in charge of about 35 miles of line with 42 signals with an average of 1 mechanical interlocking plant and 2 crossing bells. This mileage was based largely upon what was felt to be a maximum distance for good maintenance and for the bad weather conditions which would necessarily exist in winter.

Under the old plan of organization with one man to a section it was recognized that very little opportunity existed for educating men to be maintainers, and when a new maintainer was needed it was generally necessary to appoint some one from the construction forces. Under the reorganization each section was in charge of a maintainer who had under his direction a helper; each of these men being provided with a motor car. By this method a man was being educated on each section to fill a maintainer's position at a later date. The motor cars previously purchased by the maintainers, some of which were bought on the partial payment plan, were taken over by the railway company after an appraisal as to the value, and the maintainer was reimbursed for the amount he had paid less depreciation, the railroad company assuming the balance of the indebtedness, if any, and settling this direct with the motor car companies.

The general use of motor cars made it necessary to provide additional housing for the cars and likewise arrangements had to be made for storage space for gasoline. While only a few of the public utilities commissions of the various States through which the Rock Island lines operate require audible warning devices installed on motor cars, all cars on the system have been equipped with either an 8-inch gong or a Klaxon horn.

The maintainers and helpers were located as near the center of their section as was possible, this, of course, depending upon the telegraph facilities existing on each particular section. The maintainer was directly responsible for the territory assigned to him, the helper reporting to the maintainer. In addition to their other duties these men take care of all signal lights, including switch lamps and automatic signal territory on the main line, except where extensive yards exist, when other provision is made for the yard lamps.

Under the plan of the reorganization, each maintainer received an increase of \$5 per month, which was later added to by reason of general increases to employees on the system. His helper was paid at the rate of \$60 a month, which was later increased for like reasons.

Territory Before and After Reorganization
SINGLE TRACK

Before	After
12 to 15 miles	35 miles
16 to 18 automatic signals	42 automatic signals
1 mechanical interlocking	1 mechanical interlocking
2 crossing bells	4 crossing bells
DOUBLE TRACK	
20 miles	28 miles
24 automatic signals	35 automatic signals
1 mechanical interlocking	1 mechanical interlocking
4 crossing bells	6 crossing bells

to maintain and were handling only automatic signals, this territory being an average length of 27 miles with approximately 30 signals. A batteryman was assigned territory averaging about 27 miles, including 30 signals. This territory was not always under the jurisdiction of one maintainer, as in some cases it overlapped on two maintainers' sections. This was likewise true with reference to the territory of the lampman, who covered an average of 30 miles with approximately 35 signals to look after.

On single track, the territory assigned to one maintainer averaged 12 to 15 miles, with approximately 16 to 18 automatic signals. A maintainer having territory approximately 12 miles in length had included 1 mechanical interlocking plant and approximately 2 crossing bells to maintain, while the maintainer with 15 miles of territory covered automatic signals only. The maintainers on the single track territory

Due to the reorganization and taking into consideration the advance in pay to the field forces by reason of the general increase to the employees of the road, a saving has been effected of \$23,702.50 per annum. A greater saving could, of course, be shown if figured on the basis of the rates of pay in effect prior to the reorganization in 1915, and by not taking into account the general increases which have been made by the company since.

Not only has the reorganization effected the above economy, but a better signal performance is the result. While the latter is in a measure due to improved track conditions, it is felt that a large percentage is assignable to the reorganization which includes regular monthly meetings of the supervisors, together with monthly meetings of the signal engineer's staff, all of which co-ordinate the various activities of the men and tend to work to the improved service accomplished under this reorganization.

TABLE ILLUSTRATING ASSIGNMENT OF MEN ON SINGLE TRACK TERRITORY
MISSOURI DIVISION

MUSCANTINE DIVISION									
Head- quarters	Position			Territory	No. In aut. sigs.	No. King bells		Number inter- locking plants	Num- ber wkg. leaves
	Mt'r. Helper		In aut. ter.			Non- aut. ter.			
	D. N.	D. N.				M. P.	M. P.			ter.	Mch.
Muscantine	1	1	185.9	216.6	39	..	..	..	31
Muscantine	1	1	Colva	..	36	..	..	2	31
Columbus Jct.	1	1	Nahant	216.5-256.0	46	2	..	..	..
Columbus Jct.	1	1	216.5-256.0	46	2	..	..	..	..
Fairfield	1	1	82.4-82.4	30	..	..	..	..	46
Fairfield	1	1	Fairfield	30	..	..	..	..	33
Eldon	1	1	282.1-313.8	44	1	2	..	..	..
Eldon	1	1	Laborville	44	1	1	..	..	33
Centerville	1	1	Bellnap	313.1-344.2	40	1	..	1	28
Centerville	1	1	Centerville	40	1	..	..	1	28
Allerton	1	1	344.1-385.6	44	2	..	..	..	..
Allerton	1	1	344.1-385.6	44	2	..	..	..	..
Trenton	1	1	385.1-425.8	50	6	..	..	..	..
Trenton	1	1	385.1-425.8	50	6	..	..	..	..
Altamont	1	1	426.7-462.8	51	4	..	..	..	..
Altamont	1	1	..	51	4	..	..	..	..
Rushville	1	1	499.2-513.5	32	..	3	..	..	..
Reverly	1	1	Reverly	..	..	..	..	..	43
Reverly	1	1	Stillings Jct.	..	..	..	..	..	..
Reverly	1	1	4 St. Mch.	..	..	..	..	..	..

TABLE ILLUSTRATING ASSIGNMENT OF MEN ON ROUTE TRACK TERRITORY
ILLINOIS DIVISION

Head- quarters	Position			Territory	No. In aut. sigs.	No. King bells		Number inter- locking plants	Num- ber wkg. levers
	Mt'r. Helper		In aut. ter.			Non- aut. ter.			
	D. N.	D. N.							
Mokena	1	1	16.5-38.35	30	4	..	..	..
Mokena	1	1	16.5-38.35	30	4	..	..	..
Joliet (MC)	1	1	Mich. Cent.	..	..	1	..	88
Joliet (MC)	1	1	Mich. Cent.	..	..	1	..	88
Joliet (UD)	1	1	Union Depot	..	..	1	..	193

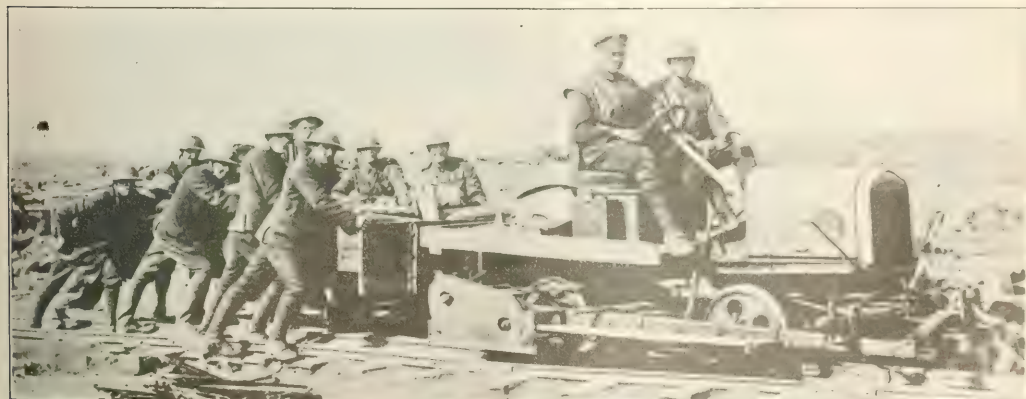
Joliet (UD)	..	Union Depot	..	1	..	..	..	..
Joliet (UD)	..	Union Depot	..	1	..	..	..	..
Morris	1	..	40.0-77.16	43	..	..	..	..
Morris	..	..	40.0-77.16	43	..	..	..	..
Ottawa	1	..	77.16-99.25	29	..	..	..	..
Ottawa	..	..	77.16-99.25	29	..	..	..	..
Bureau	..	..	98.35-129.25	41	..	..	..	..
Bureau	..	..	98.35-129.25	41	..	..	..	..
St. Charles	..	..	129.0-165.4	39	..	..	..	..
St. Charles	..	..	129.0-165.4	39	..	..	..	..
Silvis	1	..	165.2-180.3	29	..	..	..	..
Silvis	..	..	180.3-183.3	14	..	..	..	..
Davenport	1	..	Mich. Div. Jct.	..	..	..	..	..
Davenport	..	..	Bureau	40	..	..	..	..
Peoria	..	..	Peoria	40	..	..	..	..
Peoria	..	..	Peoria to R.I.	..	..	..	..	..

Inland Traffic Division of War Department Expanded

BRANCH AND DISTRICT OFFICES in charge of experienced freight traffic men are the chief features in the expanded organization of the inland traffic division of the war department, announced last week in Circular 2-A by H. M. Adams, manager of inland traffic for the department.

The circular announces the appointment, effective August 1, of the following inland traffic officers:

BRANCH OFFICERS		WASHINGTON, D. C.	
Location	Assistant	Location	Assistant
Atlanta, Ga.	A. S. Edmonds, Forsythe Building	Charlotte, N. C.	..
Boston, Mass.	..	..	..
Chicago, Ill.	..	..	..
New Orleans, La.	N. F. ..	..	..
New York, N. Y.	B. M. Flippin, Room 527, 45 Broad-	..	..
Pittsburgh, Pa.	..	..	..
St. Louis, Mo.	..	..	..
DISTRICT OFFICERS		WASHINGTON, D. C.	
At	..	At	..
Baltimore, Md.	Capt. S. A. Tubman (acting) Lexing-	..	..
Norfolk, Va.	J. F. Dalton	..	..
Philadelphia, Pa.	J. B. Trimble, Widener Building	..	..
Portland, Ore.	W. C. Dilbe
Richmond, Va.	C. A. Craig
San Francisco, Cal.	F. L. Hanna, Southern Pacific Build-
..



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A Motor Trench Tramway Behind the British Lines

DISTRICT OFFICES REPORTING TO BRANCH OFFICES

At—	Name of person in charge and address	Reporting to—
Albany, N. Y.	C. E. Harris, Room 1, Post-office Building	New York, N. Y.
Buffalo, N. Y.	P. Wakefield, Room 530, Federal Building	New York, N. Y.
Birmingham, Ala.	R. M. Dozier	Atlanta, Ga.
Cleveland, Ohio	Leonard Smith	Pittsburgh, Pa.
Cincinnati, Ohio	W. H. Connor, 314 Post-office Building	Pittsburgh, Pa.
Charlotte, N. C.	C. Sanderson, 202 Mint Building	Atlanta, Ga.
Dallas, Tex.	John D. Gowan	New Orleans, La.
Detroit, Mich.	A. J. Dutcher	Chicago, Ill.
Indianapolis, Ind.	G. W. Smith, 314 Post-office Building	Pittsburgh, Pa.
Jacksonville, Fla.	Willis Callaway, 707 Heard Nat'l Bank Building	Atlanta, Ga.
Kansas City, Mo.	J. L. Hohl	St. Louis, Mo.
Peoria, Ill.	Chas. Shackell	Chicago, Ill.
Toledo, Ohio	P. B. Doddridge, 415 Ohio Building	Chicago, Ill.

Several of the assistant chiefs in charge of the newly created branch offices held positions as railway traffic department officers. A. S. Edmonds, assistant chief at Atlanta, was formerly assistant freight traffic manager of the Missouri Pacific. R. B. Robertson, assistant chief at Chicago, is assistant general freight agent of the Chicago, Indianapolis & Louisville at Chicago. N. C. Barnett, assistant chief at New Orleans, was assistant general freight agent of the Gulf Coast Lines, with headquarters in that city. J. E. Weller, who will be in charge at Pittsburgh, is general western freight agent of the Pennsylvania-Northwest system, and C. H. Morrill at St. Louis was assistant freight traffic manager of the St. Louis-San Francisco. Several of the heads of the district offices were also prominent officers in railway traffic departments.

The remainder of the circular outlining the duties and functions of the officers, with the exception of that part outlining the boundaries of the several branches and districts, is as follows:

The services of the branch and district offices are available to all bureaus of the war department alike and their activities will be exercised in connection with property of all such bureaus without preference or prejudice. Direct communication with representatives of the inland traffic service is authorized.

The duties of those in charge of branch and district offices with respect to the transportation of troops are as follows:

The movement of troops is directed from the office of the chief, Inland Traffic Service, through the troop movement section of the United States Railroad Administration. Therefore, branch and district offices will have no duties in connection therewith except such as may be delegated by special instructions, issued from time to time. They will, however, render assistance at all times when required by the officer in charge and will promptly report to and await instructions from the chief, Inland Traffic Service, in any case of importance coming to their notice, requiring advice and instruction.

The duties of those in charge of branch and district offices with respect to the transportation of property are as follows:

(a) To represent the Inland Traffic Service in all matters within its jurisdiction, subject to the established rules and regulations.

(b) To promptly and effectively respond to all requirements of the War Department, pertaining to the transportation of War Department property, inland and coastwise.

(c) To respond, with respect to matters within their jurisdiction, to requests from officers and representatives of the United States Railroad Administration and the individual carriers, including water lines.

(d) To perform all duties pertaining to the transportation, inland and coastwise, of all property of the War Department moving by express, freight or otherwise, and the routing thereof, beginning with the ordering of cars or other vehicles for use in shipping the property, also including all matters pertaining to expedition or preference in movement, tracing, checking of railroad yards, instructions to carriers with respect to the movement of war department property, including the disposition of shipments on arrival at destination,

all other relations with the carriers, switching service and questions pertaining to transportation as distinguished from the concentration and shipping of the property and the acceptance or storing or otherwise disposing of it on arrival at destination; will require prompt acceptance of the property, unloading of cars and accomplishment of bills of lading.

(e) To exercise special supervision over the shipment of property by express and to substitute freight service when practicable.

(f) To inform themselves with respect to the service available by inland and coastwise waterways, and the rates applicable, and to encourage the movement of the maximum amount of property via such routes when safe and practicable and the expense therefor is not in excess of the expense for movement by rail, including cartage and considering land-grant deductions. Any departure from the latter rule must be approved by the Chief Inland Traffic Service.

(g) To confer with officers and agents of the carriers, to insure the prompt movement to its destination of all property of the war department being delayed en route; to report to the consignee and to the Chief Inland Traffic Service, through the proper channels, the action taken in all such cases; and for such other purposes as may be necessary.

(h) To keep themselves informed at all times with respect to the conditions at important railway centers and junction points, transfer depots, etc.; to prevent, so far as possible, delay in the movement of war department property; and to promptly report any congestion of facilities resulting in delay in the movement of such property, and, if known, the causes therefor.

(i) The United States Railroad Administration having established at Washington (Nineteenth street and Virginia avenue) a car record bureau wherein the shipment, interchange, junction passing and arrival at destination of government shipments in carloads are recorded, that record will be resorted to in so far as may be practicable in the tracing of delayed shipments.

The Inland Traffic Service maintains in connection with this record and in the same building its tracing section, with which direct communication is authorized.

(j) Branch and district offices may, when necessary and expedient, trace delayed shipments through local railroad offices within their respective territories or districts. It is especially directed, however, that preference be given to the handling of all tracers for both carload and less than carload shipments through the Washington office.

(k) Expediting the movement of important shipments shall at all times be distinguished from the matter of tracing and effecting delivery at destination of shipments delayed in transit. Branch and district offices are authorized to arrange direct with the proper officers of the carriers interested for the movement of such shipments when moving wholly within the territory assigned to the branch in which the shipments originate. All other requests must be submitted to the office of the Chief, Inland Traffic Service, Washington, for transmission to the car service section of the United States Railroad Administration.

(l) To give especial attention to the conditions at the ports of export, to insure prompt delivery of all property to the consignee upon arrival, prompt unloading of cars, prevent the incurring of demurrage charges or the accumulation of property in excess of the facilities available to store or otherwise care for it, obtain reports from the carriers of all shipments held for disposition and to inform the Chief, Inland Traffic Service, periodically as required, as to the situation, including advice as to the ability of the responsible officer to accept and unload property on arrival.

(m) To exercise such other functions and perform such other duties as may be prescribed by the Chief, Inland Traffic Service, War Department, or by his authority, from time to time.

(n) To report to the Chief, Inland Traffic Service, through the proper channels, all failures to observe the orders, rules and regulations of the Inland Traffic Service.

The following territorial assignments are made:

Assistant chiefs in charge of branch offices will have general supervision over all territory assigned thereto and will also have direct charge of the details of operations in the territory assigned to their respective branches and not assigned to districts therein.

High Capacity Cars on a Narrow Gauge Railway in India

By Frederick C. Coleman

BY FAR THE MOST interesting of all the mountain railways in India, or perhaps in the Far East, is the 2 ft. 6 in. gauge line connecting Simla, the summer capital of India and the Punjab and the headquarters of the Indian Army all the year round, with Kalka, and there forming a connection with the East Indian Railway system.

Simla, situated among the foot-hills of the Himalayas at an

been worked by the Indian North Western State Railway administration. It has a total length of 60 miles of single track throughout. The permanent way consists of 41 lb. flat-footed steel rails, with spikes and bearing plates on wooden deodar ties, but more than half of these have now been replaced on renewal by 60 lb. rails. The line is ballasted with stone, and it is fenced only along the Kalka camping ground and through the outskirts of the town of Kalka.

Most of the curves are compound, the limiting radius being 120 ft. and the ruling grade is 3 per cent, not compensated for curvature. Upon leaving the Kalka junction, where the broad-gauge trains stop, the line almost immediately commences to ascend the spurs of the mountains, taking turns continuously until Simla is reached. The spurs are generally of a favorable character and they are taken advantage of when they lie in the right direction, but, where they do not, tunneling has been resorted to. The ridges are connected by "saddles" of varying heights, not always progressive in favor of the ascent, so that the line, having surmounted a ridge, has sometimes to descend. However, as the mountains rise, so do the majority of the "saddles." In spanning mountain gorges and ravines, girder viaducts are not usually employed, but masonry structures called "galleries." These resemble



Narrow Gauge Gondola Car of the Sheffield-Twinberrow Type for the Kalka-Simla Railway

altitude of 7,116 ft., relied, until November, 1903, upon "tongas," or country carts, for its communication with the outer world. The railway was commenced in 1899 and opened for traffic in 1903, and since January 1, 1907, it has

Roman aqueducts, and they consist of tiers of arches rising one above the other until the rail level is reached. They are generally on a curve, and the curvature is formed by making the piers wedge-shaped. The retaining walls are made of dry



Box Car with Sheffield-Twinberrow Underframe and Trucks for the Kalka-Simla Railway

stone, hand set, of 10 ft. to 15 ft. in width, and bands of masonry 2 feet wide are introduced at intervals of about 5 feet, according to circumstances. There are no fewer than 21 stations, and the railway carries about 150,000 passengers and 62,000 tons of goods each year.

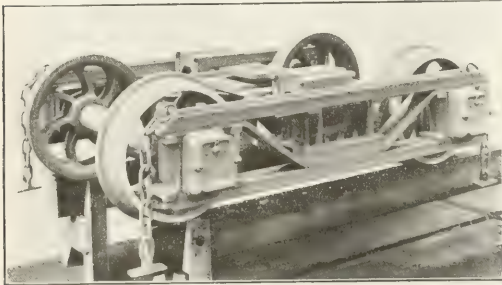
In order to provide facilities for the increasing traffic, additional locomotives of a more powerful type have recently been introduced, the passenger vehicles have been re-designed, and all-steel coaches have largely been adopted.

Simultaneously, a considerable number of all-steel high-capacity freight cars, both open and covered, have been imported from England. Among these are 50 cars of the Sheffield-Twinberrow pattern, built by the Leeds Forge Company, Limited, of Leeds, England, from the designs of George H. Sheffield, of Victoria street, Westminster. They are of two standard types, open and covered, of 42,560 lb. and 39,200 lb. rated capacity, respectively.

The following is a table of the leading dimensions of the open cars:

Length inside over end sills	36 ft.
Length over buffers and couplers	38 ft.
Height inside	3 ft. 6 in.
Width inside	7 ft.
Width overall	7 ft. 5 in.
Centres of trucks	20 ft.
Wheelbase of truck	4 ft. 8 in.
Diameter of wheels on tread	10 ft. 8 in.
Size of journals	7 in. by 3 1/4 in.
Centres of journals	3 ft. 9 1/2 in.
Tare weight complete, including vacuum brake equipment	14,000 lb.

The over all dimensions, with the exception of the height, are similar in both types of cars and, with the single exception of pressed steel end sills and end longitudinals, only three standard British steel sections are employed in the structures. Cast steel wheels are employed, and these were pressed on the axles under a pressure of 40 tons, the bosses of the wheels being keyed to the axle seats. The journal boxes are also of cast steel and are fitted with loose key plates and are designed to permit of oil lubrication, either by means of adjust-



Truck of the Sheffield-Twinberrow Type Used Under Some of the Kalka-Simla Freight Cars.

able pads or waste packing. The tare weight of the covered cars is 15,350 lb. A number of the covered cars are fitted with water tanks, each of 115 cu. ft. capacity. The weight of the empty tanks and fittings is 1,456 lb. The trucks, underframes and general dimensions of the covered cars are identical with the open cars, but an additional standard British section is employed for the longitudinals and the transverse bracing of the plates and of the roof.

One of the photographs shows the Sheffield-Twinberrow patent truck. The salient feature of this design of truck is that the weight of the car is not carried on the centre, but is distributed through groups of coil springs at a transverse distance of about 16 in. from each side of the centre. The bending moments upon the main transoms are thus considerably reduced, and the effect is to add materially to the reduction in weight of the structure. The springs are compounded

to act efficiently when the car is either loaded or empty. They rest in cast steel boxes, the lower parts of which are attached to and between the bogie transoms or bolsters. The upper, or loose, portions of the boxes are provided with large rubbing surfaces, which have a sliding contact, with corresponding rubbing pieces upon the car main transoms. Although tilting action alone is allowed for to the extent of the clearance between the centre pins and pivot casting, and the spring boxes and the side checks on the bolster frames of the trucks, there is ample provision for lateral and end movement to suit inequalities in the rails or super-elevation.

A distinct advantage in dispensing with the customary swing bolster is the fact that there is no vertical movement of the brake shoes, whether the car be empty or loaded. A uniform wear of the brake shoes is thus ensured and there is the same range of brake levers under either empty or loaded conditions. The weight of these trucks, complete, is 2,556 lb. Some of the covered cars are provided with an additional pair of doors at the top in the centre, as shown in one of the illustrations, and the tare weight of the cars is increased to 15,340 lb.

Several of the open and covered cars recently supplied for use on the Kalka-Simla Railway are fitted with an arch bar truck. The general dimensions of these cars and the structural details are similar to those already described, except that the weight of the truck is 3,192 lb., which increases the tare weight of the cars to 15,120 lb. and 16,910 lb., respectively, as against 14,000 lb. and 15,340 lb., the tare weights of the open and covered cars fitted with the Sheffield-Twinberrow truck.

Railway Supplies and Commissions

THE RAILWAY BUSINESS ASSOCIATION, through its committee on government purchasing policies, has sent the following letter to its members under the title of "Selling Agencies":

"We are informed that the Federal Department of Justice and the Division of Finance and Purchases of the Railroad Administration has under consideration the question whether established and legitimate selling agencies shall be exempt from the contract provision intended to prohibit agencies organized for the purpose of exacting a special profit. Members of the Railway Business Association who petition for relief from effects of the proposed contract clause are of two classes: (1) selling agencies; (2) makers who employ selling agencies.

"The evidence which will best aid the attorney general and the director of purchases in a wise and just determination is a description of the types of selling agencies which claim to be legitimate, with emphasis upon the points which distinguish those types from the class of agencies which the government seeks to stop. The most effective form in which such evidence can be presented to the government is letters from agents or principals, each telling his story in his own way. You are invited to write such a letter. It is suggested that replies be prompt.

"The attorney general rests his recommendation upon decisions of the supreme court which have pronounced unenforceable and illegal contracts for contingent fees in connection with furnishing supplies to the government, on the ground that they are contrary to public policy by reason of the tendency to which they give rise. The recommendation of the attorney general was that contracts made by any department of the government contain a clause by which the contractor warrants that he has employed no third person to obtain the contract upon contingent compensation or paid no brokerage, commission or percentage upon the amount receivable; breach of the warranty to constitute cause for annulment of the contract. Some of the railroad regional pur-

chasing committees have issued the attorney general's recommendation as a guide to railroad purchasing officers.

"The Railway Business Association has addressed a letter to the attorney general calling his attention to the various types of selling agencies whose legitimacy has never been questioned, the theory being that a maker might as properly employ an agency as an individual salesman to market his goods. This letter makes the suggestion that a speedy understanding of the government's precise purpose would be of substantial benefit since those engaged in conducting sales companies doubt whether under the recommended covenant they may do any more business, while makers, if agencies are prohibited, must develop other sales mechanism. Supplementing this formal communication by informal inquiries we receive the impression that established agencies were not within the scope intended and that information in the form of facts will be useful.

"Your situation, if you acquaint us with it, will be laid before the authorities at an early moment."

Orders of Regional Directors

COURTESY TO THE PUBLIC.—The reduction in service due to war necessities and the elimination of competition created a growing feeling on the part of the public that there is a lack in attentiveness and courtesy on the part of railroad employees and subordinate officers in their contact with patrons. Intelligent, prompt and energetic action is urged to remove any real occasion that there may be for this feeling. A number of suggestions are made as to course of action which should be taken to this end, among which are: (a) The appointment of "Four Minute" men on each division and particularly in each large terminal, taken from amongst the older officers and employees, to give short snappy talks to railroad men who come in frequent contact with the public, outlining the aims of the Administration in the direction of efficient and prompt service to the public, courteously rendered; (b) A close study of the needs of individual ticket offices to determine whether an increase in the number of ticket windows and employees is necessary or whether a floorwalker should be supplied to discover and adjust peoples' needs and troubles and to assist them in securing tickets and accommodations; (c) Close attention to neatness in uniforms or personal appearance of representatives of the Railroad Administration coming in contact with the public; (d) The maintenance of railroad property where the public transacts business with the railroad administration in a clean and businesslike condition. This applies particularly to passenger and freight stations and means that windows should be washed, floors cleaned, lavatories disinfected properly, well lighted, and public conveniences kept in first-class order at all times.

Sleeping Car Reservations.—Hereafter railroad agents or representatives will not pay for telegraph or telephone messages covering sleeping, parlor car or steamer reservations. When such messages are sent by railroad representatives passengers will be required to pay the established charges for the necessary telegraph or telephone service in both directions, except that the wires of railroads under government control may be used locally or jointly without charge under the following conditions: (a) The accommodations will be secured only in connection with a continuous trip, a reasonable time—not to exceed 12 hours—being allowed for train connections at points where transfers to sleepers are made. (b) A sleeping, parlor car or steamer berth ticket or order therefor covering accommodations must be purchased at the time that they are secured. (c) For delivery of the sleeping or parlor car or steam berth ticket, the agents to whom application is made for the accommodations shall require the

presentation or purchase of a ticket good from his station to or beyond the destination to which the reservation is made. Assignment of space to offices located off the line of sleeping and parlor car runs must not be made.

Transportation of Laborers.—In Circular No. 47, dated July 30, the regional director of Southwestern railroads says: "Supplement No. 5 to Circular No. 63 issued by the regional director of Northwestern railroads stipulates that the payment of fare for laborers from labor markets to the point needed and their return fare to the point where employed may be continued, but that this practice will not be considered as an allowance that will have the effect of increasing compensation. We interpret this rule as applying to the payment of fare over connecting or intermediate roads and that free transportation may be issued only over the lines of the employing road as they existed prior to Federal control—that is, for example, men for service on the Missouri, Kansas & Texas of Texas at Dallas may be moved dead-head over the Missouri, Kansas & Texas from St. Louis, but where intermediate lines are used fares should be paid; for instance, men moving from St. Louis for service at Longview, Texas, on the Texas & Pacific should pay their fare from St. Louis to Texarkana."

Dynamometer Car.—The Southern regional director announces in Circular No. 358 that the all-steel dynamometer car owned by the Nashville, Chattanooga & St. Louis has now served its purpose on that road and is available for use on any of the railroads under federal control.

Reports of Traffic Movements.—In order that facilities of the Southern Region may be used to the greatest advantage, the regional director has asked each federal and general manager to give him on the first and fifteenth of each month a statement as to what proportion of main lines or routes under their jurisdiction are not handling as much tonnage at present as they were last year or, if more is now being handled, over what part of the lines this heavy movement has occurred. He also wants reports as to unbalanced movements and suggestions as to the best means of remedying them, and wire or other immediate reports of unusual changes or unusually heavy movement of empty cars.

Hours of Service Law.—Employees have been penalized for violation of the hours of service law because of the misunderstanding of Article 1 of General Order No. 8. It should be understood that the officers and agents of carriers who are liable to the penalties provided in the act are those who have official direction or control of the employees; and that the penalties do not attach to the employees who, subject to such supervision or control, perform the service prohibited, under instructions. It should be thoroughly understood, however, by all employees, the circular states, that before becoming a party to a violation of the law, it is their distinct duty to notify the officer of an impending violation of the hours of service law, and which may have been overlooked by the officer at the time in charge of the handling of the men involved.

Publicity Agents.—The Southern Regional Director in Circular 354 has asked for a list of the publicity men employed by the railroads in his jurisdiction. This list is to show the name, salary, estimate of expenses, and the functions performed and will include not only men actually designated as publicity agents, but employees with other titles who perform publicity functions. The circular says: "Under present conditions, it is difficult to see any justification for publicity agents whose salaries and expenses are charged to operating expenses. Please, therefore, indicate which, if any, of the men included in your list you think ought to be retained in service and give the reason for your belief that they should be so retained."

Wage Increases.—In circular letter No. 355 the Southern director draws attention to the fact that in the case of men jointly employed by several railroads, some of which are un-

der government control and others which are not under government control, the increases in pay under General Order No. 27 will apply, even though in some instances the actual pay check may be issued by the railroad not under government control.

Rental Charges for Locomotives.—Circular letter No. 356 issued by the Southern director says that until such a time as a uniform basis has been arrived at, the rental rate for leased or loaned locomotives of one mill per pound tractive effort per day, with a minimum charge of \$25 per day, will be used.

Loss and Damage.—The Eastern regional director is calling for a report of payments for loss and damage claims paid during the first six months of 1918 and caused by insecure packages.

Agents' Funds, Paying Payrolls, and Bank Accounts.—The Eastern regional director is asking for a statement of the practices in effect concerning (a) method of remitting agents' funds, (b) method of paying payrolls, and (c) bank accounts that should be maintained. It is desired to make a careful study of these practices with a view to determining the practicability or desirability of adopting uniform methods.

Conserving Materials.—The Eastern regional director directs attention to the necessity of reclaiming as far as practicable all iron and steel parts and suggests that the use of oxy-acetylene and electric welding outfits should be increased.

Bonds for Use as Stores or Cellars as Warehouses.—In calling attention to section 2,961 of the revised statutes of the United States statutes, the Division of Law is arranging with the treasury department to give a general bond for the director general to execute covering this subject, and the railroads should, therefore, not execute such bonds as was formerly the practice.

Cars for Railroad Fuel Loading.—In Supplement No. 1 to Circular 42, dated August 5, the regional director of Central Western lines explains that the abolishment of assigned cars for railroad fuel loading is intended to affect only the distribution of cars as between mines, and is not intended to affect car service or interchange as between railroads. The purpose of the new arrangement is to avoid the working of some mines to full capacity while other mines in the same competing district work less than full capacity. It is therefore permissible for railroads to accept from their connections cars to protect their company coal lading. Mines owned by railroad companies and producing exclusively railroad fuel must be treated just the same as any other mine.

POSTAL AIR SERVICE BETWEEN BUDAPEST AND VIENNA has begun on July 4. Press despatches state that the Hungarian Minister of Commerce has suggested a similar service between Budapest and Odessa.

Meeting of Railway Claim Agents

THE ANNUAL MEETING of the Association of Railway Claim Agents was held at Hotel LaSalle, Chicago, on July 30. About 90 of the larger railroads of the United States were represented. J. H. Howard, supervisor of claims in the office of the general counsel of the Railroad Administration who until recently was general claim agent of Chicago & Alton at Chicago, delivered an address. He stated that interference by ambulance-chasing lawyers and crooked physicians in cases of injuries incurred on the railroads will not be tolerated by the government. The Railroad Administration proposes to deal directly with claimants and to treat them fairly. When claimants insist upon legal advice their counsel will be limited to a reasonable fee. The policy of the administration will be to investigate fully each case of personal injury and to handle it strictly on its merits. Every effort, he said, would be made to introduce uniformity and economy in claim departments under federal control. In that connection he pointed out that some railroad claim departments handle only personal injuries while others handle all cases including claims for losses through fire and the injury and slaughter of live stock. It was Mr. Howard's opinion that a general claim department should handle all claims except freight claims and should also have jurisdiction over railroad surgical departments.

Mr. Howard read a letter to the association from Judge John Barton Payne, general counsel of the Railroad Administration, which stated that the federal authorities expect railroad attorneys to refrain from taking claims against other railroads. Likewise county, city and district attorneys, being employed in public service, should not take railroad claim cases, as such action would amount to working against the interests of another branch of the government. If any such attorneys persist in taking claims against the carriers it was suggested that they be reported to the regional director and through him to the legal department of the Railroad Administration at Washington.

A considerable part of the meeting was devoted to a discussion of trespassing and automobile crossing accidents which constitute the most serious problems confronting the claim departments. Attention was also directed to the large losses in food resulting from the slaughter of live stock on railroad right-of-ways and the destruction of grain by fire set out by trains. For instance, the loss in live stock killed on all railroads in Missouri in 1916 amounted to 11,612 animals representing a value of \$544,000. A number of members of the association told of the excellent co-operation given them by the Food Administration and the Council of National Defense, as well as by individual farmers, in cut-



Canadian Wounded on Their Way to Base Hospitals

ting down these losses. In some instances farmers have plowed fire guards inside and outside of the right-of-way to prevent the inception of conflagrations from locomotive sparks. In order to secure the assistance of the Railroad Administration in working out these problems and in order to effect the closest co-operation between the individual railroad lines and the federal authorities at Washington, a committee was appointed consisting of R. C. Richards, general claim agent of the Chicago & North Western at Chicago as chairman; Frank V. Whiting, general claims attorney of the New York Central Lines at New York; H. B. Hull, general claim agent of the Illinois Central, at Chicago; A. H. Mansfield, claims attorney of the Missouri Pacific, at St. Louis; and D. H. Kimball, general claim agent of the Great Northern, at St. Paul.

The following officers of the association were elected for the coming year: President, R. C. Richards, to succeed W. F. Every, general claim agent of the Northern Pacific at St. Paul, Minn.; first vice-president, John S. Douglass, general claim agent of the Gulf, Colorado & Santa Fe, Galveston, Texas; second vice-president, C. A. Theis, chief claim agent of the New York Central Lines at Chicago; third vice-president D. H. Kimball, to succeed J. J. Donahue of the Louisville & Nashville, Louisville, Ky.; secretary and treasurer, Willis H. Failing, claims attorney of the Central Railroad of New Jersey, Jersey City, N. J.

Special Meeting of Short

Line Association

THE SPECIAL MEETING of the American Short Line Railroad Association, held in the Homer Building, Washington, last Wednesday, considered principally the relations between the Railroad Administration and the short lines and considerable attention was paid also to the relations in general between the short lines and the government, in the matter of mail pay, etc.

Calls for the meeting were sent out by Bird M. Robinson, president of the association, to members and other short line carriers who would be interested. In the call to members he said that the meeting was called for two general purposes:

"First—To carefully and fully consider the emergency which now confronts the great majority of the short line railroads.

"Second—To alter or amend the articles of organization and by-laws, in any way and to any extent that may be deemed necessary; to adopt financial plans and policies for the future; to elect officers and necessary committees; to consider and act upon any proposition or suggestion that may be offered.

"The government control of all main or trunk lines, including their short-line subsidiaries, and the exclusion from such control of the great majority of the independently owned short lines, is having a distressing and dangerous effect.

"President Wilson and other officials have stated that the short lines are to be treated fairly, but so far nothing has been done that has been effective in affording necessary relief. The enforced absence of the director general has no doubt delayed matters to some extent. We are now advised that he will return to Washington on August 5 and will soon thereafter approve standard forms of contracts to be made with any and all railroads taken under federal control.

"We are advised that no contract has been made by the government with any railroad company, and that no contract will be made until after the director general returns and reports.

"We are of the opinion that it would be best for all concerned for the short lines to defer any attempt to negotiate a contract or to make permanent arrangements until the

meeting of the association on August 7; that every short line, whether retained by the government or relinquished, should be represented in that meeting, and that the delegates should then adopt such policy and recommendations as may to them seem wise, just and proper.

"This association has not at any time, and does not now, approve of any arbitrary, unfair or unjust demands upon the government; on the contrary, it has favored and now advocates doing everything possible to aid the government in solving the serious problem involved, in a way that will do the greatest good for all concerned. We have frequently tendered our services to the administration with that object in view, and will recommend that the coming meeting not only earnestly renew that offer, but that it openly condemn any road that is shown to be guilty of attempting to obtain an unfair advantage. The proposed delay in attempting to negotiate contracts would probably aid the administration as it would enable them to settle many questions that must be determined before any contracts are made.

"War conditions during the past fifteen months have prevented the association from having meetings in due course. Notwithstanding a continuation of such meetings, we believe it is necessary for the members to meet and consider the situation.

"Present conditions are such that the meeting herein called ought to be, and probably will be, the most important short line meeting ever held."

The meeting was called to order at 10:30 a. m. in the office of the Bureau of Railway Economics, Homer building, Washington. Mr. Robinson presided. E. C. Niles, chairman of the short line section of the Railroad Administration, spoke briefly on the relations between the administration and the short line railroads. Considerable attention was given to the report of the executive committee on the compensation contract, papers being read by Ben B. Cain, vice-president and general manager of the Gulf, Texas & Western, chairman of the committee, and by W. M. Blount, president of the Birmingham & Southeastern, another of its members.

A full report of this meeting will be given in our next issue.

Railway Notes from China

PERSONS

ON APRIL 17 occurred the first train "hold-up" in the history of China. The scene was a few miles west of Hsu Chowfu on the new Lung Hai line. The engineer of the west-bound express perceiving a large pile of stones on the track ahead brought his train to a stop in time to prevent accident. But as soon as the train slowed down it was greeted with a heavy rifle fire from all sides. After this preliminary salvo, the bandits wearing queues and faded old military uniforms, boarded the train taking all valuables from passengers, the baggage car and the express car. Three passengers who resisted were shot to death. Several were wounded by the preliminary fire. About a dozen were taken along to be held for ransom. There is little doubt that the robbers are former soldiers of the old monarchist Chang Hsun, leader of the fiasco of last July.

The Peking Hankow line by way of precaution is attaching an armored car to the four express trains passing daily over the section between Shunthefu and Wushangkuan. Twenty soldiers armed with rifles and a machine gun compose the crew.

* * *

On the night of April 27 friends of G. A. Kyle, chief engineer of the Siems Carey Railway & Canal Company, made up a considerable party to meet him returning from his captivity. He was in the hands of the bandits 52 days. He was forced to make long marches at night. His shoes were taken away because of the noise they made. Chinese

shoes crippled his feet, and finally rags wrapped around his feet were the only protection he had. He was secreted by day, but not allowed to sleep soundly, because of a certain habit whose sound might attract attention. Yet his vitality was such, that after sleeping for a day or two and visiting the barber he shows few effects of the hardships. The three bandit chiefs concerned in the abduction have all been appointed majors in the Honan army, and are attached to the bodyguard of the commander of the First Mixed Brigade. It should be understood that these appointments are not as a reward for the kidnapping, but for the release of Mr. Kyle. As a local paper, edited by Chinese, puts it: "In China they always take the enlightened view that a man is only a bandit from force of circumstances. 'It isn't them as has money that breaks into houses and steals.' China must have some features in common with England in the days of Dr. Johnson who said that a pension was the reward of a traitor for betraying his country."

John Stevens, head of the American railway unit to Russia, together with his son and secretary, has been visiting Peking. It is presumed that his visit has had to do with the status of the American experts who at present are giving their attention to the Chinese Eastern Railway.

Since the beginning of the great war, the following loans have been made by Japan to China on securities connected with communications:

Ministry of Communications loan	\$3,000,000
SzePingChieh-Chengchiatun Railway	5,000,000
Bank of Communications loan.....	5,000,000
Kirin-Changchun Railway	4,011,000
Second Communications loan.....	20,000,000
	\$37,011,000

On April 30 a contract was ratified between the Telegraph Administration and three Japanese banks for a loan of \$20,000,000. It is issued at par and bears eight per cent interest. Security offered is the entire government telegraph system and the income therefrom—about \$5,000,000 annually at present. China binds herself to hereafter make the first approach to Japanese financiers when in need of funds for this branch, to employ Japanese advisers and experts when extensions are to be made, and to purchase Japanese materials.

The Peking Suiyuan line is erecting four superheated Mikado locomotives, built for it by the American Locomotive Company. These engines will be used over the heavy grades between Nankow and Kalgan, over the Nankow pass

and through the Great Wall. They were ordered early in 1916.

It is understood that negotiations are under way for an extension of 130 miles into Eastern Mongolia of the recently constructed Ssuningkai—Chengchiatun line. The Yokohama Specie Bank will probably be in charge of financial arrangements. The extension is estimated to cost about \$1,000,000.

Graduates of American universities are managing directors of four out of the fourteen government lines in operation in China. These four lines produce two thirds of the entire gross revenue earned by the government system.

Shortage of cars remains critical. The situation is aggravated by the considerable troop movements in connection with inter-provincial troubles. Interested shippers and capitalists are busy devising plans to augment the car supply, but except for the small agreement on the Taokow Chinghua line, no agreements have been reached. The Ministry of Communications has apparently changed its attitude toward present high prices, in view of the probable long continuation of the war, and rehabilitation period after.

Another illustration of the growing appreciation of *esprit de corps* on the part of Chinese railway management is offered in the first track meet held under the auspices of the Ministry of Communications on the 15th of May. The contending teams represented the two Administration schools, Railway and Telegraph respectively. The records made were not remarkable, but the spirit displayed made the event a pronounced success. The grounds were decorated with the flags of all the allied and neutral nations. A band played western music at intervals throughout the day. The contestants for the most part were dressed for their events in accoutrements of American make, or copies of such makes. Two rooting sections led by "yell leaders" who contorted themselves in the most approved collegiate style cheered on their respective mates to victory. Probably most remarkable of all, in view of traditions, was the presence of at least two hundred women and girls, representing the families of the officials in the Ministry and relatives of the contestants. However, these were segregated to a definite section. Spectators remained for hours watching and applauding the events with evident zest. Instinctively, it seemed, the most applause went to the contenders displaying the best "form."



Photo courtesy of the Chinese Railway Service

This Scene Does Not Look Much Like War

General News Department

J. M. Hawley, agricultural agent of the Buffalo, Rochester & Pittsburgh, estimates that there are 3,000 war gardens under cultivation by employees of that company. This is nearly double the number of gardens planted last year.

Six aeroplanes, built exclusively for mail carrying purposes have been completed at Elizabeth, N. J., and have been delivered to the government this week. Two are to be sent to Washington, two to Philadelphia and two to New York.

It is said that the city ticket offices in New York will be consolidated some time during August, with four offices only in New York City; one at 64 Broadway, one at 57 Chambers street, one at 31 West 57th street, and one at 114 West 42nd street. There will also be a consolidated ticket office in Brooklyn.

L. S. Carroll and F. A. Bushnell, members of the regional purchasing committee for Northwestern railroads, left Chicago on August 7 for an extended trip throughout the Northwestern region for the purpose of investigating the organization and practices of the stores departments of the roads under Federal control in that section of the country.

The Quarterly Bulletin of the voluntary relief department of the Pennsylvania Railroad western lines shows disbursements during the three months ending June 30, 1918, of \$18,750 in benefits for deaths resulting from accidents and \$79,414 in benefits for deaths resulting from natural causes, \$51,013 in benefits for disabilities resulting from accidents and \$108,343 in benefits for disability caused by sickness.

The collision of a freight train on the Belt Railway of Chicago with a street car at Sixty-third street and Archer avenue, Chicago, on August 5, resulted in 5 fatalities and 27 injuries. All of those injured and killed were passengers on the street car. The apparent cause of the accident was the attempt of the motorman of the street car to beat the train across the crossing. The street car was thrown 20 ft. down a grade and the locomotive jumped the tracks and tore up the adjoining rails.

At a meeting at St. Paul, Minn., of representatives of railroad commissions of northwestern states, it was decided to request a conference with Mr. McAdoo at Washington, on or about August 20, through the National Association of Railroad and Utilities Commissioners, for the purpose of discussing a closer co-operation between the Railroad Administration and the state commissions. Representatives of the commissions in Minnesota, South Dakota and Iowa attended the meeting at St. Paul.

The city of New Orleans has recently authorized the appointment of a board of advisory engineers of the Public Belt Railroad Commission for the purpose of investigating the physical and financial feasibility of a bridge or tunnel crossing of the Mississippi river at or near the city in connection with terminal development under the auspices of the Public Belt Railroad. This board consists of four members, Lieut. Col. Bion J. Arnold, Chicago, chairman; Dr. J. A. L. Waddell, Kansas City; J. Vipond Davies, of New York, and A. F. Barclay, engineer of the Public Belt Railroad Company, secretary. The board is instructed to submit a report by the first of January, 1919. Field work will be conducted under the direction of J. R. Bibbins, Charles K. Allen and A. R. Archer.

Railroad Claim Swindler Arrested

The arrest of E. Runderle, an attorney in the Exchange building at the Union Stock Yards, Chicago, is expected to result in the disclosure of railroad claim swindles involving thousands of dollars and a number of railroad officers and employees in that city. Runderle was arrested on a federal warrant charg-

ing him with bribery. Several claim agents of railroads are said to have confessed receiving bribes from him in consideration of their aid in favoring his clients. It is alleged that Runderle, in many instances, negotiated directly with the heads of claim departments giving them bribes to pass generously upon the demands of his clients. Sometimes both shipper and railroads would be used for the purpose of effecting the collection of an exorbitant claim, from which Runderle would deduct not only the amount he had added to the claim of his client but also the fee for handling the case. Other attorneys are said to have engaged Runderle to handle their claims and these may be drawn into the case.

Telegraphers Still Threaten Strike

The Eastern general committee of the Commercial Telegraphers' Union of America has telegraphed Postmaster General Burleson, claiming that the Western Union is still discharging operators who join the union and also claiming that the officers of the Western Union are desirous of a telegraphers' strike while the union is doing its best to prevent such a strike. The telegram says in closing:

"In view of present unsatisfactory conditions, it is essential, in the opinion of the undersigned, that a statement be made by the Postmaster General with respect to the right of employees to organize without the loss of employment, and that his pronouncement on this principle includes decision on the cases of the men and women hitherto discharged by the company for membership in the union. These cases were referred to the Secretary of Labor in May and, we understand, were referred to the Postmaster General for final disposition."

Priority for Railroad Materials

The Priorities Division of the War Industries Board issued on July 26 circular No. 4, dated July 1. This embodies a revision of its rules and regulations governing priority in production, including changes suggested by the experience of the past six months, intended to simplify the administration of priorities and at the same time give greater assurance that the war requirements will be promptly met. The new circular continues in effect class A-A, which comprises only emergency war work; class A, which comprises other war work, and class B, which comprises orders and work which, while not primarily designed for the prosecution of the war, yet are of public interest and essential to the national welfare or otherwise of exceptional importance. In order to secure rating within these three classes, application must still be made to the priorities committee, save in cases where provision is made for automatic classifications. One of the fundamental changes embodied in the circular is the establishment of automatic ratings. Automatic classifications are allowed on orders for materials, equipment or supplies for specific uses named in the circular, which places orders "for the repair or construction of steam railroad locomotives for use on the railroads under the jurisdiction of the United States Railroad Administration" in class A-4 and orders "for the manufacture of steam railroad materials, equipment and supplies other than locomotives for use on the railroads under the jurisdiction of the United States Railroad Administration" in class B-1. The automatic classifications do not prevent higher classifications being given on orders so included where it may appear essential or desirable that a higher classification be given. Application for transportation assistance where necessary should be made to T. C. Powell, manager of inland traffic, War Industries Board, Washington, D. C., on forms of application which may be had from him on request and a preference list compiled by the priorities board is used as a guide by the United States Fuel Administration and the United States Railroad Administration in the distribution of fuel to industries and plants.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAY 1918

Average mileage operated during period	Name of road.	Operating revenues			Total (inc. misc.)	Maintenance of way and structure.		Equipment.	Operating expenses			Net operating ratio.	Railway tax accruals.	Operating comp. with last year.	Increase (or decr.) last year.
		Freight.	Passenger.	Other.		Way and structure.	Equipment.		Traffic.	Trans- portation.	General.					Total.
31	Belt Ry. of Chicago.	\$35,450	\$349,092	\$24,604	\$444	\$14,436	\$57,361	\$41,743	\$7,698	\$38,386	73.72	\$91,611	\$1,374,163	\$303,052	\$1,474,391
411	Cent. Ry. of Chicago.	\$61,294	\$454,741	\$95,046	\$4,463	\$84,463	\$24,694	\$24,884	\$3,488	\$21,396	78.26	\$18,500	\$1,374,163	\$303,052	\$1,474,391
1,878	Chicago Great Western.	\$1,577,076	\$20,698	\$2,933,319	\$24,193	\$607,338	\$20,739	\$20,739	\$2,461	\$18,278	75.26	\$72,720	\$1,374,163	\$303,052	\$1,474,391
381	Chicago & North Western.	\$115,783	\$8,727	\$120,680	\$3,763	\$95,659	\$2,154	\$2,154	\$5,227	\$132,095	90.04	\$28,085	\$1,374,163	\$303,052	\$1,474,391
441	Detroit & Mackinac.	\$205,199	\$10,230	\$228,864	\$7,488	\$7,238	\$4,651	\$7,238	\$9,225	\$3,640	69.50	\$8,500	\$1,374,163	\$303,052	\$1,474,391
24	Kansas City Traction.	.....	.....	109,441	12,793	14,816	.....	.....	.....	67,712	61.57	18,370	\$1,374,163	\$303,052	\$1,474,391
FIVE MONTHS OF CALENDAR YEAR 1915															
31	Belt Ry. of Chicago.	\$1,374,163	\$303,052	\$1,869,516	\$24,818	\$374,084	\$3,000	\$876,704	\$34,314	\$1,334,332	60.68	\$137,061	\$83,726	\$3,266,275	\$3,266,275
449	Cent. Ry. of Chicago.	4,728,960	1,677,016	6,981,470	995,021	1,524,344	192,226	3,105,244	189,191	6,001,053	96.13	968,005	530,186	344,369	344,369
1,878	Chicago Great Western.	10,537,592	987,072	11,799,825	1,252,409	3,322,555	115,618	6,675,740	4,225,331	11,801,071	91.38	9,288,68	333,220	635,189	1,234,229
381	Chicago & North Western.	1,157,833	87,277	1,206,680	37,663	95,659	2,154	97,813	52,465	134,265	72.60	33,972	41,565	381,800	63,130
441	Detroit & Mackinac.	205,199	10,230	228,864	7,488	7,238	4,651	7,238	9,225	3,640	69.50	8,500	15,652	15,652	15,652
24	Kansas City Traction.	.....	.....	109,441	12,793	14,816	.....	.....	.....	67,712	61.57	18,370	55,322	16,764	55,322

MONTH OF JUNE 1918

Alabama	812	840,071	823,830	857,037	870,838	868,600	870,779	831,896	864,762	881,762	888,113	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,470	890,291	892,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114,887
401,943

Alabama	680,861	3,746,780	336,902	981,120	44,959	2,486,911	104,417	40,112,530	107,254	37,637,49	1,435,908	172,924	439,357	1,435,908
Alaska	338,931	463,439	94,167	119,218	12,635	353,132	599,100	311,521	135,671	18,500	154,171	311,521	311,521	
Arizona	54,695	212,214	38,863	37,034	4,150	166,811	4,080	34,914	16,355	34,690	43,701	103,509	43,701	
Arkansas	554,547	1,928,547	1,028,547	304,615	41,250	1,584,344	35,283	1,033,313	36,687	36,687	774,289	774,289	774,289	
California	6,988,881	23,423,238	10,198,809	2,004,636	133,219	6,043,672	313,829	11,533,808	113,008	1,054,911	4,409,151	4,409,151	4,409,151	
Colorado	7,729,026	2,500,690	10,808,372	3,186,512	133,219	6,043,672	313,829	11,533,808	113,008	1,054,911	4,409,151	4,409,151	4,409,151	
Connecticut	231,230	1,429,010	337,021	455,405	41,888	935,348	63,875	1,576,128	931,28	447,137	384,238	51,297	384,238	
Delaware	643,676	242,239	997,565	135,659	21,019	31,308	31,470	88,220	124,406	2,554,305	516,348	516,348	516,348	
District of Columbia	2,165,842	10,617,409	1,913,559	3,381,689	130,362	7,356,927	374,004	12,171,888	134,406	2,554,305	516,348	516,348	516,348	
Florida	3,739,914	1,635,928	2,004,636	1,176,512	133,219	6,043,672	313,829	11,533,808	113,008	1,054,911	4,409,151	4,409,151	4,409,151	
Georgia	890,926	2,500,690	10,808,372	3,186,512	133,219	6,043,672	313,829	11,533,808	113,008	1,054,911	4,409,151	4,409,151	4,409,151	
Hawaii	20,613	163,958	136,057	64,053	5,511	111,909	10,174	357,299	157,31	32,842	103,586	103,586	103,586	
Idaho	4,325,702	1,928,547	1,028,547	304,615	41,250	1,584,344	35,283	1,033,313	36,687	36,687	774,289	774,289	774,289	
Illinois	5,024,704	3,391,232	1,597,572	58,921	116,734	1,064,137	15,406	8,351,061	102,80	370,515	105,301	485,043	485,043	
Indiana	1,124,558	3,324,834	1,872,377	32,884	31,164	1,064,137	15,406	8,351,061	102,80	370,515	105,301	485,043	485,043	
Iowa	311,267	54,775	61,701	76,996	8,399	163,063	17,893	361,883	160,71	136,707	10,679	47,468	102,525	
Kansas	334,089	1,228,745	149,536	407,204	30,767	623,065	35,006	1,252,375	101,92	23,630	38,485	62,356	478,497	
Kentucky	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Louisiana	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Maine	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Maryland	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Massachusetts	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Michigan	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Minnesota	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Mississippi	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Missouri	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Montana	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Nebraska	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Nevada	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
New Hampshire	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
New Jersey	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
New Mexico	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
New York	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
North Carolina	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
North Dakota	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Ohio	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Oklahoma	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Oregon	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Pennsylvania	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Rhode Island	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
South Carolina	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
South Dakota	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Tennessee	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Texas	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Utah	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Vermont	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Virginia	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Washington	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
West Virginia	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Wisconsin	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	
Wyoming	1,518,892	1,589,240	48,537	60,944	4,874	1,110,272	7,421	24,530,60	108,05	18,070	44,764	62,357	136,752	

Average mileage during period.	Operating revenues				Operating expenses			Total.	Operating ratio.	Net from railway operation.	Railway tax, acc'n.	Operating income (or loss).	Increase (or decrease) last year.
	Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equip.	Traffic.	Trans- portation.						
Great Northern	\$3,696,721	\$1,619,940	\$7,737,898	\$1,832,925	1,792,051	\$7,235	\$4,640,295	\$184,578	109.89	\$392,848	\$499,203	\$1,292,491	\$1,191,997
Great Northern	8,291	1,418,267	4,231,481	2,675,432	2,223	2,283	76,840	1,556,852	109.77	\$78,884	69,646	\$208,952	\$593,992
Gulf, Colorado & Santa Fe	402	1,418,267	2,275,584	1,418,267	1,418,267	7,318	592,729	35,534	97.01	36,721	15,425	\$7,118	\$104,388
Hocking Valley	349	930,014	36,995	144,359	295,921	7,318	592,729	35,534	97.01	36,721	15,425	\$7,118	\$104,388
Houston, East & West Texas	190	92,756	38,767	19,319	24,333	16,087	2,397	88,158	96.83	5,527	6,423	\$93	\$49,074
Houston & Texas Central	4,982	390,229	214,582	645,291	13,713	380,136	13,713	380,136	93.85	39,630	35,743	\$522	\$182,796
Illinois Central	7,478	6,218,176	1,854,609	8,628,308	1,136,195	17,930	3,440,248	302,372	127.93	2,410,575	420,002	\$2,832,573	\$4,550,366
Kanawha & Michigan	176	441,000	110,768	543,465	57,807	105,659	3,223	226,738	74.81	138,886	21,359	\$115,528	\$18,091
Kansas City Southern	274	862,878	185,814	1,177,624	149,157	240,932	3,223	226,738	195.17	73,311	6,970	\$79,681	\$24,251
Lehigh & Hudson River	990	679,858	51,693	240,283	138,236	189,236	17,636	304,653	136.34	136,344	58,286	\$79,224	\$41,251
Lehigh & New England	990	679,858	51,693	240,283	138,236	189,236	17,636	304,653	136.34	136,344	58,286	\$79,224	\$41,251
Long Island	308	434,583	4,271	485,153	60,947	277,636	17,936	165,552	104.63	233,558	79,42	\$119,613	\$9,07
Louisiana Western	207	191,947	107,668	320,023	38,526	39,307	6,445	139,059	79.82	462,697	140,964	\$321,100	\$147,033
Mississippi, Henderson & St. Louis	192	59,000	237,465	48,531	39,994	7,480	110,177	15,974	88.23	27,931	13,363	\$74,802	\$40,900
Missouri & Arkansas	1,869	3,318,632	171,296	5,433,327	810,651	1,144,970	63,122	3,653,519	156.16	11,832	16,074	\$37,776	\$49,587
Minneapolis & St. Louis	1,869	6,852,829	177,969	9,124,848	235,564	297,856	14,931	3,542	135.31	3,063	37,063	\$370,720	\$1,303,587
Min., St. Paul & Sault Ste. M.	195	63,859	35,866	49,002	23,599	11,724	536	6,653	108.88	8,351	4,599	\$12,942	\$3,763
Missouri, Ohio & Gulf	4,43	1,639,591	599,382	2,469,227	694,432	646,076	94,999	3,121,934	126.43	652,601	181,769	\$334,340	\$2,017,157
Mobile & Ohio	1,574,601	9,019,248	1,574,601	1,574,601	1,574,601	1,574,601	1,574,601	1,574,601	109.16	115,880	8,479	\$124,465	\$151,503
Mobile & Ohio	1,574,601	9,019,248	1,574,601	1,574,601	1,574,601	1,574,601	1,574,601	1,574,601	109.16	115,880	8,479	\$124,465	\$151,503
Monmouth, Chesapeake & Atlantic	164	15,846	44,601	105,625	15,050	26,972	3,198	42,372	65.05	62,269	8,357	\$71,339	\$3,534
Monmouth, Chesapeake & Atlantic	164	15,846	44,601	105,625	15,050	26,972	3,198	42,372	65.05	62,269	8,357	\$71,339	\$3,534
Monmouth, Chesapeake & Atlantic	164	15,846	44,601	105,625	15,050	26,972	3,198	42,372	65.05	62,269	8,357	\$71,339	\$3,534
Monmouth, Chesapeake & Atlantic	164	15,846	44,601	105,625	15,050	26,972	3,198	42,372	65.05	62,269	8,357</		

Interchange Defect Carding

The Master Car Builders' Association has issued circular No. 12 in reference to defect carding of cars in interchange. The rules have been changed as follows:

(a) Defect carding for any delivering line defects as between government controlled roads for defects on cars belonging to non-government controlled roads and private car lines, as well as cars belonging to government controlled roads, is discontinued.

(b) Defect carding for any delivering line defects on cars belonging to non-government controlled roads and private car lines is limited to the first and last government controlled road receiving or delivering the car.

Cannot Garnishee Railway Wages

In a decision delivered on August 1, by Judge Hugh J. Kearns of the Chicago municipal court, it was held that railroad employees are in the same category as employees of the nation, state, county and city and that their wages cannot be garnished. The decision was made in the case of John Shea for the use of Harry Poulos vs. the Chicago, Rock Island & Pacific. The road pled that its revenues belong to the United States Government and are not subject to garnishment and its contention was upheld by the judge. He explained that the government had announced that while it was opposed to garnishment suits against railroads, it intended to investigate all claims against railroad employees. In case the claims were just and no satisfactory explanation was given as to why they had not been met, employees would be discharged.

Recruiting Labor for Railroads

The railroads will not lose out in the campaign now going on to recruit unskilled labor for employers engaged in war work.

The Department of Labor in a statement issued last week said:

While the prohibition against recruiting of unskilled labor by employers engaged in war work, except under the direction of the Department of Labor does not include railroads and farmers, the transportation and agricultural industries will be assisted by the United States Employment Service in every way possible.

Specialization in farm and railroad labor supplying is a feature of the central labor recruiting program and the leading branch offices have special railroad labor and farm labor divisions, while in the West and in some places in the South and East offices have been established which devote their entire attention to supplying farm labor and railroad unskilled labor. Recently the employment offices of railroads in Western territory were made a part of the Federal Employment Service system.

This statement is made necessary by the existence of an erroneous belief that railroads and farms must obtain labor through means other than the United States Employment Service. The service will not only assist railroads and farms in getting unskilled labor, but they will be protected by the Department of Labor from recruiting by other industries.

Store-Door Delivery Problems

Some of the agents of California shipper food products to New York have been protesting to the Railroad Administration against the plan for store-door delivery of freight without some modifications.

One shipper is quoted in part as follows:

"But as it is proposed to operate the scheme we are to have no notice of arrival till a railroad truckman backs up to our office door with several hundred boxes or cases on his truck. Where we can put them I do not know. Surely not in this office; and I defy anyone to find warehouses available in this city for short-order delivery. Nor can we tell anything about approximate arrival date the way things are being delayed now. The wasted time of trucks awaiting a chance to unload will be as bad if not worse than the present delay of goods on docks, and will cost more money.

"The ideal system would be for the railroad to provide ware-

houses—make every dock a five or six-story storage house if necessary—and then store for our account after the expiration of a reasonable time of notice. As it is, every warehouse in town is full, and space cannot be had even with plenty of time to hunt for it. If we had to keep warehouse space available, the wasted rent when it was empty, especially when multiplied by the hundreds and thousands of concerns like ourselves, with no use for warehouses more than a few weeks in the year—for we do not carry stocks on hand—would add materially to the cost of doing business. In our case haulage to the warehouse, haulage out again for delivery, double handling and warehouse charges would be as much as \$200 a car, and I think that is more of a burden than the Administration ought to saddle us with, knowing full well that it would have to be passed along to the trade and the consumer."

Railway Business Association

J. M. Hansen, president of the Standard Steel Car Company, Pittsburgh, and E. J. Kearney, secretary and treasurer of Kearney & Trecker, Milwaukee, manufacturers of machine tools, have been appointed members of the general executive committee of the Railway Business Association. Mr. Hansen has been assigned to the committee on government purchasing policies, and Mr. Kearney to the committee on railroads after the war. Mr. Kearney's appointment was in accordance with the plan to offer immediate representation to the group of companies enrolling with the association since the annual meeting at Chicago in March.

Frank W. Noxon, secretary of the association, has sent the following letter and list of questions to all members:

"Tardiness by individual railroads in paying bills for goods delivered having again shown an increase as indicated by letters from our members, the matter has been discussed by us with the authorities in Washington.

"Individual complaints to the Division of Finance and Purchases are now investigated where the manufacturer specifies the road, gives the facts and seems to set up a prima facie case of flagrancy. It has been suggested that the Railroad Administration prescribe a standard of promptness, establish means of payment for all roads, and provide a check-up of performance. The decision of the authorities as to whether the situation requires such action will be based upon the facts as presented. Such facts our association can only obtain from the members. We shall present the matter to the Director of Finance and Purchases as soon as we have in hand sufficient material to show that the condition is general.

"For this purpose we have arbitrarily fixed 60 days as the line beyond which remittances will be regarded as tardy. To be considered, facts must be concrete and susceptible of verification. Are you in position to name roads? If not, can you get into that position by discussing the matter with railroad disbursing officers and gaining their acquiescence to your stating the facts? If neither, can you suggest an alternative method of our making a case?

"Appended hereto is a questionnaire.

"1. Please furnish the Railway Business Association to be quoted to the director of finance and purchases a statement naming roads and giving figures and dates of all accounts outstanding before, or incurred since, governmental control where the lapse of time between delivery and remittance has exceeded (a) days

"2. If not in a position to comply with (1) please endeavor to obtain from appropriate officers of individual roads whose remittances you deem slow acquiescence in your stating to the director of finance and purchases the facts together with the reason given by the road for tardiness and furnish the Railway Business Association statement covering for such roads as acquiesce the information called for under (1).

"3. If you feel reluctant to follow either of the methods suggested above in (1) and (2) can you suggest any other method by which the facts of the situation may be presented to the authorities?

"4. Please give a list of reasons stated by railway disbursing officers for delay in remittances.

"5. Please state recommendations which our association might appropriately make to the director of finance and purchases intended to be helpful to him in framing instructions as to future practice in auditing, provision of funds and remittances."

Traffic News

The Railroad Administration has established a western lines bureau of service of national parks and monuments with Howard Hayes formerly manager of the department of tours of the Chicago & North Western and the Union Pacific lines in charge, with headquarters at Chicago. One representative of each road serving parks will assist Mr. Hayes. The government will distribute circulars and information on parks and monuments and answer inquiries about rates and service to them without charge to the public.

Important developments with regard to the construction, operation and management of the intra-coastal waterways systems from Boston to Beaufort may result from the hearings held recently before the Army Board of Engineers for Rivers and Harbors in Washington. Major-General William M. Black, chief of engineers, in a report recently made public, recommended that such a system be placed by the Railroad Administration in charge of a director, who shall control them as the railroads are now being managed.

Indictments for Rebating

The Pennsylvania Railroad, Armour & Co., Swift & Co. and the Jersey City Stock Yards Company were indicted by the Federal Grand Jury yesterday on the charge of conspiring to violate the Interstate Commerce law prohibiting rebates. The indictments were returned to Judge Julius M. Mayer in the United States District Court.

The indictments charged that Armour & Co. caused to be incorporated the Jersey City Stock Yards Company, all the stock of which was to be owned by the Armour and Swift packing concerns. Then the Pennsylvania Railroad, the indictments state, leased the Harsimus stock yards property in Jersey City to the Jersey City Stock Yards Company at an inadequate rental, and as the results the packing plants thereafter made their cattle shipments over that railroad.

The indictments charged that the packing concerns shipped livestock destined for New York consumption over other railroads prior to the leasing of the Harsimus yards, but afterward the shipments were routed over the Pennsylvania Railroad. This practice extended from November 6, 1912, to December 27, 1917, the indictments charged.

Grain Movement Under Way

The movement of grain is starting this year much earlier than last year. In the ten days from July 15 to July 25 the railroads under federal control handled 40,044 cars in the three western and in the eastern regions, as compared with 24,533 for the same ten days of last year, an increase of 15,511 cars.

The figures compiled by the Railroad Administration are as follows:

	1918	1917
Southwestern	11,414	7,782
Central Western	19,301	8,978
Northwestern	6,347	6,772
Eastern	2,982	1,001
	40,044	24,533

The Northwestern is the only region of the four which shows a smaller movement this year than last. This is because the movement from this region has not yet started in volume and also because last year the railroads were still moving some of the old crop.

Coal Production

The output of bituminous coal during the week of July 27 declined approximately 1 per cent from the preceding week, according to the report of the Geological Survey. The production during the week, including lignite coal and coal made into coke, is estimated at 12,802,000 net tons, a decrease compared with the week preceding of 121,000 net tons, but an increase

over the corresponding week of 1917 of 1,471,000 net tons, or 13 per cent. The average daily production is estimated at 2,134,000 net tons as against 2,154,000 net tons during the week of July 20 and as compared with 1,889,000 net tons during the week of July 27, 1917.

Anthracite shipments increased slightly during the week, the total movement amounting to 40,942 carloads.

The percentage of full time output lost on account of car shortage during the week of July 20 was 5.1 per cent.

Canadian Freight Rate Advances

In authorizing increases in freight rates in Canada in accordance with the orders in council by the Canadian government, Sir Henry Drayton, chairman of the Canadian railway board, gave out a statement in part as follows:

"The estimates of the increased costs filed by the Canadian Railway War Board, show a total increased cost of \$50,616,226, in addition to which there are further claims to be settled by the McAdoo award, which, if settled adversely to the companies, might call for an additional sum of \$19,930,000, making a possible outlay of \$70,546,260.

"The McAdoo award is popularly supposed to increase rates twenty-five per cent. In some instances, not amounting, however, to a great volume, the McAdoo award exceeds this percentage. In a larger number of instances, owing to maximum advance limitations and to a flat rate increase, which, while advancing in a higher percentage the rate for the shorter mileage, hold down all longer movements, the increase of twenty-five per cent is not obtained.

"The railway statistics for 1917 show the total freight earnings of all systems in Canada as amounting to \$215,245,256. This total amount includes railways which are now under the jurisdiction of Parliament and whose increases are not mirrored in the company's estimates. The difference, however, would not be very great.

"Assuming, however, that the whole amount represented earnings of companies under the jurisdiction of Parliament, and assuming further that the increases under the McAdoo scale would net on the gross the whole twenty-five per cent, which they will not, the total amount of the resultant increases under the McAdoo award would be \$53,811,314. These figures, however, cannot be accepted. On the one hand the freight earnings in 1917 were very large—the volume may not prove representative—but on the other hand as rates have already been increased, the resultant gross revenues may well be much larger. As the board has not had the time necessary to compile statistics based on the newer rates, the American increases which were arrived at as necessary in American territory after much investigation are treated as those necessary, subject to the recommendation hereinafter made for rate reduction.

"It is difficult accurately to forecast the increased gross earnings that the rate increases will give. It is much more difficult to arrive with any degree of accuracy at the result of the net. Traffic conditions and operating expenses constantly change. The authorities of the United States have gone into all the circumstances requiring, and the added expenses necessitating, a rate increase with much care. As a result of this study, in the opinion of those authorities, the so-called 25 per cent increase was necessary.

"It is also true that the increases on a large volume of the traffic will fall a considerable degree short of the 25 per cent increase popularly connected with the McAdoo order, owing to the maximum limitation the order creates and the flat increases in other cases allowed.

"The order in Council was not passed for the purpose of increasing company profits over those of previous years, but for the purpose of meeting the advanced costs of transportation, of preventing strikes, and the collapse of the country's transportation."

INCREASED FREIGHT RATES ON ITALIAN STATE RAILWAYS.—Consul General David F. Wilber, of Genoa, reports an advance in freight rates on the Italian State Railways, effective for internal traffic on June 16 and for international traffic at a date to be fixed later. The new tariff applies to shipments by fast freight, accelerated slow freight, and ordinary slow freight, and also to the conveyance of baggage.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has issued a pamphlet of revised regulations for the transportation of explosives, inflammables and other dangerous articles by freight and by express.

The commission's examiner in the Pneumatic Scale Corporation's case relative to the rates on the collapsible container made by that company has decided adversely to the complainant. The Pneumatic Scale Corporation asked for a rate on goods shipped in these containers which would include merely the net weight of the contents and for a lower classification on the collapsed containers returned empty. The examiner believes that the present rates on these containers, both loaded and empty, are not unreasonable and says that while the general use by shippers of a steel container would reduce the loss and damage claims of the carriers due to certain causes, this fact is not sufficient to justify a rule requiring the carriers to compute freight charges on commodities shipped in such containers at the net weight of the contents.

The commission on August 3 announced its opinion that in cases now pending before it, whether heard and submitted or not, relative to carriers now under Federal control, the Director General of Railroads:

1. Is or may be a proper party defendant where the cause of action accrued wholly prior to Federal control, and no order is sought for the future;
2. Is or may be a proper, if not a necessary party defendant where the cause of action accrued in part or in whole during Federal control, and no order is sought for the future;
3. Is a necessary party defendant where the cause of action is as to rates, etc., which since the filing of the complaint have been or shall have been increased or changed by order of the director-general under the Federal control act, and the relief sought includes an order for the future limiting said rates, etc., or fixing their relationship to other rates, etc.

Legality of Express Franks

In the matter of the issuance and use of passes, franks, and free passenger service. Opinion by Commissioner Harlan.

The commission holds as unlawful the free transportation of property upon franks issued by express companies to their officers and employees or to the officers and employees of other common carriers in exchange for passes or franks of such common carriers. This decision confirms Conference Ruling 513 announced on July 20, 1917, which the express companies brought up for further hearing. (50 I. C. C. 599.)

Director General McAdoo, as briefly noted in the *Railway Age* of August 2, page 222, has already instructed the American Railway Express Company to cancel franks previously in use and to issue no new franks.

Lumber from Certain Points in Idaho

Springston Lumber Company et al v. Northern Pacific et al. Opinion by Division 2, Commissioners Clark, Daniels and Woolley.

Combination rates on pine and fir lumber from Harrison, Springston, and Rose Lake, Idaho, to points local to the line of the Northern Pacific, east of Billings, Mont., in Montana, North Dakota, and Minnesota, are found to be prejudicial.

Through routes and joint rates should be established, the latter not to exceed, from the three points of origin to Minneapolis, Minn., the rates from Spokane to the same point of destination, graded westwardly therefrom so as not to exceed 2 cents per 100 lbs. above the rate from Spokane to Beach, N. Dak., at the latter point.

Rates from the three points of origin to Beach should be maintained as maxima to points between Billings and Beach. (50 I. C. C. 591.)

State Commissions

Indiana Interurban Rates

The Public Service Commission of Indiana has given out its decision in the case of the petition by the Interurban roads asking for an advance in freight rates which would put their rates on approximately a par with the increased steam railroad rates. The commission allows slightly higher rates on interurban freight of the fourth, fifth, and sixth classes which, it is understood, includes largely long haul freight. The rates on first, second and third classes of freight are made lower than the steam roads' rates with the purpose of relieving congestion in local freight service on steam roads.

The effect of the order will be to set the interurbans on a plane where their freight service will approach more nearly that of express service, and the order will wipe out applications for through joint rates by the interurbans, under which long hauls were carried by interurbans at far less rates than local freight of the individual companies. The order is limited to "a period of wartime operations, not exceeding two years."

It authorizes interurban utilities to publish and file on one day's notice tariffs stating class freight rates between points in Indiana, which rates shall be as follows:

"First class rates, 21½ cents a 100 pounds for four miles; first class rates for greater distances to be based on 1 cent a 100 pounds for each four miles; second class rates to be 86 per cent of first class rates; third class rates to be 70 per cent of first class rates; fourth class rates to be 55 per cent of first class rates; fifth class rates to be 40 per cent of first class rates, and sixth class rates to be 30 per cent of first class rates.

"It is further ordered that the minimum charge applicable under this order and authorized in this proceeding shall be 35 cents."

Court News

Transfer of Passengers After Wreck

—Duty to Mail Clerks

The Oklahoma Supreme Court holds that where a transfer of passengers is made necessary by reason of a wreck, and the carrier pending such transfer provides for the use of the passengers suitable coaches properly heated, open for their use, in which they might take refuge at all times, it has performed its full duty. And the fact that the employment of a passenger as a railway mail clerk prevents him from occupying such coaches, but requires that he remain outside in charge of the mail, and he thereby contracts an illness, the failure of the carrier to provide him shelter and warmth at the place where the mail is transferred, other than the coaches referred to, does not constitute actionable negligence. —*Lusk v. Wilkes*, (Okla.), 172 Pac. 929. Decided January 9, 1918. Rehearing denied May 21, 1918.

Federal Employers' Liability Act Decisions

The Circuit Court of Appeals, Second Circuit, holds that recovery in an action falling within the federal act, declaring that common carriers shall be liable in damages for injuries due to their negligence, can in no way be modified by the Workmen's Compensation Act of the state in which the accident happened for the word "damages" as used in the federal act means what juries assess according to their own views of value, whereas Workmen's Compensation Acts do not depend on any act of negligence. The federal act supersedes all state laws on the subject with which it deals, and is unaffected by any state act subsequently passed. —*Erie v. Tinnekoel*, 248 Fed., 389. Decided January 16, 1918.

The federal district court for the Western District of South Carolina holds that the fact that the appliance an injured employee was repairing when injured might in the future be used in interstate commerce did not bring him within the act. —*O'Dell v. Southern*, 248 Fed., 343. Decided November 25, 1917.

In another action on the same facts the court holds that an employee, injured while working on an electric motor cannot, though the company was engaged in both interstate and intrastate commerce, be deemed engaged in interstate commerce, if not appearing that the particular motor was in any way used in

interstate commerce.—*O'Dell v. Southern*, 248 Fed., 345. Decided November 19, 1917.

The Idaho Supreme Court holds that a laborer employed in the construction of a fill beneath a wooden trestle, which when completed was intended to take the place of the trestle and to support the track of a railroad company engaged in the transportation of both intrastate and interstate commerce, is not engaged in interstate commerce under the act.—*Kinzell v. C., M. & St. P. (Idaho)*, 171 Pac., 1136. Decided March 26, 1918.

Notice of Title to Goods

The carriage of goods from terminus to terminus on the requirement of a person unlawfully in possession is not a conversion, though if the true owner, before the goods are delivered, intervenes and demands them, and the railroad refuses to deliver them, it is liable in trover. The owner of ore on a mine dump, anticipating that E., the operator of the mine, would endeavor to ship it, notified the railroad and forbade the transportation of the ore. The railroad, when E. offered the ore for transportation, required him to make affidavit that the ore was his, which he did, and the railroad transported the ore for him. The Nevada Supreme Court held the railroad liable to the owner of the ore in conversion, being charged with constructive notice of the owner's right.—*Dixon v. Southern Pac. (Nev.)*, 172 Pac., 368. Decided April 30, 1918.

Presumption as to Working of Block Signals

In an action under the federal Employers' Liability Act for negligently causing the death of the plaintiff's intestate, who was killed in a collision between the locomotive of which he was the engineer and the caboose of a standing train, the New York Appellate Division held that the submission to the jury of the question of the defendant's negligence in operating its block signal system was not justified under the evidence. There was no direct evidence that the block system was not in order and did not work at the time the intestate's train entered the block, or that at any prior or subsequent time it failed to give warning of danger; therefore there was no presumption that the signal failed to operate at the time of the collision.—*Lyman v. D. & H.*, 170 N. Y. Supp. 412. Decided May 17, 1918.

Twenty-eight Hour Law

Under the Twenty-eight Hour Law the shipper may allow the period of confinement to be extended to 36 hours. A railroad company received a shipment of cattle originating in Canada, which the owner had consented should be confined for 36 hours. The railroad confined the animals after receipt in the United States for a period which, added to the time they had been confined in Canada, exceeded 36 hours. The Circuit Court of Appeals, Sixth Circuit, holds that the company was guilty of a violation of the act, which was intended to prevent cruelty to animals, as well as to prevent impairment of their food value, and so it is applicable to shipments originating in Canada, where in the course of interstate commerce they are brought into the United States.—*Grand Trunk Western v. United States*, 248 Fed. 505. Decided April 2, 1918.

Government Control—Local Transportation Facilities

The Nebraska Supreme Court holds that the federal government being in control of the railroads of the country as a war measure, state courts and administrative tribunals should consider the general welfare in adjusting between private-suitors controversies involving the expenditure of railroad funds for the improvement of local transportation facilities. When the enforcement of an order of a state commission made before the United States engaged in the present war would require labor, materials, and money, the commission should have an opportunity for further inquiry in view of changed conditions, and on appeal such an order, (for construction of a station and shipping facilities), was vacated and the proceeding remanded to the Nebraska State Railway Commission for further consideration.—*Ralston Business Men's Assn. v. Bush*, (Neb.), 167 N. W. 727. Decided May 4, 1918.

Supply Trade News

The Thomas A. Edison, Inc., primary battery division has moved its San Francisco office from room 921 Crocker building to room 1205 Hobart building. E. W. Newcomb is in charge.

The P. & M. Company has made arrangements with the Ajax Rail Anchor Company, whereby the P. & M. Company takes over the exclusive manufacture and sale of the "Ajax" rail anchors, effective August 1.

At the last meeting of the Board of Directors, Le Grand Parish, chairman of the executive committee, was elected president of the Lima Locomotive Works, Incorporated. Mr. Parish will also retain the presidency of the American Arch Company.

The Q. & C. Company, New York, has taken a license for the manufacture and sale of a snow melting device for switches, which is the invention of Francis Boardman. This device will be made by the Q. & C. Company under the name of the Q. & C.-Boardman Snow Melting Machine.

The Independent Pneumatic Tool Company has leased the entire sixth floor of the Otis building, at 600 West Jackson boulevard, Chicago, for general offices. The new quarters will be twice as large as those now occupied at 1307 South Michigan avenue. Removal to the new quarters will be effected about September 1.

The Dearborn Chemical Company has just announced the inauguration of a specialties department, for the manufacture and marketing of a number of specialties of interest to manufacturers of steel products. These specialties include a rust preventive known as No-Ox-Id, cutting oils for use in metal cutting, quenching oils, for heat treating, drawing oils and Dearboline, a preparation for cleansing machined parts of emery or grease.

The Lagonda Manufacturing Company, Springfield, Ohio, announces that the Syracuse (N. Y.) district office, in charge of T. X. Lieb, has been moved from 2400 South Salina street to 219 Union Bank building, and that the Cincinnati branch office has been moved from the First National Bank building to 2607 Union Central building. Frank Walsley, who has handled the Lagonda business in Cincinnati for some time, is in charge.

The Roberts & Schaefer Company, Chicago, has been awarded contracts for railway construction in the past 60 days aggregating \$865,000. Contracts for 21 reinforced concrete automatic electric coaling plants have been secured covering plants having capacities varying from 100 tons to 1,200 tons or a total storage capacity in the aggregate of 8,700 tons. The railroads, capacities and location of these stations are enumerated as follows: A plant for the Philadelphia, Baltimore & Washington, of 1,200 tons at Wilmington, Del.; a plant for the Pennsylvania Railroad, of 600 tons at Gardenville terminal, and another at Buffalo, N. Y.; a plant for the Pennsylvania Lines of 700 tons at Canton, Ohio, one of 700 tons at Crestline, Ohio, one of 700 tons at Mingo Jct., Ohio, one of 1,000 tons at Girard, Ohio, and one of 200 tons at Wheatland, Pa.; one for the Pere Marquette of 500 tons at Wyoming, Mich., one of 150 tons at Grand Jct., Mich., and one of 250 tons at New Buffalo, Mich.; a plant for the Terminal Railroad Association of St. Louis of 300 tons at St. Louis, Mo., and one of 300 tons at Madison, Ill.; one for the Toledo & Ohio Central of 300 tons at Columbus, Ohio; a plant for the New York Central Lines of 300 tons at Coalburg, Ohio; also a cinder handling plant at Minerva, Ohio, a coaling plant of 100 tons at Ft. Wayne, Ind., and a cinder handling plant at Coalburg, Ohio; a plant for the Chesapeake & Ohio of 500 tons capacity at Handley, W. Va.; one for the Pennsylvania Railroad of 200 tons capacity at South Oil City, Pa.; one for the St. Louis Southwestern of 200 tons at Jonesboro, Ark., and one of 200 tons at Commerce, Texas; and also one plant for the Nashville, Chattanooga & St. Louis of 300 tons at Atlanta, Ga. (frame plant).

Trade Publications

INDUSTRIAL TRANSPORTATION.—The Baker R. & L. Company, Cleveland, Ohio, has issued two 16-page booklets, one entitled, "Utility Trucks" and the other, "Tractors." These describe equipment manufactured by that company for all manner of industrial and commercial purposes. The various parts of the machines are described in detail with the use of outline and phantom drawings.

WELDING AND CUTTING APPARATUS.—The Bastian-Blessing Company, Chicago, has issued a 26-page catalogue illustrating complete units of Rego welding and cutting apparatus, and giving complete descriptions of the cutting and welding torch details and the Rego diaphragm regulator details. The company's line of oxygen, acetylene and hydrogen welding regulators and adapters is also illustrated.

RESEATING MACHINES.—Bulletin G-2, recently published by the Lagonda Manufacturing Company, Springfield, Ohio, describes that company's electric, air, steam and water-driven reseating machines for boiler caps and headers. These machines are portable and are especially designed for use on boilers of the Babcock & Wilcox type, using ground joints between caps and cap seats in the headers.

MOTOR TRUCKS AND GISHOLT LATHES.—In order to show how motor trucks are used in the war and how Gisholt turret lathes are used to manufacture some of the mechanical parts, the Gisholt Machine Company, Madison, Wis., has prepared an attractive booklet entitled Motor Trucks in the War. It contains a large number of illustrations showing cars actually in war service, detail drawings of parts manufactured on Gisholt machines and illustrations showing the tooling of the lathes to perform these operations.

BATTERY CHARGING EQUIPMENT.—The Cutler-Hammer Manufacturing Company, Milwaukee, Wis., has recently issued a four-page illustrated pamphlet describing the C-H sectional battery charging equipment for electric vehicles and industrial trucks. Some of the distinctive points claimed for this kind of equipment are the adoption of a standard unit as the basis for forming panels and groups of panels, and the ability to make future equipment conform and be an addition to present equipment.

ELECTRICAL MEASURING INSTRUMENTS.—The Potentiometer System of Pyrometry and Temperature Control is the title of a 60-page catalogue published by the Leeds & Northrup Company, Philadelphia, Pa., to describe its system of pyrometry and temperature control, in which the potentiometer method is employed for measuring the electromotive force of thermocouples. The catalogue contains many illustrations, and other electrical measuring instruments manufactured by the Leeds & Northrup Company are also described.

METAL CUTTING TOOLS.—The Lovejoy Tool Company, Inc., Springfield, Vt., in presenting this, its first catalogue of patented inserted-cutter tools, states that it has been the intention of the company to design a line of tools closely approaching the solid-forged tool in respect to rigidity, unnecessary overhang and objectionable projection. It is claimed that the Lovejoy inserted-cutter tools are positively locked and have the merits of the solid tool. Turning, facing and planing tools of this type, boring or facing bars, and patented end-milling cutters are illustrated and briefly described.

"UNDER-FRAME" CAR LIGHTING EQUIPMENT.—The Safety Car Heating & Lighting Company, 2 Rector Street, New York, has issued a 28-page book as a reference for the man who operates "under-frame" equipment. It is called Operation of Safety "Under-Frame" Car Lighting Equipment. The object of the book is to state briefly and concisely the essential points regarding the installation and operation of "under-frame" dynamos and type-F regulators. The first part is given over to such subjects as installation of dynamo and suspension, lining up dynamo, belt lengths, to measure belt lengths, application of belt fasteners, care of under-frame suspension, operation of Safety Type F dynamo regulator, method of adjusting automatic switch with car in yards, etc. The latter part of the book is given over to assembly and detail drawings, each detail part is numbered and named. The book is complete and well worth the attention of any one interested in car lighting equipment.

Financial and Construction

Railway Financial News

BALTIMORE & OHIO.—Directors have postponed action on the common stock dividend pending the working out of the terms of the contract with the government. The regular semi-annual dividend of 2 per cent, however, was declared on the preferred.

BUFFALO, ROCHESTER & PITTSBURGH.—A semi-annual dividend of 2 per cent has been declared on the common stock, comparing with 3 per cent paid semi-annually in 1917. This reduces the annual rate from 6 per cent to 4 per cent. Following the meeting of the board of directors, President Noonan made the following statement:

"The board adopted an ultra-conservative dividend policy on the understanding that the present action would not prejudice future distributions. I was in Washington earlier this week and pointed out to John Skelton Williams that the Buffalo, Rochester & Pittsburgh had paid 4 per cent on the common during each of the first two years of the test period and 6 per cent during the third. In addition it paid 3 per cent last February, so that the present declaration makes 5 per cent for the year, which is about the average for the test period."

"The Railroad Administration has advanced to our road more than \$2,000,000 for additions and betterments, as well as a large percentage of the estimated rental compensation. The road's finances are in a satisfactory position, and we contemplate its financing this year."

DENVER & RIO GRANDE.—The regular semi-annual interest of three and one-half per cent on the adjustment bonds has been declared payable October 1. This calls for a payment of \$350,000. The Bankers Trust Company has made the following announcement:

"We announce that the United States government has arranged with Alexander K. Baldwin, receiver, to provide funds sufficient to pay the interest due August 1 upon the first and refunding 5s of the Denver & Rio Grande Railroad Co., and also to complete the sinking fund payment under that mortgage. The advance by the government, it is understood, does not take the form of a loan, but an advance of rentals due from the government under its operation of the railroad."

WABASH.—The directors have deferred declaring the semi-annual dividend on the profit sharing preferred stock A until the government and the railroad company have finally agreed as to what compensation should be paid and the contract with the government executed.

Railway Construction

BALTIMORE & OHIO.—Repair shops for the Baltimore & Ohio are being built at Cumberland, Md., by Westinghouse, Church, Kerr & Company; a contract for the steel fabrication has been given to the Lackawanna Bridge Company.

DELAWARE & HUDSON.—This company has given a contract to M. E. Ryan & Company, of Schenectady, N. Y., to build a new freight office on the corner of Maple and Walnut streets, Glens Falls, N. Y. It is to have two stories and basement and will be 38 ft. wide and 39 ft. long, with concrete foundation, brick walls, frame floors and roof. The cost of this work will be about \$16,000.

TOLEDO & OHIO CENTRAL.—This company is contemplating the expenditure of \$20,000 in improvements at Fostoria, Ohio. The company has purchased the water right of an abandoned quarry there and will construct a water softener plant in the north railroad yards.

VIRGINIAN RAILWAY.—This company is carrying out double tracking work from Sewalls Point (Va.) terminal westerly to South Branch yard, 13.3 miles. Track has already been laid on 3.7 miles. The contract has been given to the James Stewart Construction Company, Norfolk, Va.

Railway Officers

Railroad Administration

Federal and General Managers

J. M. Gruber, vice-president and general manager of the Great Northern at St. Paul, Minn., has been appointed federal general manager with the same headquarters, effective August 1.

H. G. Hetzler, president of the Chicago & Western Indiana and the Belt Railway of Chicago, with headquarters at Chicago, has been appointed general manager of these roads, effective August 1.

J. M. Hannaford, federal manager of the Northern Pacific, with headquarters at St. Paul, Minn., has had his jurisdiction extended to include the Camas Prairie Railroad, effective August 1.

B. F. Parsons, assistant general freight agent on the Chicago Great Western, at Chicago, has been appointed assistant to the general manager, with headquarters at Chicago, effective August 1.

F. C. Batchelder, vice-president of the Baltimore & Ohio, at Chicago, has been appointed general manager of the Baltimore & Ohio Chicago Terminal, with headquarters at Chicago, effective August 1.

A. J. Davidson, general manager of the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has had his jurisdiction extended to include the Oregon Electric and the Oregon Trunk, effective August 1.

W. L. Park, general manager of the Chicago Great Western, with headquarters at Chicago, has had his jurisdiction extended to include the Leavenworth Terminal Railway & Bridge Company, effective August 1.

George Hannauer, general manager of the Indiana Harbor Belt, with headquarters at Gibson, Ind., has been appointed federal general manager of the same railroad, with the same headquarters, effective August 1.

W. P. Kenney, federal manager of the Great Northern, with headquarters at St. Paul, Minn., has had his jurisdiction extended to include the Farmers Grain & Shipping Company and the Minneapolis Belt Line, effective August 1.

S. M. Rogers, vice-president of the Elgin, Joliet & Eastern, with headquarters at Chicago, has been appointed general manager of that road and of the Chicago, Milwaukee & Gary, with the same headquarters, effective August 1.

W. D. Duke, general superintendent of the Richmond, Fredericksburg & Potomac, has been appointed general manager of the same road and the Washington Southern (not including Potomac yards), with headquarters at Richmond, Va.

M. Jeffers, vice-president and general manager of the Union Pacific, at Omaha, has been appointed general manager of the Union Pacific and terminal manager for operations on all lines in Omaha, South Omaha and Council Bluffs.

W. J. O'Brien, general superintendent of the Chicago Junction, with headquarters at Chicago, has been appointed general manager of the same road and of the Chicago River & Indiana, with headquarters at Chicago, effective August 1.

The authority of **F. H. Alfred**, federal manager of the Pere Marquette, with office at Detroit, Mich., has been extended over the car ferry lines on Lake Michigan, formerly operated by the Ann Arbor, the Pere Marquette, and the Grand Trunk.

H. E. Byram, federal manager of the Chicago, Milwaukee & St. Paul, has had his jurisdiction extended to include the Escanaba & Lake Superior, the Ontonagon Railroad and the Port Townsend & Puget Sound, with headquarters at Chicago, Ill., effective August 1.

W. L. Mapother, federal manager of the Louisville & Nashville, the Louisville, Henderson & St. Louis, the Nashville, Chattanooga & St. Louis, and the Tennessee Central, has been appointed federal manager also of the Birmingham & Northwestern, with office at Louisville, Ky.

The authority of **E. J. Pearson**, federal manager of the New York, New Haven & Hartford and the Central New England with office at New Haven, Conn., has been extended over the New York Connecting Railroad, the Narragansett Pier Railroad and the Wood River Branch Railroad.

C. M. Kittle, federal manager of the Illinois Central, the Yazoo & Mississippi Valley, the Gulf & Ship Island, the Mississippi Central and the New Orleans Great Northern, with headquarters at Chicago, has had his jurisdiction extended to include the St. Charles Air Line, effective August 1.

C. E. Johnston, general manager of the Kansas City Southern, the Texarkana & Ft. Smith, the Midland Valley, the Houston, East and West Texas, and the Vicksburg, Shreveport & Pacific, has had his jurisdiction extended to include the Joplin (Mo.) Union Depot Company, effective July 22.

George W. Stevens, federal manager of the Chesapeake & Ohio, east of Louisville, Ky., Columbus and Cincinnati, Ohio, including the Chesapeake & Ohio Northern and the Ashland Coal & Iron Railway, with office at Richmond, Va., has had the authority extended over the Sandy Valley & Elkhorn, and the Long Fork Railways.

G. R. Huntington, federal manager of the Minneapolis, St. Paul & Sault Ste. Marie, and the Duluth, South Shore & Atlantic, with headquarters at Minneapolis, Minn., has had his jurisdiction extended to include the Copper Range, the Lake Superior Terminal & Transfer and the Mineral Range, effective August 1.

G. L. Peck, federal manager of the Pennsylvania Railroad, western lines, the Cincinnati, Lebanon & Northern, and the Lorain, Ashland & Southern, with headquarters at Pittsburgh, Pa., has had his jurisdiction extended to include the Pittsburgh, Chartiers & Youghiogheny, the Calumet Western, the Englewood Connecting Railway and the South Chicago & Southern.

A. W. Trenholm, federal manager of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has also been appointed federal manager of the Minneapolis Eastern, the Minnesota Transfer, the St. Paul Bridge & Terminal and the St. Paul Union Depot Company, effective August 1. Mr. Trenholm also has jurisdiction over the terminals of all railroads entering St. Paul and Minneapolis.

J. P. O'Brien, federal general manager of the Oregon-Washington Railroad & Navigation Company, has been appointed federal manager of that road, and the Northern Pacific Terminal Company of Oregon, Portland, Ore.; the Pacific & Eastern; the Pacific Coast Railroad; the San Francisco & Portland Steamship Company; and the Southern Pacific Lines north of Ashland, Ore., effective August 1. Mr. O'Brien's headquarters are at Portland, Ore.

D. L. Bush, vice-president of the Chicago, Milwaukee & St. Paul, at Chicago, and **J. W. Taylor**, assistant to the president, have been appointed assistants to the federal manager, with headquarters at Chicago. **J. T. Gillick**, general manager, has been appointed general manager of the lines east of Moberg, S. D., with headquarters at Chicago. **H. B. Earling**, vice-president at Seattle, Wash., has been appointed general manager of the lines west of Moberg, S. D., with headquarters at Seattle, effective August 1.

George T. Reid, assistant to the president of the Northern Pacific, with office at Tacoma, Wash.; **W. H. Wilson**, assistant to the vice-president at St. Paul, Minn., and **R. W. Clark**, have been appointed assistants to the federal manager. Mr. Reid will have his headquarters at Tacoma, and will also have charge of legal matters on the western lines. Messrs. Clark and Wilson will have their headquarters at St. Paul. **J. M. Rapelje**, acting vice-president of the Northern Pacific lines east of St. Paul, has been appointed general manager with headquarters at St. Paul, effective August 1.

Operating

John H. Robinson has been appointed trainmaster of the Northern Pacific, with office at Seattle, Wash.

R. W. Ellsworth has been appointed assistant trainmaster on the Ontario division of the New York Central, with office at Oswego, N. Y., vice **R. W. Nutting**, resigned.

R. G. Kenly, general manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been appointed general superintendent, with the same headquarters, effective August 1.

I. O. Wilson has been appointed chief dispatcher of the Atchison, Topeka & Santa Fe, at Amarillo, Tex., succeeding **H. G. Odell**, who has received a commission as captain in the Sixty-sixth Engineers of the United States army.

D. H. Beatty has been appointed superintendent of safety of the Southern Railway system, the Georgia Southern & Florida, the Alabama & Vicksburg, the Carolina, Clinchfield & Ohio, and other lines under the jurisdiction of E. H. Coapman, federal manager, with headquarters at Washington, D. C.

Martin Quick, supervisor of the labor and safety bureau of the Erie Railroad, at New York, has been appointed assistant to general manager of the Erie, the Chicago & Erie, the New Jersey & New York, the Bath & Hammondsport and the New York, Susquehanna & Western, and **Archibald K. Stone** has been appointed safety supervisor of the same roads; both with headquarters at New York.

F. G. Munnick, superintendent of freight transportation of the Pittsburgh & Lake Erie, has been appointed operating assistant of the same road, the Lake Erie & Eastern, and the Monongahela Railway, with headquarters at Pittsburgh, Pa. **W. F. Brunner** has been appointed assistant to general manager with office at Pittsburgh of all the above named roads, and **G. B. Obey**, general superintendent and purchasing agent of the Monongahela Railway, is now general superintendent of the same road with headquarters at Brownsville, Pa.

W. C. Hurst, vice-president and general manager of the Chicago, Peoria & St. Louis has been appointed general superintendent of that road and the Chicago & Alton, with headquarters at Bloomington, succeeding **X. H. Cornell**, transferred to Chicago as superintendent of the Chicago terminals of the Alton, succeeding **Charles W. Miller**, who died on August 7. **James J. Butler**, assistant to general manager of the Alton, at Bloomington has been appointed assistant superintendent of the Chicago, Peoria & St. Louis, with office at Springfield, Ill.

H. A. Gausewitz, general superintendent of the Fort Worth & Denver City, at Fort Worth, Texas, has been appointed general superintendent of the Missouri, Kansas & Texas, west of Whitesboro; the Texas, Wichita Falls & North Western; the Fort Worth & Denver City; the Wichita Valley and the Abilene & Southern, with headquarters at Fort Worth, Texas. **H. E. McGee**, superintendent of the Missouri, Kansas & Texas, at Parsons, Kan., has been appointed general superintendent of the Missouri, Kansas & Texas of Texas (except lines west of Whitesboro, Texas), and the Houston & Texas Central, with headquarters at Dallas, Texas.

Sidney Upson Hooper, whose appointment as superintendent of transportation, western lines, of the Baltimore & Ohio with headquarters at Cincinnati, Ohio, has already been announced in these columns, was born on May 5, 1880, at Brookline, Mass. He was educated at Yale University, and began railway work in June, 1903, with the New York Central & Hudson River. From 1904 to 1911 he served consecutively as yard clerk, switchman and yardmaster on the Great Northern, the Northern Pacific, the Oregon Short Line and the Southern Pacific. On October 1, 1911, he entered the service of the Baltimore & Ohio as supervisor of yards and terminals, and in August of the following year, was appointed supervisor of transportation. From February, 1913, to June, 1917, he was trainmaster of the Chicago and Indiana divisions; then to February, 1918, he was assistant superintendent of the Toledo division, and since the latter date served as assistant superintendent of transportation at Cin-

cinnati, Ohio, until his recent appointment as superintendent of transportation, as above noted.

W. Y. Brown, chief clerk in the car service department of the Terminal Railroad Association, of St. Louis, has been appointed superintendent of car service, succeeding **Edward Clem-**



W. Y. Brown

ens, who has been appointed assistant to the terminal manager of the St. Louis-East St. Louis district. Mr. Brown was born at Providence, R. I., in 1875. In 1890 he entered railroad service as a messenger at St. Joseph, Mo., in a car accountant's office. He was appointed chief clerk and car distributor on the Missouri Lines of the Chicago, Burlington & Quincy, in 1898, and in 1901 he was appointed chief clerk in the trainmaster's office of the Council Bluffs division. Two years later he left the service of that company to become chief

Association, at St. Louis, Mo., which position he held until his clerk in the car service department of the Terminal Railroad promotion to superintendent of car service, as mentioned above.

Ellis Eugene Dildine, whose appointment as superintendent of telegraph of the Northern Pacific, with headquarters at St. Paul, Minn., was announced in the *Railway Age* of July 26,



E. E. Dildine

was born at Hawtreys, Ont., on September 1, 1866. Mr. Dildine began railway work with the Flint & Pere Marquette, now the Pere Marquette, on September 15, 1883. The following year he entered the service of the Canada Southern, now the Michigan Central, with which he remained until 1886, when he went with the Northern Pacific. Mr. Dildine has been with that road continuously ever since, except for a short period in 1892, during which time he was connected with the Canadian Pacific Tele-

graph Company, at Toronto, Ont., and with the Western Union Telegraph Company, at Chicago. Mr. Dildine's first position with the Northern Pacific was telegraph wire chief; subsequently he became office manager, and later assistant superintendent of telegraph, with headquarters at Tacoma, Wash., which position he held at the time of his promotion to superintendent of telegraph, as noted above.

Victor Parvin, superintendent of the Virginian Railway at Princeton, W. Va., has been appointed assistant superintendent, with headquarters at Princeton, W. Va.; **W. H. Myers** has been appointed trainmaster, with headquarters at Princeton, in charge of the territory Princeton to Roanoke, and the position of assistant trainmaster has been abolished; **George Gieger** has been appointed trainmaster, with headquarters at Princeton, vice **J. W. White**. **G. E. Carr** has been appointed trainmaster, vice **J. F. Duesenberry**, assigned to other duties. **J. W. White** has been appointed chief dispatcher, vice **A. S. Fortune**, who has been appointed night chief dispatcher, vice **J. S. S. Leach**, assigned to other duties.

M. McKernan, whose appointment as superintendent of the southern Kansas division of the Missouri Pacific, with

headquarters at Coffeyville, Kan., succeeding **R. G. Gordon**, was announced in the *Railway Age* on June 7, has since been appointed superintendent of safety of the Missouri Pacific system. Mr. McKernan was born on September 9, 1868. He began his railroad career as a brakeman on the Erie at Susquehanna, Pa., in 1886. The following year and until 1889 he was a conductor on the same road. He then went with the Chicago, St. Paul, Minneapolis & Omaha as yardmaster, at St. Paul, Minn. Later he became a conductor, and in 1892 he worked in the same capacity on the Wisconsin Central, now a part of the Minneapolis, St. Paul & Sault Ste. Marie, at Waukesha, Wis. Two years later he became agent of the Chicago & Northern Pacific, now the Baltimore & Ohio Chicago Terminal, at Chicago, and until 1900 was subsequently trainmaster and superintendent. In 1900 he entered the service of the Northern Pacific as trainmaster at Duluth, Minn., where he remained until 1903, at which time he became trainmaster on the Chicago, Rock Island & Pacific, at Rock Island, Ill. In 1911 he left the service of that company to go with the Missouri Pacific, as assistant to the general manager. In the early part of 1918 he became acting superintendent of the Wichita division.

Financial, Legal and Accounting

Rush N. Harry, local treasurer of the Cleveland, Cincinnati, Chicago & St. Louis, at Cincinnati, Ohio, has been appointed federal treasurer.

Jos. B. Lacy, treasurer of the Norfolk & Western, with office at Roanoke, Va., has been appointed federal treasurer, with office at Roanoke.

D. W. Bigoney, local treasurer of the Erie, with office at New York, has been appointed federal treasurer, and his former position has been abolished.

H. A. Gray, controller of the Northern Pacific, with headquarters at St. Paul, has been appointed federal auditor. **C. A. Clark**, treasurer at St. Paul, has been appointed federal treasurer, effective August 1.

G. J. Bunting, controller of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed federal auditor. **A. G. Loomis**, treasurer, has been appointed federal treasurer, effective August 1.

Charles Jensch, controller of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been appointed federal auditor. **C. P. Nash**, local treasurer, has been appointed federal treasurer, effective August 1.

O. F. Gnadinger, claim agent on the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill., has been appointed supervisor of safety, with the same headquarters, effective August 1. Mr. Gnadinger will continue to act as claim agent.

W. W. Cole, assistant treasurer of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been appointed federal treasurer, with the same headquarters. **A. E. Smith**, controller, has been appointed federal auditor.

L. G. Scott, controller of the Wabash, with headquarters at St. Louis, Mo., has been appointed acting treasurer, succeeding **A. D. McDonald**, who has resigned to resume his duties as vice-president and controller of the Southern Pacific, at New York.

William B. McKinstry, controller of the Central of Georgia, has been appointed general auditor, and **Walter C. Askew**, treasurer, has been appointed federal treasurer of the Central of Georgia lines, under the United States Railroad Administration; both with headquarters at Savannah, Ga.

J. F. Meyer, assistant treasurer of the Oregon-Washington Railroad & Navigation Company, with headquarters at Portland, Ore., has been appointed federal treasurer. **R. Blaisdell**, auditor, has been appointed federal auditor. **A. C. Spencer**, general attorney, has been appointed general solicitor, effective August 1.

C. D. Brandriff, general auditor of the Chicago & North Western, with headquarters at Chicago, has been appointed federal auditor, with the same headquarters. **A. B. Jones**, local treasurer at Chicago, has been appointed federal treasurer, with the same headquarters, effective August 1.

Carey & Kerr, Portland, Ore., have been appointed general solicitors for the Spokane, Portland & Seattle, with the same headquarters. **G. R. Williams** has been appointed federal auditor, and **F. A. Smith** has been appointed federal treasurer, with headquarters at Portland, effective August 1.

A. E. Miller has been appointed general solicitor of the Duluth, South Shore & Atlantic, with headquarters at Marquette, Mich. **A. E. Delf**, controller, with headquarters at Marquette, Mich., has been appointed federal auditor. **W. J. Ellison**, treasurer, has been appointed federal treasurer, with headquarters at Marquette, effective August 1.

M. L. Countryman, general attorney for the Great Northern at St. Paul, Minn., has been appointed general solicitor with the same headquarters: **F. A. Barnes**, assistant controller, has been appointed federal auditor; and **L. E. Katzenbach**, secretary and treasurer with headquarters at St. Paul, Minn., has been appointed federal treasurer, effective August 1.

W. H. Jacobs, member of the firm of Winston, Strawn & Shaw, attorneys, Chicago, has been appointed general solicitor of the Chicago Great Western, with headquarters at Chicago. **C. F. Krebs**, general auditor of the Chicago Great Western, at Chicago, has been appointed federal auditor; and **J. F. Coykendall**, treasurer at Chicago, has been appointed federal treasurer, effective August 1.

H. B. Dike, assistant to the president of the Minneapolis, St. Paul & Sault Ste. Marie, at Minneapolis, Minn., has been appointed general solicitor, with the same headquarters. **C. W. Gardner**, controller, has been appointed federal auditor at Minneapolis. **C. F. Clement**, treasurer, with headquarters at Minneapolis, has been appointed federal treasurer with the same headquarters, effective August 1.

E. H. Kennedy, auditor of the Pittsburgh & Lake Erie, has been appointed general auditor of the same road, the Lake Erie & Eastern and the Monongahela Railway, with office at Pittsburgh, Pa.: **W. M. Doulin**, local treasurer and secretary of the Pittsburgh & Lake Erie, has been appointed treasurer with office at Pittsburgh, and **Reed, Smith, Shaw & Beal** have been appointed general attorneys for all the above named roads.

F. P. Johnson, assistant general auditor of the Missouri Pacific, at St. Louis, Mo., has been appointed general auditor of the Missouri Pacific Railroad, vice **J. G. Drew**, resigned to go with Missouri Pacific Railroad Corporation. **T. M. Niven**, auditor of disbursements at St. Louis, Mo., has been appointed assistant general auditor; **C. B. Moore** has been appointed auditor disbursements, and **C. B. Milsom** has been appointed general accountant: all with offices at St. Louis, Mo.

Traffic

B. B. Stowits, live stock agent of the Erie Railroad, lines east of Buffalo and Salamanca, has been appointed general live stock agent, with office at Buffalo, N. Y.

H. M. Pearce, general traffic manager of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been appointed traffic manager, effective August 1.

W. L. Martin, vice-president of the Minneapolis, St. Paul & Sault Ste. Marie, at Minneapolis, Minn., has been appointed traffic manager with the same headquarters, effective August 1.

J. B. Baird, freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., has been appointed traffic manager, with the same headquarters, effective August 1.

G. H. Smitton, general traffic manager of the Great Northern, with headquarters at St. Paul, Minn., has been appointed traffic manager, with the same headquarters, effective August 1.

F. B. Townsend, vice-president of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been appointed traffic manager, with the same headquarters, effective August 1.

J. M. Cutler, general freight agent of the Southern Railway System and the Georgia, Southern & Florida, with office at

Macon, Ga., has had his authority extended to embrace the line of the Hawkinsville & Florida Southern.

H. R. McCullough, vice-president of the Chicago & North Western, with headquarters at Chicago, has been appointed traffic manager. **A. C. Johnson**, general traffic manager, has been appointed assistant traffic manager, effective August 1.

W. H. Tayloe, passenger traffic manager of the Southern Railway, lines east, with office at Washington, D. C., has been appointed a member of the Southern Passenger Traffic Committee, with office at Atlanta, Ga., vice **S. G. Hatch**, deceased.

Edgar W. Perrott, chief clerk in the office of the superintendent of freight transportation of the Pennsylvania Lines West of Pittsburgh, with office at Pittsburgh, Pa., has been appointed assistant to the superintendent of freight transportation.

J. B. Nettle, general freight agent, and **L. A. Robison**, general passenger agent, of the Pittsburgh & Lake Erie, have been appointed to the same positions also on the Lake Erie & Eastern and the Monongahela Railway; both with headquarters at Pittsburgh, Pa.

Tinsley Smith, division freight and passenger agent of the Central of Georgia, with office at Chattanooga, Tenn., has resigned to engage in other business, and **E. B. Lewis**, commercial agent at Chattanooga, is now in charge of freight and passenger traffic in Chattanooga territory.

Stanley D. Roberts, general advertising agent of the Chicago, Milwaukee & St. Paul, at Chicago, resigned on August 1, to go with the Hebe Company, a subsidiary of the Carnation Milk Products Company, at Chicago, as a special representative in connection with publicity work.

R. M. Calkins, vice-president of the Chicago, Milwaukee & St. Paul, at Chicago, who has just been appointed traffic manager of that road, under the Railroad Administration, will resign on August 15, to represent the Australian Government in supervising the ship building program in Puget Sound.

C. L. Chapman, assistant general traffic manager of the Erie, with office at New York, has been appointed acting general passenger agent, with headquarters at New York during the absence on furlough of **R. H. Wallace**, general passenger agent, and **G. M. Craig**, assistant general passenger agent.

Engineering and Rolling Stock

F. P. Roesch has been appointed supervisor of the fuel conservation section for the Northwestern region, with headquarters at Chicago.

J. W. Hardy has been appointed supervisor of the fuel conservation section for the Southwestern Region, with headquarters at St. Louis, Mo.

H. H. Baxter, chief draftsman in the signal department of the Chicago & North Western, has been promoted to superintendent of construction, with headquarters at Chicago, effective August 1.

S. J. Williams, Jr., principal assistant engineer on the Wheeling & Lake Erie, with headquarters at Cleveland, Ohio, has resigned to take a position with the M. A. Hanna Coal Company, in the same city.

W. R. McMunn, general car inspector of the New York Central, Buffalo and East, with office at Albany, N. Y., has been appointed assistant to superintendent of rolling stock, with office at New York, vice **A. E. Calkins**.

J. A. Atwood, chief engineer of the Pittsburgh & Lake Erie, has been appointed chief engineer also of the Lake Erie & Eastern and the Monongahela Railway, with office at Pittsburgh, Pa. **D. K. Orr**, chief engineer of the Monongahela Railway, is now assistant engineer of the same road, with office at Brownsville, Pa.

F. W. Taylor has been appointed mechanical superintendent of the Missouri, Kansas & Texas of Texas; the Wichita Falls & North Western; the Fort Worth & Denver City; the Wichita Valley; the Houston & Texas Central; the Union Terminal of Dallas, and the Abilene & Southern, with office at Denison, Texas.

L. H. Turner, superintendent of motive power, of the Pittsburgh & Lake Erie, has been appointed superintendent of motive power also of the Lake Erie & Eastern and the Monongahela Railway, with office at Pittsburgh, Pa.

E. R. Lewis, assistant to the general manager, in charge of engineering on the Duluth, South Shore & Atlantic, with headquarters at Duluth, Minn., has been appointed chief engineer, with the same headquarters, effective August 1.

J. P. Zahnen, pilot engineer on signal valuation for the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been appointed construction engineer for the signal department, with the same headquarters, effective August 1.

F. L. Nicholson, chief engineer of the Norfolk Southern, with office at Norfolk, Va., has been appointed consulting engineer of the Virginian Railway, with office at Norfolk, with the same authority as the chief engineer, reporting to the federal manager, during the absence on account of illness of **H. Fernstrom**, chief engineer.

L. R. Pyle, fuel supervisor of the Minneapolis, St. Paul & Sault Ste. Marie, at Minneapolis, Minn., has been appointed supervisor of the fuel conservation section for the Central Western region, with headquarters at Chicago. Mr. Pyle will give special attention to the conservation of fuel used on locomotives, in shops, at terminals, at water stations, and for all miscellaneous purposes. He will also give attention to the preparation of fuel received and to its quality; and will make investigations and recommendations with respect to its transportation and its handling at fuel stations.

Harry Keiter Fox, whose appointment as mechanical engineer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, was announced in the *Railway Age* on



H. K. Fox

July 19, was born in Washington county, Maryland, on October 14, 1881. Mr. Fox was educated in the Washington County Academy, graduating in 1900. In September, six years later, he began his railroad career, entering the service of the Norfolk & Western, at Roanoke, Va., with which company he remained for about three years, following which he entered the employ of the Pennsylvania Railroad, at Pittsburgh, where he remained until November, 1911, when he became draftsman on the Western Maryland, at Hagerstown, Md. In October, two years later, he was promoted to motive power inspector, and in October, 1916, he became chief draftsman. On March 8, 1918, Mr. Fox was appointed engineer of tests of the Chicago, Milwaukee & St. Paul, at Milwaukee, Wis., which position he held until his promotion to mechanical engineer on July 8, as mentioned above.

The following appointments have been made for all lines under the jurisdiction of **J. L. Lancaster**, federal manager: **A. A. Matthews**, chief engineer of the St. Louis Southwestern, at Tyler, Texas, has been appointed assistant chief engineer, at Dallas, Texas; **E. S. Pennbaker**, has been appointed assistant to chief engineer at Dallas; **R. L. Holmes**, assistant engineer of the Texas & Pacific has been appointed engineer of water supply, at Dallas; **E. P. Weatherby**, signal engineer, of the Texas & Pacific has been appointed signal engineer at Dallas; **W. G. Williams** has been appointed bridge engineer at Dallas; **F. A. Mote** has been appointed assistant engineer at Marshall, Texas; **F. N. Baldwin**, terminal engineer of the Trans-Mississippi terminal, at New Orleans, La., has been appointed assistant engineer at New Orleans.

Corporate

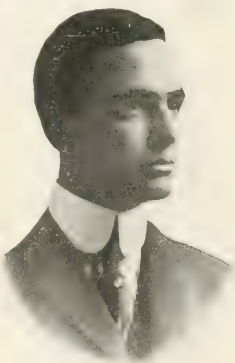
Executive, Financial, Legal and Accounting

F. C. Baird has been elected vice-president in charge of the traffic and transportation departments of the Montour Railroad, with headquarters at Pittsburgh, Pa.

The corporate organization of the Central of Georgia is now as follows: **Charles A. Peabody**, chairman of the board; **Alexander R. Lawton**, president; **Charles F. Groves**, secretary and treasurer; **James G. Corbett**, assistant secretary; **Merle F. Harden**, controller and **Joseph W. Fox**, chief engineer; all with headquarters at Savannah, Ga., except Mr. Peabody, whose headquarters are at New York.

The following corporate officers of the Pennsylvania Railroad, have been elected corporate officers also of the Long Island Railroad: **Samuel Rea**, president; **Henry Tatnall**, vice-president and treasurer; **A. J. County**, vice-president (he will also act as controller); **Lewis Neilson**, secretary, and **Thomas W. Hulme**, general real estate agent. The following corporate officers were also elected on the New York, Philadelphia & Norfolk: **Henry Tatnall**, treasurer; **Henry H. Lee**, assistant treasurer; **H. C. Lawser**, cashier; **Thomas W. Hulme**, general real estate agent; **F. J. Bell, Jr.**, assistant controller; **J. G. Rodgers**, engineer maintenance of way and equipment; **H. C. Booz**, corporate engineer. **A. J. County**, controller, is acting for **C. M. Bunting**, who is now furloughed in the United States army service.

Charles E. Perkins, whose election as president of the Chicago, Burlington & Quincy was announced in the *Railway Age* on July 26, was born at Burlington, Iowa, on February 21, 1881. Mr. Perkins is the son of Charles E. Perkins, deceased, who was president of the Burlington from 1881 to 1900, a period of almost 20 years. The present Mr. Perkins was educated at Harvard University, graduating in 1904. In 1914, he was appointed co-receiver for the Brazil Railway and the Uruguay Railway, with headquarters at New York. At that time, Mr. Perkins made a personal inspection of the properties. He has been a director of the Burlington for a number of years and is president of the International Products Company, of New York. Since 1914, he has been receiver for the Brazil Land, Cattle & Packing Company, with headquarters at New York. He is also president of the Lincoln Land Company and the Northwestern Cabinet Company at Burlington, Iowa.



C. E. Perkins

Frank S. Elliott, formerly general superintendent of the Lake district, on the Great Northern, with headquarters at Superior, Wis., has been elected president of the Spokane & Inland Empire and the United Railways, with headquarters at Portland, Ore., succeeding **L. C. Gilman**, who is district director of the Puget Sound district of the Northwestern region. Mr. Elliott was born at Eddyville, Iowa, on September 29, 1865, and began railroad work as a telegraph operator on the Chicago, Rock Island & Pacific, in July, 1882. In 1884 he entered the service of the Chicago, Burlington & Quincy as an operator, and subsequently became agent and train dispatcher. In 1890 he left the service of the Burlington to go with the Atchison, Topeka & Santa Fe as train dispatcher; later he served in the same capacity on the Northern Pacific, and in 1904 he went with the Great Northern, with which company he remained until 1905, serving successively as train dispatcher, chief dispatcher, trainmaster and assistant superintendent of the Spokane and Cascade divisions. He then went with the Denver & Rio Grande

as superintendent at Salt Lake City, Utah, where he remained for one year. In 1906 he returned to the Great Northern and for the next two years was assistant superintendent of the Dakota, Kalispell, Spokane and Willmar divisions, and from 1908 to 1910 was superintendent of the Northern and Dakota divisions and the Lake district. Mr. Elliott was then appointed assistant general superintendent of the western district, with headquarters at Spokane, Wash., and on July 20, 1913, he was promoted to general superintendent of the central district, at Great Falls, Mont., where he remained until October, 1917. He was then transferred to the Lake district, at Superior, Wis., where he remained until July of this year when he was elected president of the Spokane & Inland Empire and the United Railways.

Archibald Stuart Baldwin, chief engineer of the Illinois Central, with headquarters at Chicago, has been elected vice-president of the corporation. Mr. Baldwin was born at Winchester, Va., on September 28, 1861. He entered railway service in 1879 as a rodman on the Richmond & Allegheny, now the Chesapeake & Ohio, since which he has been consecutively from 1880 to 1882, assistant engineer and engineer of the Iron & Steel Works Association of Virginia; 1882 to 1885, draftsman and assistant engineer on the Philadelphia extension of the Baltimore & Ohio; 1885 to 1886, principal assistant engineer of the Missouri river bridge at Kansas City, Mo., for the Chicago, Milwaukee & St. Paul; 1886 to 1887, resident engineer of the Louisville, St. Louis & Texas; 1887 to 1889, assistant engineer on the Louisville & Nashville; 1891 to September, 1901, roadmaster on the same road. In September, 1901, Mr. Baldwin entered the service of the Illinois Central as principal assistant engineer and on May 1, 1903, he was appointed engineer of construction. On March 20, 1905, he was promoted to chief engineer, which position he held until his appointment as mentioned above.



A. S. Baldwin

Operating

Robert Beverley has been appointed assistant to **S. W. Heald**, superintendent of the Panama Railroad, with headquarters at Balboa Heights.

Engineering and Rolling Stock

Robert C. Falconer, whose appointment as chief engineer of the Erie, for the corporation with headquarters at New York, has already been announced, was born on March 21, 1874, at St. Mary's, Pa. He was educated in the Engineering School of the University of Wisconsin, where he received the degree of B. S. In January, 1899, he began railway work with the Pennsylvania Lines West of Pittsburgh, as transitman, and was engaged in third and fourth track work, track elevation, etc. From May, 1901, to October, 1905, he was out of railway work; during part of this time he served as contracting engineer of the American Bridge Company, and as designer and estimator for the McClintock-Marshall Construction Company. In October, 1905, he went to the Erie Railroad as assistant engineer, on surveys and construction work, and has been in the continuous service of that road ever since. In October, 1911, he was appointed division engineer of the New York division, and one year later, became principal assistant engineer of the lines east. From February, 1913, to January, 1916, he was superintendent of construction and since the latter date, served as assistant chief engineer of the same road, until his recent appointment as chief engineer for the corporation as above noted.

EDITORIAL

Railway Age

EDITORIAL

The general installation of the block system is desirable. But a block system is of no value unless the signal indications given are obeyed by the engine-men. At longer or shorter intervals bad accidents occur because, as investigation discloses, engine-men have run past signals that were set against them.

Need for General Use of Surprise Tests

This was the cause of the recent disastrous collision on the Michigan Central at Ivanhoe, Ind. The only way to prevent such accidents is to prevent locomotive engineers from running past signals. The most effective means ever put into general use for learning of and preventing such misconduct is the surprise test. Such tests formerly were conducted regularly on numerous railways. Little has been heard of them recently. It seems that on many roads they have fallen into disuse. They ought to be revived and employed generally. The Railroad Administration should make them a part of its "Safety First" campaign. The operating officers of all roads having the block system should be instructed to ascertain whether their locomotive engineers are implicitly obeying the signals and to adopt proper punitive measures in the cases of those that do not. There are various indications that the general adoption of the system of surprise tests would disclose the existence of conditions and practices at the present time which must be remedied before railway operation in this country will be made as safe as it ought to be and before the best results in other respects will be obtained from the block system.

The most striking fact noted by a recent visitor to numerous railroad offices, both general and divisional, was that after more than a year of war, there are still a great many men employed in purely clerical positions. Why should men, particularly young men, cling to jobs that can be held as

Give a Man a Man's Work

well, if not better, by girls, when there is so much real man's work to be had, a large part of which pays equal or higher wages? The older office man has acquired experience and a knowledge of his work and the organization to which he belongs, that make him peculiarly valuable, not so much because he is a man as because he has a knowledge of his work which cannot be duplicated in someone else without an equivalent experience. Besides, with family obligations and the reduced adaptability of mature years, a change would work a serious hardship to him. The young fellow, on the other hand, lacks the special knowledge that comes with long experience and is readily replaced, while a change to another job under different circumstances will cause no special inconvenience, except, perhaps, for a man of limited physical strength. But why evince any particular solicitude for the young man? In many cases he ought to be thankful to anybody who would kick him out of a desk job. Even if he is ambitious to follow railroad work, the opportunities to acquire a real knowledge of railroading are better in an engine, a caboose, a shop or a repair gang than in an office. These are days of limited man power, when women should replace men wherever it is practicable to do so, and the young man should be offered encouragement to look for a man's job.

"Our parlor cars seem to be doing business as usual. Any persons who are laboring under the delusion that they are

The Luxury of Parlor Cars

too good to ride in the ordinary coaches should be promptly awakened from their dreams and put to work at some useful occupation. Modern railroad coaches are comfortable enough for any one physically able to travel." This observation and comment, taken from a recent issue of the New York Sun, and noticed more at length in another column, will evoke a sympathetic response in many quarters. One railroad is taking the chairs out of some of its parlor cars, with a view to putting in smaller and cheaper seats which will permit the carriage of 60 to 70 passengers in each car. No statistics have been published since the advanced rates went into effect, but some railroad officers estimate that the additional half cent a mile has reduced the parlor car traffic twenty-five per cent. The trouble with the problem of space and dead weight wasted is that it is not wholly a question of luxury. A considerable percentage of the people in parlor cars are those whose age, or infirmity, or other delicate conditions justify them, if they have the necessary money, in having the benefit, while traveling, of an attendant (the porter or the maid) and the clean washroom and other facilities which are not available in the common car. Another considerable percentage take the parlor car mainly to get away from the foul air and other bad conditions—not to say foul conditions—which often pervade the crowded day-coach. Many a time it is possible to make a six-hours' journey in a day coach in perfect comfort; but the prospective traveler can never tell, beforehand, just what kind of a reception he is going to encounter. The country is waiting for the traffic genius who is going to provide cleanliness, personal service where necessary and reasonable, and some approach to a refined social atmosphere, without unduly offending the extreme economist who would introduce in America the customs of India—passengers in 16-car trainloads with scarcely an inch of spare space.

The convention of the Traveling Engineers' Association, which is to be held in Chicago, September 10, should be the

Convention of the Traveling Engineers

most successful convention ever held by this association. The director general has approved of the holding the convention and in addition has permitted the supply companies to exhibit their products as in the past. Undoubtedly there will be a large attendance at the convention. The mechanical officers will have a splendid opportunity of discussing the vital problems in locomotive operation and fuel consumption and of acquainting themselves with the latest developments in locomotive mechanical devices. This convention will give the supply companies the opportunity they have had to forego for the past one and one-half years of displaying their products and the space in the exhibit rooms has been generously subscribed to. Every effort should be exerted to make these exhibits as instructive as possible, as there will probably be a record attendance of railway men at the meeting.

The National Industrial Conference Board recently issued a report on War Time Experience with Women in the Metal Trades. It deals with manufacturing industries, and, of course, does not cover railway repair shops where the work is much heavier and less attractive. There are, however, a large

number of women working in such shops; although in some instances, machine tools are lying idle because of the impossibility of getting men for the work and a prejudice on the part of those in charge against engaging women. As more and more men are taken into the army, it will become absolutely necessary to use more women in the railway repair shops, unsuitable as this work may appear to be. The report above mentioned draws attention to the fact that most manufacturers agree that women should not be employed on heavy work or in processes exposing them to gases, fumes or unusually high temperatures. Employers generally commend the women as being more thorough and conscientious, as producing less spoiled work, and as being more careful with tools. A great deal depends, however, on the selection and training of the women as well as on the adaptation of the organization and equipment. These matters deserve special and thorough attention. It is of interest to learn that general experience indicates that the women are "more teachable," "quicker to learn," and "follow instructions" better than the men. The necessity of having rest periods varying in length from five to fifteen minutes is emphasized. The arrangement most frequently used is a ten-minute rest period in the middle of the morning and a similar period in the afternoon. In these days when the labor turnover situation on the railroads is so serious, it is important to note that female labor is generally regarded as being more stable than men employees.

Vestibules for Locomotives

In New York State

ON MAY 13, LAST, a law was passed in the state of New York prohibiting the use within the state of "any locomotive engine not equipped with a vestibule cab," the act to take effect January 1, 1919. All new locomotives received after that time must be provided with vestibule cabs and all locomotives passing through shops for general heavy repairs shall be equipped before they are returned to service unless the director general otherwise directs.

It seems strange, particularly at this time when every railroad in the country, and especially in the East, is using its shop facilities to the limit properly to maintain locomotives, that an order of this kind should be permitted to go into effect. We do not know from whence the suggestion for vestibule cabs came, nor how the legislature of the state of New York became interested in it. The use of vestibule cabs on locomotives is in the experimental stage. Practically none of the railroads in the United States have this construction. Some roads in Canada have. It has been stated that the cost of applying vestibules to existing locomotives is about \$300 per engine for locomotives burning bituminous coal. The construction of the locomotives using anthracite coal is such that the cost of this work would be considerably greater and the locomotives would have to be held out of service for a greater length of time in order to apply them. On locomotives of the "Mother Hubbard" type, that is, with the engineman's cab over the barrel of the boiler, it will be necessary to lengthen the rear frame about three feet properly to provide for the vestibule. The cab will have to be moved to the rear of the boiler with all the various cab fittings, connections, etc. It is not believed that the assumed benefits will warrant the expense. The enginemen in Canada who

have operated locomotives so equipped are not very enthusiastic over this type of cab. It is reported that the cabs are cold in winter, it being found necessary to still use the curtains in extreme cold weather; that they interfere with the work of the fireman, and that they are noisy. As a rule, the men are not in favor of the cabs except in stormy weather; they prefer the curtain arrangement which is in general use in this country.

It is evident that proper consideration was not given to these factors, and to the trouble it would cause the railroads in providing the vestibules for locomotives even in one state. The act provides that it shall go into effect unless the director general otherwise directs. It would seem under the present conditions, when the shortage of power is so great, that the director general should object to the enforcement of the law.

Better Protection for

Highway Crossings

THE EVOLUTION TAKING place in highway traffic during the last twenty years, under which horse-drawn vehicles have been largely replaced by the much faster motor vehicles, has increased the complexity of the grade crossing problem. The greater speed of highway traffic today calls for a more comprehensive form of signal than was formerly adequate, for as in the case of railway train movements there is a definite need for early warnings. The motorist desires to be informed of the necessity for a stop, in time to afford him ample opportunity to reduce the speed of his car before reaching the point of danger. The railroads, however, have been confronted with a definite obstacle in providing such warning or approach signs on highways, since they must be installed at a considerable distance from the track and therefore usually outside of railroad premises. Consequently the railway would be without right to erect the signs or authority to maintain and protect them from injury.

The rational remedy for this difficulty is to put the responsibility for these cautionary signs on the state, county or municipal officers; and this has been done, in a number of states, as was noted in the report presented at the last convention of the National Association of Railway Commissioners (*Railway Age*, November 2, 1917, page 804). New Hampshire was the pioneer in this matter and action was subsequently taken by Vermont, Massachusetts, Connecticut, Maine, California, Oklahoma and Illinois. The carrying out of this law in Illinois is the subject of an article in another column of this issue. The Public Utilities Commission requires public highway officers to install and maintain "Approach" signs 300 ft. from the railroad crossing when in the judgment of the commission the crossing involves such hazards as to require the installation of "Stop" signs at the crossing. Thus the erection and maintenance of the warning signs, placed outside of the railroad right-of-way is imposed on the highway commissioners who have definite authority over the ground on which the signs are installed, whereas the installation of stop signs in close proximity to the tracks and therefore usually inside the railroad's right-of-way, is imposed on the railroad.

The order also provides that no sign of any character other than those used to protect the railroad crossing shall be permitted within 300 ft. of such a crossing. This is an excellent provision but it does not go far enough; rigid restrictions should be placed on the erection of unnecessary signs anywhere on the highways. The motorist's interest in warning signals is too often jaded by such signs as, "STOP! And Get a Chicken Dinner at Pete's Roadhouse," or, "DANGER! Get Some Tire Chains at Smithers' Garage." Until such notices and other sign boards of fan-

tastic design are eliminated, there is bound to be more or less confusion with the actual warning signals.

With increasing recognition of the utter impossibility of financing the elimination of all grade crossings of railroads with highways, state and county officers are giving to railroad officers more effective co-operation in obtaining a maximum protection of the grade crossings as such. Since our entrance into the war, a well defined policy has been developed against expenditures for any railway improvements which are not of direct benefit in handling traffic. Therefore, all efforts to decrease the danger of highway crossings must be directed toward the improvement rather than the elimination of grade crossings, so that efforts toward the standardization of signs are in the right direction.

Missouri, Kansas & Texas

EVEN IN THE ESTIMATE which was made by J. W. Kendrick as consulting engineer for the banking house of Speyer & Company, the earnings of the Missouri, Kansas & Texas for 1920 fell behind the actual earnings for 1917 by approximately \$4,000,000. The actual earnings were \$43,344,000 for 1917; the estimate by Mr. Kendrick of earnings for 1920 was \$39,400,000. This estimate might be fairly characterized as the best which could reasonably be hoped for in 1920. And yet with earnings of \$4,000,000 above the hoped for earnings for three years hence, the Missouri, Kansas & Texas' operating income in 1917 was \$8,035,000 as against an estimate by Mr. Kendrick of \$11,250,000 operating income in 1920. Furthermore, the Missouri, Kansas & Texas has had no such appalling increase in expenses as many of the eastern roads, and operating figures reflect substantial progress in more scientific railroading.

It is not often that the essential soundness and wisdom of a particular court decision is demonstrated so quickly by the facts as has been the decision of the district court in which the court refused to interfere in the receiver's management of the Missouri, Kansas & Texas in the interests of a reorganization plan of bankers who desired to base their reorganization upon hopes for the best outcome of railroading conditions in the southwest that could be possibly expected. The court refused to lend its aid to a reorganization plan based on the Kendrick report made on the Missouri, Kansas & Texas in the latter part of 1916 because, apparently, there was too much chance of things not turning out as favorably for southwestern railroads as Mr. Kendrick hoped and predicted they would. No one could have foreseen the particular operating conditions which made an operating ratio of 76.47 in 1917, a comparatively good showing (Mr. Kendrick's predicted operating ratio for 1920 was 64.7), but the court had the wisdom to refuse to aid a reorganization plan which ignored the possibilities of bad luck or unforeseeable difficulties.

The Missouri, Kansas & Texas has been in the hands of C. E. Schaff, as receiver, since 1915. The company had been reorganized without foreclosure in 1891, by the assumption by the company of an overlapping patchwork of many mortgages. With a thoroughly unsound financial structure, two years of extraordinary bad luck, 1914 and 1915, put the property again into receivership. The more conservative bankers and capitalists interested proposed a drastic reorganization which would reduce the company's fixed charges to a minimum which was reasonably sure of being earned in bad times as well as in good times. This plan met with opposition, as was to have been expected, because holders of bonds secured by first mortgage on unessential parts of the system were asked to make considerable sacrifices in the face value of their holdings. Even before government control the reorganization of the Katy bid fair to be a long drawn

out piece of negotiation. In the meantime, however, the physical condition of the property and operating methods were being greatly improved under Mr. Schaff's management. In 1917 the management had the unexpected aid of very greatly increased revenues.

Freight revenue amounted to \$29,028,000, an increase over 1916 of \$4,232,000, and passenger revenue amounted to \$11,161,000, an increase of \$1,945,000. The establishment of military camps in Texas added both to the freight and passenger revenues of the Missouri, Kansas & Texas and the movement of drafted men added passenger revenues to the entire system. There was likewise, apparently, a considerable increase in freight hauled for other than government purposes. Thus the livestock and products of animals carried in 1917 amounted to 693,000 tons, an increase of 141,000 tons, and the tonnage of manufactures amounted to 2,448,000, an increase of 510,000 tons.

The management was able to hold down operating expenses remarkably well considering the rise in cost of materials and wage scales. Total operating expenses in 1917 amounted to \$33,146,000, an increase over 1916 of \$3,706,000. While there was a decrease of \$1,282,000 in maintenance of way, due particularly to a quite abnormal expenditure on this account in 1916, this was more than offset by an increase of \$1,464,000 in maintenance of equipment expenses. Maintenance of equipment expenses were very high as will be seen from the following table showing repairs to each class of equipment per unit of equipment:

	1917	1916
Locomotives	\$4,732	\$4,474
Passenger train cars	1,116	975
Freight train cars	129	110

Replacement of equipment in some of the years prior to the receivership on the Missouri, Kansas & Texas had been rather badly neglected. The receiver, therefore, is finding it necessary, apparently, not only to pay the present high prices prevailing for materials and labor but also to take up past delayed maintenance.

Transportation expenses in 1917 amounted to \$15,673,000, an increase of \$3,272,000 over the previous year. Considering the increase in business handled, this is a most creditable showing, but it illustrates in a striking way how impossible of realization Mr. Kendrick's estimates of savings were under the unforeseen war conditions of 1917. Take the cost of fuel, for instance; fuel for yard locomotives cost \$621,000 in 1917, an increase of \$292,000, or more than 70 per cent, and the cost of fuel for train locomotives amounted to \$3,765,000, an increase of \$1,186,000, or about 48 per cent.

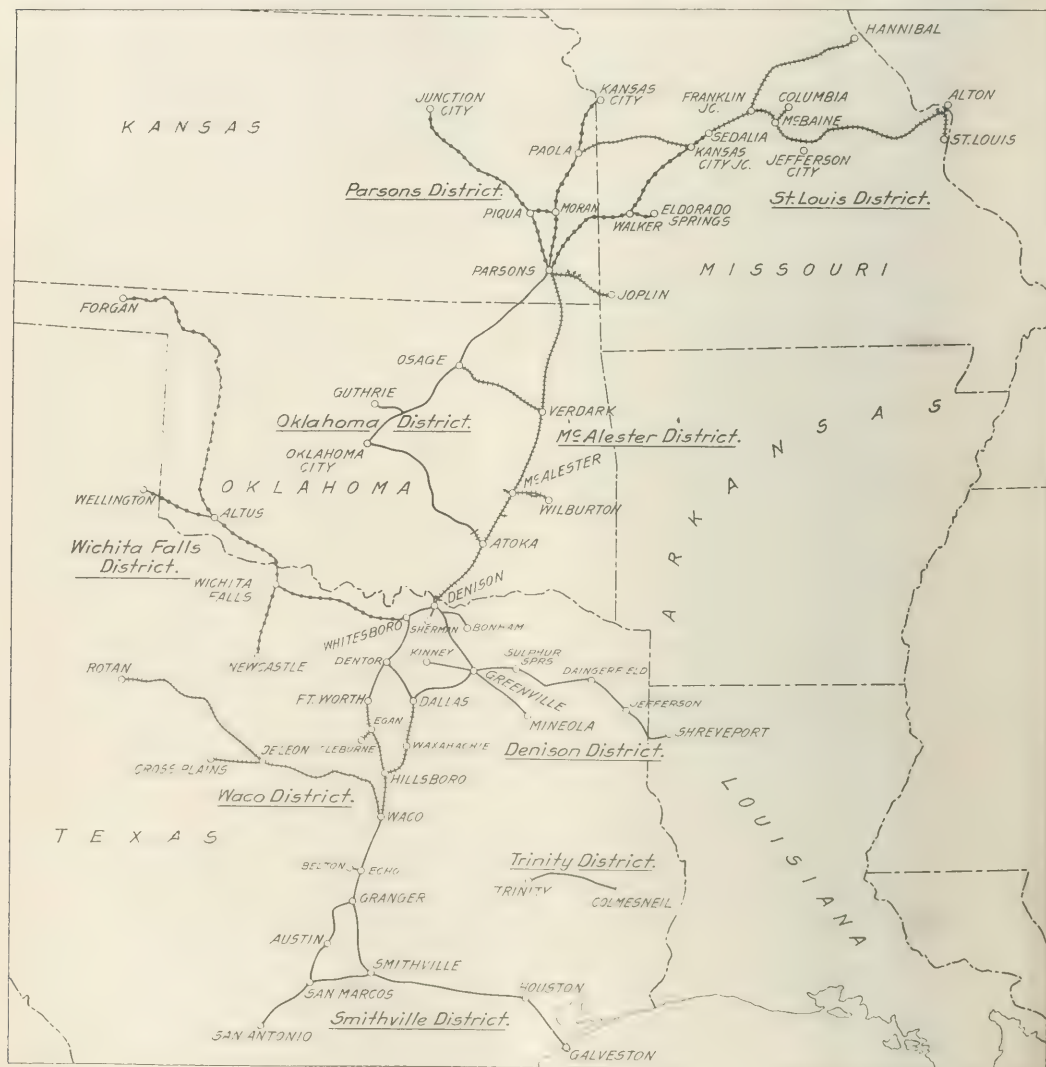
Operating statistics show continued and considerable progress in increased train loading, car loading, etc. The total tonnage of freight carried was 12,865,000, an increase of 15.6 per cent, and the average length of haul was 232 miles or over 15 miles longer on the average than in 1916, so that the ton mileage of revenue freight was 23.7 per cent greater in 1917 than in 1916. The number of passengers carried one mile was 467,800,000, an increase of 13 per cent. The freight train mileage was 6,977,000, a decrease of 2.3 per cent, and the passenger train mileage was 7,645,000, a decrease of 4.8 per cent. The average revenue train load was 428 tons, an increase of 19.14 tons, or 26.7 per cent over 1916. This included both the lines north of the Red river and the lines in Texas, and is a pretty fair indication that it was not lack of progress in scientific railroading which prevented Mr. Kendrick's estimate of operating income from being realized but other circumstances entirely beyond the control of railroad managements. With the much heavier trainload, the gross load behind the drawbar of the locomotive increased in as great proportion as revenue train load, the pounds of fuel consumed in freight service, exclusive of switching, per thousand gross ton miles was 218 in 1917 as

compared with 227 pounds in 1916. The more effective use of fuel as here indicated did not, however, as has already been mentioned, offset by a long way the higher cost per ton of fuel.

In 1917 the receiver spent \$3,240,000 on additions and betterments to road and a net amount of \$1,074,000 on additions to equipment. This net figure was arrived at after

The following table shows the principal figures for operation in 1917 as compared with 1916:

	1917	1916
Average mileage operated.....	3,866	3,865
Freight revenue.....	\$29,027,903	\$24,795,730
Passenger revenue.....	11,160,922	9,215,627
Total operating revenues.....	43,344,150	36,733,682
Maintenance of way and structures.....	6,353,665	7,633,695
Maintenance of equipment.....	8,737,922	7,273,804
Traffic expenses.....	786,980	725,564



The Missouri Kansas & Texas

Operating Districts Are Shown by Different Symbols

subtracting \$1,091,000 from equipment retired. The most important addition to equipment was the purchase of 10 new Pacific type locomotives and of 363 coal and stock cars. The expenditures for road were principally for improving track conditions, ballasting, strengthening bridges, etc., in the general program of putting the property in shape to handle heavy modern locomotives with a corresponding increase in train loads.

Transportation expenses.....	15,672,561	12,400,521
General expenses.....	1,273,611	1,169,910
Total operating expenses.....	33,146,111	29,439,701
Taxes.....	1,983,115	1,546,659
Franchise income.....	8,214,924	5,747,322
Gross income.....	8,803,761	6,143,711
Net income.....	1,379,573	1,134,634*

*Loss.

Note.—The net income or loss is arrived at by subtracting rentals and interest including interest which was deferred or defaulted. The deferred interest in 1917 alone amounted to \$1,038,890 and the defaulted interest during the entire period of receivership since 1915 was \$8,035,380.

Reinforced Concrete Trestles at North Toronto

Unique Details Developed in Viaducts Designed as a Substitute for Steel Construction

IN ACCORDANCE with the general tendency to avoid the use of structural steel wherever possible in the present period of high prices and delayed deliveries, the Canadian Pacific has now completed two reinforced concrete trestles at North Toronto, Ontario, that are excellent examples of the possibilities of reinforced concrete in bridge structures where, under ordinary conditions, steel might have been utilized. These trestles were built in connection with the double tracking of the North Toronto sub-division of the Canadian Pacific between North Toronto and Leaside Junction, a distance of two miles. They replace old single track steel trestles, are approximately 100 ft. high and are of equal

equal, each trestle consisting of five towers of 34-ft. span and six intermediate spans of 36-ft. This permitted standard construction above the trestle bents, thus simplifying the building of forms for the pre-cast deck slabs and lessening the number of forms required. At the three-track trestle 66 deck-spans were required, all of which were cast in eight forms. The same number of forms was used for the 44 deck spans required in the two-track trestle.

The towers in each case consist of two bents tied together by horizontal struts. The plans show the typical bent for the two-track structure which consists of three posts tied together by a cap and transverse struts. The bents of the



The Towers Ready for the Track Slabs

length, 386 ft. between back-walls. Taken together they involve 13,500 cu. yd. of concrete and 670 tons of reinforcing steel. Work on these trestles was begun in July, 1917; one of them was put into partial service on May 1, and the other on May 10. The whole of the double track work, including the bridges, is now practically completed.

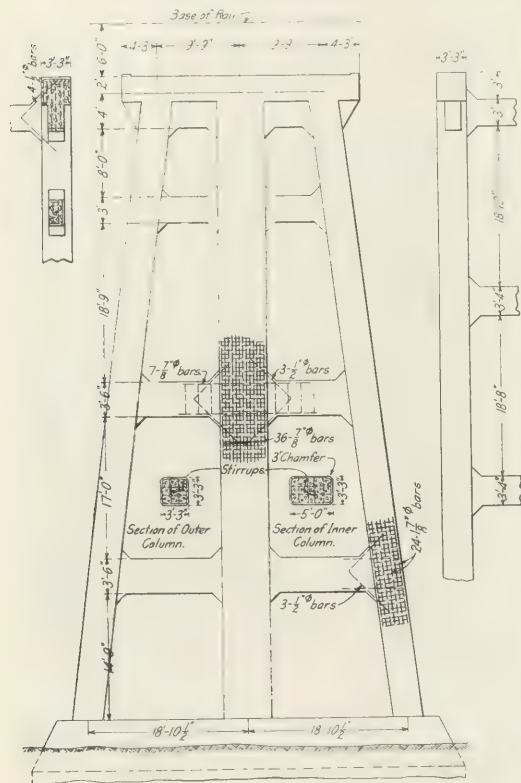
Bridge No. 1.8, located at the throat of the North Toronto yard, is a three-track trestle and bridge No. 0.9, located out on the line, carries two tracks. They cross ravines more than 100 ft. deep of approximately similar contour and width. In making plans for the structures advantage was taken of the similar conditions to standardize the designs as far as possible. To this end the spans were made

three-track structure are of similar design but have four posts instead of three. The footing, which is continuous under all of the posts of each bent, is designed as a girder to distribute the column concentrations to the foundation material. Under the tallest bent this footing is 53 ft. long.

The columns are of a uniform section throughout the structure. The batter columns are 3 ft. 3 in. square and the interior columns 3 ft. 3 in. by 5 ft. in section. They are all heavily reinforced. The outside columns of the tallest bent have 24 and the inside columns 36 1½-in. rods for a length of 34 ft., beginning at the bottom, while rods 7⁄8 in. in diameter are used in equal numbers in the upper sections of these columns. The posts are all hooped at intervals of

6 in. with $\frac{3}{8}$ -in. stirrup bars. The caps at the tops of the bents are of a T-design with an upper part 2 ft. 11 in. deep of the same width as the column and a lower portion 3 ft. deep of the same width as the strut, 1 ft. 10 in. The longitudinal struts are unusual in the use of recesses or panels 3 in. deep on the two side faces.

The slabs are of the pre-cast type of T-beam design with two slabs approximately 6 ft. 6 in. wide under each track, each unit consisting of a single girder 3 ft. 6 in. wide with an expanded top to form a deck slab 12 in. deep. A curtain wall at each end of the slab extending down to the bearing surface finishes the slab to a full width of 6 ft. 6 in. but this curtain wall does not assist in carrying the end reaction since the slab is supported on a steel bearing plate



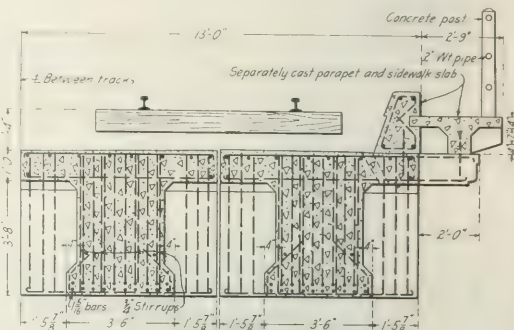
Details of One of the Bents

interposed between the end of the girder and the cap of the bent, which is only as wide as the girder. These girders embody one refinement not often seen in the paneling of the vertical faces to a depth of 4 in. on each side, a feature that improves the appearance and saves some concrete although complicating the reinforcement and the form work.

Provision for a side-walk in a structure of this kind always introduces a perplexing problem. The width of the slab, approximately 6 ft. 6 in., is determined by the spacing of the tracks while an extension of the outside slab a sufficient distance to provide a walk would introduce a serious eccentricity in the slab design, while producing an increase in weight of a slab which already weighs 51 tons. This problem was overcome in the two Toronto viaducts by building both the sidewalk and the parapet as separate units, in-

roducing a special feature in the main slab only by the addition of four brackets to carry the sidewalk slab. The parapet units are 4 ft. $2\frac{3}{4}$ in. long and are doweled to the edges of the main slabs. The sidewalk slabs are 9 ft. $2\frac{1}{2}$ in. long.

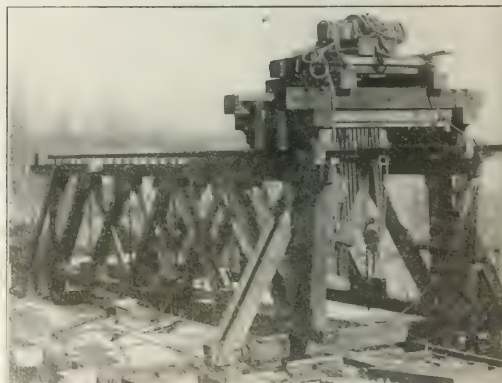
These parapet and sidewalk slabs form an interesting structural combination as is indicated in the drawing. The edge of the walk is 6 ft. 3 in. from the center line of track, or 3 ft. beyond the edge of the main slab. As the walk slab is



Section Through the Deck Construction

also of the T-design and is supported by its stem on the brackets projecting from the main slab, any unbalanced load near the outer edge of the walk would produce a considerable over-turning moment. This is resisted by the weight of the parapet since the inside edge of the walk is made to fit into a groove provided in the face of the parapet. This walk also carries a railing consisting of concrete posts spaced 9 ft. 3 in. center to center with three lines of 2-in. wrought pipe. The posts are $6\frac{1}{2}$ in. square at the wall level and have 9 in. extension stems that fit into holes 5 in. square provided for them in the slab.

As the new trestles are located approximately on the same



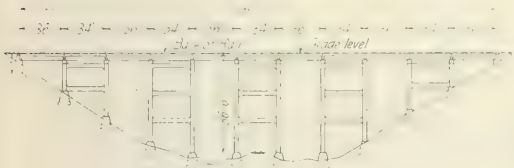
The Erection Trusses and Traveler Used in Placing the Deck Slabs

line as the old bridges it was necessary to divert traffic during construction. For this purpose temporary trestles were built of timber bents with I-beam stringers released from old structures to carry the deck. On the completion of the temporary structures, the old steel trestles were taken down and work started on the excavation at both bridges.

This was made by hand and the foundation tested to 4 tons per sq. ft. The actual weight carried on the footings is 2.5 tons per sq. ft.

At bridge No. 0.9 concrete plants were provided at both ends of the bridge. The main plant consisted of the concrete mixer placed just clear of the west abutment, material bins, including elevated hoppers for sand and stone, the cement house and a McMyler crane for unloading the materials from cars and elevating them to the bins.

With the exception of the east abutment and one tower at the east end which were placed from a small plant lo-



Elevation of One of the Viaducts

cated at that end of the bridge, all of the concrete was placed from the main plant. A temporary trestle was run out from the mixer to the easterly tower. This trestle carried a narrow-gage track and a switch was provided to permit the loaded cars to pass the empty ones on the way back to the mixer. The concrete was dropped from the mixer into dump cars mounted on this narrow-gage track. The cars were moved by hand and emptied into hoppers connected with chutes for conveying the concrete to the forms. The



Derrick Moving the Trusses Ahead in Preparation for Placing the Slabs in the Next Span

small plant at the east end consisted of the mixer, which was fed by hand, all materials being wheeled.

At bridge No. 1.8 the concrete plant consisted of a mixer and a hoisting tower provided for elevating the concrete and spouting it to the forms. At this bridge the materials were moved from the cars to the storage by hand and teams, and from the storage to the mixer in wheelbarrows.

Separate casting yards were provided for the manufacture

of the slabs of each bridge. In both yards the mixers were fed by hand and the concrete was wheeled to the forms in buggies on plank ways. Eight forms were provided at each yard. These were kept thoroughly oiled with crude vaseline with excellent results. Forty-four slab spans were cast for bridge No. 0.9 and 66 for bridge No. 1.8. The heavy bars for reinforcement were bent at the mill and the lighter ones on the job by means of a table rigged up with a template for each style of bend.

The slabs weigh 51 tons each and interesting methods were developed for transporting them from the casting yards to the bridges and for erecting them. To facilitate the handling two vertical 2-in. holes were provided at each end of the slab, 9 $\frac{3}{8}$ in. each side of the center line, for 1 $\frac{3}{4}$ in. bolts. These holes were closed up after the slabs were placed. When ready for placing, a slab was picked up by a 100-ton wrecking crane, set on two standard car trucks, which were run down the main line to the bridge and switched in front



This View Shows the Old Steel Being Removed, the Temporary Trestle and Foundations for the New Piers

of a 30-ton bridge erection car. Two timber trusses were provided, long enough to span between bents and far enough apart to take a slab between them. They were fitted with rails on the top chords to carry a traveling crane built of wood.

With the slab properly placed with reference to the erection car and the traveler, the car picked up one end of the slab and the traveler the other. The car was then moved ahead, pushing the traveler along its track on the trusses until the slab was in the proper location, between the trusses, to be lowered to place. With the slabs for one span in place, the track was laid forward over them, and the trusses were picked up by the crane and moved ahead to the next span ready to repeat the operation. The trusses and traveler and the method of moving the trusses ahead are shown in two of the photographs.

The work was done under the direction of J. M. R. Fairbairn, chief engineer of the Canadian Pacific, the bridges having been designed by P. B. Motley, engineer of bridges. J. H. Barber was engineer in charge of the work.

Orders of Regional Directors

CARS FOR MINES.—The question has been asked as to the treatment with respect to car supply of mines owned by railroad companies and producing exclusively railroad fuel. It has been ruled that such mines must be treated in the matter of car supply just the same as any other mine.

Labor Advertisements on Railroad Premises.—The posting on railroad premises of advertisements for labor to supply government needs as well as the solicitation of labor on railroad property is prohibited. Exception may be made to this rule only when express authority has been secured from the regional director.

Abandonment of Unnecessary Main Line Tracks.—In a number of instances the consideration of operating problems has involved the abandonment, during the period of federal control, of certain main track lines; one case in point being the Denver & Rio Grande main line between Salt Lake and Ogden, where the Oregon Short Line double track is used exclusively. Another case is the abandonment of the Omaha's main line for 8 or 10 miles north of Sioux City, the Great Northern being exclusively used. The question of charter and ordinance requirements in each case must be considered, and where there is an obligation for continuous operation the facts in connection therewith should be reported to the regional director and Judge Payne will handle the matter with the authorities.

Mechanical Stokers.—The eastern regional director is asking for the following information from each road: number of locomotives of 45,000 lb. tractive power or more; how many are now equipped with mechanical stokers; type of stoker; what is policy or recommendation regarding the application of stokers to the balance of the locomotives of above mentioned capacity.

Observance of Embargoes.—The regional director of Northwestern railroads advises that the Clearing House Committee in Chicago handling embargoed cars disposed of 259 cars during the week ending July 27, all of which were loaded in violation of embargoes. It is pointed out that the failure to observe embargo instructions was one of the causes of the serious accumulation during the past winter and that it is extremely important that such instructions be issued by each line as will positively insure that the cars be not loaded in violation of existing embargoes. In case any difficulty is experienced in disposing of cars that are loaded but not delivered to connections subsequent to the issuance of an embargo, railroads may call upon the office of the regional director for assistance.

Wages at Common Points.—The regional director of Northwestern railroads asks that the wages of track and common labor at common points where two or more railroads employ such labor, must not be increased over the existing rates of pay within the limits of the minimum of 25 cents and a maximum of 35 cents an hour, without each road first having a complete understanding with all the other lines interested. Compliance with these instructions will do much to reduce the constant transfer of labor from one road to another which usually results from non-uniformity of rates of pay.

Railroad Men in State Militia.—When the men are not paid by the state for their time or expenses during attendance at encampments of state militia or state guard railroads are authorized to pay them in full, but when they receive payment from the state they will not receive their regular wages or salaries from the railroads unless they are on their full vacations and would receive pay from the Railroad Administration for their time if not on state military duty. If the men are compensated by the state and are not on their vacations with pay, their compensation payable by the Railroad Administration should be correspondingly diminished.

Compilation of Operating Statistics Forms.—The regional director of Southwestern railroads quotes correspondence with C. R. Gray, director of operation, which makes it clear that these statistics need not be prepared for individual corporate properties but only for operating units. The question arose with reference to reports for the Southern Pacific lines between El Paso and New Orleans and the Gulf Coast lines between both Houston and New Orleans, both of which comprise a number of corporate properties.

Deferred Draft Classification.—The regional director of southwestern railroads advises that he has received word from the Secretary of War to the effect that draft boards have been instructed that the selective service regulations providing for the withdrawal of deferred classifications and the order numbers of registrants found to be idlers or engaged in non-productive occupations or employments, do not apply to dining car waiters and Pullman car porters.

Semi-Monthly Report of Operation Conditions.—The regional director of southwestern railroads asks federal managers and terminal managers under his jurisdiction to submit semi-monthly reports, as of the fifteenth and last day of the month, on operating conditions on their lines. A separate report is to be made for each railroad and is to be prepared in duplicate to reach the office of the regional director on the twentieth and the fifth of each month.

The reports will include a general synopsis of weather conditions; a synopsis of the condition of the different crops by states indicating the per cent of acreage and yield as compared with the previous year; a general statement of the traffic situation, both freight and passenger, as compared with last year, together with an assignment of reasons for decreases or increases; a statement indicating whether any assistance is needed in the way of power or cars to handle unusual movements of traffic impending; a brief synopsis of labor conditions; a statement of the condition of roadway, bridges and other structures and the reason for deferred maintenance, if any; a statement of the normal tie allotment and the per cent of application for the year to date and a report on delays to work underway resulting from a shortage of ties or other material; a list of any large improvements in progress involving an expenditure of \$25,000 or more and the per cent complete with the probable date when they will be ready for service; a synopsis of the condition of locomotive and car shops indicating whether additional locomotives, passenger and freight cars can be handled for other federal managers, and a statement of the hours worked at the principal shops compared with the same period of last year; a general statement of the condition of locomotives, passenger train cars and freight cars, indicating the per cent of each class in shops, whether any maintenance is being deferred because of keeping equipment in service on account of heavy traffic, whether there is any surplus of equipment and, if so, how long it can be spared for use in other territory. The reports may be supplemented by comments on any other matters of general interest.

Yard Operation.—Numerous complaints from shippers respecting delays to cars in yards have occasioned the issuance of detailed instructions covering yard operation by the regional director of northwestern railroads. The operation of yards should be so arranged as to provide as nearly as possible continuous movement of traffic. When for any reason continuous movement is impossible, cars should be moved in the order of arrival. It is the duty of operating organizations to know that the work is so arranged in all yards as to avoid unusual delay. Reports made by inspectors, however, show that on many lines there has not been provided a system that insures unflinching attention to all loaded cars that for any reason fall out of the regular current of movement, including cars not billed or improperly billed, cars held for disposition or reconsignment, cars loaded with company material and cars in bad order, including loaded cars held for repair.

A careful study should be made of the organization and facilities of all important yards and terminals to insure a proper and efficient method as to (a) a proper organization of forces; (b) the assignment of individual responsibility of duties; (c) the supervision of office and yard operation; (d) the working facilities of yards and power; (e) yard office facilities. The circular suggests that former traffic officers and employees might, with profit, be put in charge of yard office organizations at some of the larger terminals or be assigned to special duties in connection therewith.

Careful study should also be made to determine the possibility of a further extension of solid train-lot movement to avoid switching en route. When sufficient tonnage is not available for this purpose loads for common points should be assembled together to facilitate train-lot consolidation at other points.

There is no valid excuse for delays in yards and congestions occasioned by the failure of agents to observe embargoes. If any accumulation of cars results from loading prior to the issuance of embargoes, a prompt report should be made to the office of the regional director containing details as to car numbers and full billing reference.

Wood Preservation Statistics

THE PROCEEDINGS of the American Wood Preservers' Association for 1918, which has just been issued, contain statistics regarding the activities of the wood preserving industry in 1917. The total quantity of wood subjected to preserving processes in the United States in 1917 by 115 treating plants was 137,338,586 cu. ft., as compared with 150,522,982 cu. ft. treated by 117 plants which were active in 1916. This represents a decrease of 13,184,396 cu. ft., or 8.7 per cent. There has also been a corresponding decrease in the treatment of railroad cross-ties, since 33,459,470 were subjected to preserving processes in 1917, or 4,900,898 less than in 1916. In the case of piles, there was a small increase in the amount treated, the total for 1917 being 12,695,567 lin. ft., or only 4,700 lin. ft. more than in 1917. A greater increase is recorded for poles, since 53,527 more poles were treated during 1917 than the 328,517 reported for 1916.

The quantities of preservatives used in the treating plants in 1917 amounted to 72,564,345 gal. of coal tar creosote, 2,977,392 gal. of water gas tar, 7,579,819 gal. of paving oil, 26,440,689 lb. of zinc chloride and 137,361 gal. of miscellaneous preservatives. In 1916 90,404,749 gal. of creosote and refined water gas tar and 26,746,577 lb. of zinc chloride were used. As divided between domestic and foreign production of creosote, the conditions brought about by the war have made it more and more necessary to depend upon domestic production. In 1917, 76 per cent of the creosote used in the country was produced here.

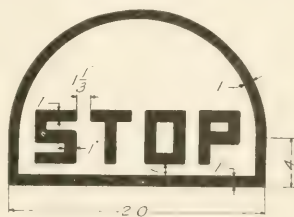
The price paid for preservatives has also advanced materially. In 1917 creosote sold at \$0.08 to \$0.23 per gal., as compared to \$0.075 to \$0.135 in 1916. For zinc chloride the range of price was \$0.0325 to \$0.095 per lb. in 1916 and \$0.625 to \$0.085 in 1917.

Of the 33,459,470 cross-ties treated in 1917, 24,811,208 were hewed and 8,648,262 were sawed. The oak ties were treated in the largest number, constituting 40.2 per cent, with yellow pine second, comprising 34.5 per cent, and Douglas fir 8.2 per cent. Creosote was the preservative for 16,436,573 ties while zinc chloride was used in 14,843,318. A combination of the two preservatives was used in 2,160,682, while 18,897 were subjected to treatment with miscellaneous preservatives. The average impregnation for creosote, water gas tar or paving oil was 7.95 lb. per cu. ft., for zinc chloride it was 0.46 lb. per cu. ft., while with the combination process

it was 2.98 lb. per cu. ft. of creosote and 0.46 lb. per cu. ft. of zinc chloride. In the case of piles, the principal woods treated were southern yellow pine and Douglas fir. The average impregnation for creosote was 13.83 lb. per cu. ft. and for zinc chloride 0.69 lb. per cu. ft.

New Highway Crossing Signs in Illinois

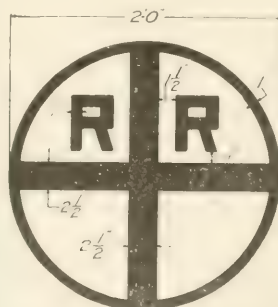
THE PROTECTION of highway grade crossings with railroads in Illinois has been put on a more effective basis by the Public Utilities Commission of that state which issued an order on July 31, requiring the installation of special "stop" and "approach" signals at such highway crossings as may be designated by the commission as "extra hazardous." This order was formulated in the execution of statutes passed by the state legislature in June, 1917, requiring the railroads to erect and maintain "stop" signs at highway crossings and the township highway commissioners to erect and maintain "approach" signs within 300 ft. of



Stop Sign to be Installed by the Railroads

such crossings when so ordered by the Public Utilities Commission.

The "stop" and "approach" signs are the equivalent of home and distant signals for the protection of these crossings, the distant signal being designed to meet the conditions brought about by the higher speed of highway traffic at the present time. The provision of the law which puts the responsibility for these crossings on the township highway commissioners or other highway authorities, results from



Approach Sign to be Erected by the Highway Officers

the fact that these signals to be effective must be at such a distance from the railroad track that they will be outside of the railway right-of-ways in nearly all cases. Another provision in this law prohibits the construction of any other signs or signals such as advertising notices, within 300 ft. of any grade crossing, to prevent any possibility of confusion with the crossing protection signs.

The commission's order provides explicit specifications

for both the "stop" and "approach" signs, the outlines and dimensions of which are shown in the drawings. The signs are required to be of porcelain-enameled metal made of 16 gauge iron, crimped backward at least $\frac{1}{2}$ in. around the perimeter. The letters are to be black on a white field and the rear of the sign is to be black. The supporting post may be either iron or wood and must be of sufficient size and strength to make a solid and substantial support. The posts are to be designed to permit a bracket or attachment to be installed for the purpose of supporting a light or signal at night whenever in the opinion of the commission this may be necessary.

Will State Tax Commissions Reduce Railroad Assessments?

IN STATEMENTS recently submitted to the tax commission of South Dakota on behalf of the Chicago & North Western by T. A. Polleys, tax commissioner, it is pointed out that taxes imposed on railroads by state authorities for the year 1918 are to be borne by the federal government. Unless the tax commission takes action to bring the assessment of railroad property into a more just relation to the assessment of general property and more in accord with requirements of the state constitution, the government can, if it sees fit, under the existing basis of assessment and under the decisions of the courts applicable thereto, successfully attack the assessment placed this year on the property of the Chicago & North Western in South Dakota.

In the statement on behalf of the North Western Mr. Polleys presented nine separate valuations of the operating property of the Chicago & North Western in 1918, arrived at by as many methods:

1. The system stock and bond value on the basis of the average stock and bond prices during the five years ending June 30, 1917, as computed by the Wisconsin Tax Commission, \$415,161,000. (No deduction made for non-operating assets.)
2. The system stock and bond value on the basis of highest quotations on the New York Stock Exchange from January 1 to April 12, 1918, \$351,576,300 (No deduction made for non-operating assets.)
3. System investment in road and equipment as of December 31, 1917, as shown in the general balance sheet on page 20 of the 1917 annual report of the Chicago & North Western to its stockholders, \$397,916,749.
4. System value for the five-year period ending June 30, 1917, by the process originated by N. P. Haugan of the Wisconsin Tax Commission, \$420,098,350.
5. System value by capitalization of the system net earnings, less taxes, for the five years ending June 30, 1917, at six per cent, \$358,062,000.
6. System value by capitalization at six per cent of system net earnings, less taxes, during the single year ending June 30, 1917 (The highest system net earnings ever made by the company in any year), \$440,516,000.
7. System value by capitalization at six per cent of the system net earnings, less taxes, for the single year ending December 31, 1917, as shown by the report recently filed with the South Dakota tax commission, \$397,141,900. (This year showed the highest gross earnings ever made by the company but considerably less net earnings than in the year ending June 30, 1917.)
8. System value by the composite capitalization of system gross earnings, net earnings and maintenance charges for the five years ending June 30, 1917, according to Polley's formula, \$529,996,000.
9. Capitalization at six per cent of the guaranteed government return, less war taxes payable therefrom, approximately \$375,000,000.

Of the nine foregoing system-values, two fall below \$375,000,000 and only one exceeds \$450,000,000. The average of the nine values give a system composite-value of \$409,496,500—practically \$410,000,000. The question arises, what proportion of the system-value is fairly assignable to South Dakota. Of the system all-track mileage, 9.69 per cent is located in the state. Of the system's gross earnings during the five years ending June 30, 1917, only 3.98 per cent were made in South Dakota. There have been no net earnings from the North Western lines in that state; on the contrary, the deficit from operation during the last three years represents a minus ratio of 1.40 per cent of the system's net earnings during that period. During the year ending June 30, 1917, only 3.33 per cent of the system car-

mileage was performed in South Dakota. The average of the four ratios just stated is only 3.88 per cent which is probably as large a fraction of the total system-value of the North Western as should fairly be assigned to South Dakota. However, if twice as much weight is given to the factor of all-track mileage as to each of the three other factors above-named, the distribution ratio for South Dakota would even then be only 5.04 per cent.

In other words, on that basis the value of the North Western's South Dakota property would be only $\frac{1}{20}$ of the total system-value, or a trifle over \$20,000,000. The assessment tentatively announced by the state tax commission for 1918, amounted to \$35,967,606. If general property in the state were being assessed at its full value, even then the assessment proposed for the North Western would be tremendously excessive. But general property in the state is not being assessed at its full value. A table filed with the tax commission shows the 1918 estimated average true value of land in 17 counties in eastern South Dakota at \$78.30 per acre. The average assessment per acre in 1917 in those counties was \$50 which represents only 63.86 per cent of the full value in 1918. In those counties 400 court transfers and probate appraisals made in 1917 and 1918, show that the 1917 assessment is only 68.46 per cent of the average value fixed by these court transactions. When acre property and urban real estate are combined in this group of counties, the 1917 assessment represents 64.66 per cent of the estimated true value of 1918.

On the same basis the assessment of North Western property at \$36,000,000 implies a true value of about \$54,000,000 for the property of the railroad in that state. This likewise implies a valuation of the entire railroad within and without the state of about \$1,120,000,000 as against a composite system-value of only \$410,000,000 worked out in the early part of Mr. Polleys' statement by the use of various well recognized processes.

In concluding, Mr. Polleys pointed out that while it may not be practically possible and expedient for the commission to grant at this time the full measure of relief to which the North Western is plainly entitled, it is certainly practicable to make at this time not less than a 10 per cent reduction in its assessment, at the same time advancing the assessment against general property sufficiently to put it again upon a 75 per cent basis (adopted as proper by the commission in recent years). In the event that the commission takes no such action and the government makes a successful attack upon the assessment—and it is more than likely to succeed—the taxes to be paid by the government for 1918 on the entire group of North Western properties in South Dakota will be only about one third of the \$600,000 which would be paid if the commission's tentative assessments against those properties remained unredressed.

LOSSES OF FOUR YEARS' WAR.—The losses from destruction of railway bridges, etc., in the four years of war have been estimated in Belgium at \$275,000,000, and in France at \$300,000,000.—*The Guaranty News.*

RAILWAY CONNECTION BETWEEN ROME AND CONSTANTINOPLE.—A new company has been formed in Naples under the name "Transbalkanica Italiana," with the object of bringing about direct railway connection between Rome and Constantinople. The proposed route is Otranto, Valona, Monastir, Salonika, Seres, Drama, Zanthi and Dimotica. Only the line Valona-Monastir is to be newly built; all the other lines are existing. Otranto will be connected with Valona across the Straits of Otranto, some 50 miles, by large ferry steamers. The new line, it is hoped, will strengthen Italy's influence in Albania and the Balkan States.—*Railway Gazette, London.*

Doings of the United States Railroad Administration

Director General McAdoo Returns to Washington; Settlement of Compensation Contract Expected

WASHINGTON

DIRECTOR GENERAL McADOO returned to his desk on Monday, much rested after his extended western trip. He spent the morning in the treasury department and the afternoon at the Interstate Commerce Commission Building holding conferences with his assistants. While he was there he was visited by President Wilson.

Mr. McAdoo promptly plunged into the pile of work that was before him and is expected to take action on a number of things this week, the most important of which is the compensation contract.

The contract was discussed before Director General McAdoo Wednesday morning. The committees of the National Association of Owners of Railroad Securities were represented by its counsel Samuel Untermyer and B. H. Inness Brown. The Railway Executives Advisory Committee was represented by its counsel, Alfred P. Thom and S. T. Bledsoe. The counsel of the respective organizations discussed the contract separately. Samuel Untermyer, of counsel for the association, had an interview Tuesday with the director general. It is understood that Mr. Untermyer had a preliminary discussion of the objections of the association to certain sections of the contract.

Director General and Electrification

Mr. McAdoo, when he was at the treasury Monday morning, held a conference with newspaper men and others, at which he said that his observations of the enormous water power resources of the west had impressed him greatly with the value of railway electrification. He did not mean to imply that he now had it in mind to carry out any extensive electrification projects while the war was on or during the period of government control, but expressed the idea that if the railways were permanently in the hands of the government instead of only temporarily he would probably give the idea considerable attention. Several of the newspapers published articles saying that Mr. McAdoo favored electrification of steam roads. When these articles were called to the attention of the director general he explained that he had not intended to convey such an impression.

Increasing Locomotive Building Capacity

The recent order for 510 eighty-ton Consolidation locomotives for the American forces overseas has served to emphasize the importance of the project the Railroad Administration has had under discussion for some time looking towards an increase in the locomotive building capacity of the country.

The Division of Finance and Purchases, John Skelton Williams, director, has been gathering information along these lines, and has been considering either the construction of a new locomotive plant for the government or advances to the three locomotive builders to cover extensive plant additions. Information has been asked of the three locomotive plants to this end. It is understood, further, that negotiations are already under way whereby the Lima Locomotive Works will receive an advance of about \$1,500,000 and that the Baldwin Locomotive Works will receive advances for the building of its new Chicago plant. One story tells of a contemplated plant to be built by the company in the South. The American Locomotive Company may receive advances for its Schenectady and Dunkirk plants. All these negotiations, of course, are subject to the approval of Mr. McAdoo.

The locomotive requirements for the coming year are estimated at 10,000, including engines for our domestic roads, for our Allies and for the American military lines in France.

The locomotive building capacity of the country is estimated at only 6,500 or 7,000. The present proposals call for an increase in building capacity of 1,500 locomotives yearly. The urgent necessity for some step of this kind is further shown by the fact that Pershing's order for 510 locomotives will delay the construction of the standard locomotives for the Railroad Administration, as has been previously noted in these columns.

The Contract Warranty

The warranty or covenant, which is being put in all contracts for purchases of equipment and supplies by the Railroad Administration, has resulted in a veritable flood of inquiries to the Central Advisory Purchasing Committee and to the Division of Law. These two bodies are not attempting to explain the warranty, but have referred the entire matter, with a long memorandum of questions as to just how various types of firms are covered, to the office of the attorney-general of the United States.

The contract covenant is not merely a Railroad Administration matter but applies to all purchases by the government—in any department—War, Navy, Fuel Administration, etc. The attorney-general's office has been receiving requests for interpretations likewise from all these departments and from a great many individuals and firms. The attorney-general is expected to give a decision within the next few days.

The contract warranty is not exactly new, for it dates back to a letter bearing the date of June 18, addressed by the attorney-general to the heads of all departments of the government. This letter said:

A situation which has arisen in the matter of government contracts seems to me to require summary action. Owing to the tremendous increase in government business and the speed with which it must be executed, some manufacturers because of ignorance or misinformation have thought it necessary to negotiate with the government through contract brokers or contingent fee operators. It follows that the system requires a contractor in making his estimate to load his bid with the contingent fee item. The courts have universally condemned the contingent fee contract. The methods employed by the contingent fee operator are often insidious and reprehensible, and, in view of the fact that the average fee is five per cent, the resulting cost to the government is very great. As a means of breaking up this practice I have prepared the following form of covenant, which the President requests shall be inserted in all government contracts:

"The contractor expressly warrants that he has employed no third person to solicit or obtain this contract in his behalf, or to cause or procure the same to be obtained upon compensation in any way contingent, in whole or in part, upon such procurement; and that he has not paid, or promised or agreed to pay to any third person, in consideration of such procurement, or in compensation for services in connection therewith, any brokerage, commission, or percentage upon the amount receivable by him hereunder; and that he has not, in estimating the contract price demanded by him, included any sum by reason of any such brokerage, commission, or percentage; and that all monies payable to him hereunder are free from obligation to any other person for services rendered, or supposed to have been rendered, in the procurement of this contract. He further agrees that any breach of this warranty shall constitute adequate cause for the annulment of this contract by the United States, and that the United States may retain to its own use from any sums due or to become due thereunder an amount equal to any brokerage, commission, or percentage so paid, or agreed to be paid."

As an additional protection it is requested that your department adopt as a regulation the following language taken from Section 3722, p. 735, R. S. as applied to the Navy Department: "And no person shall be received as a contractor who is not a manufacturer of, or regular dealer in, the articles which he offers to supply." This will synchronize the action of officials of your department with that of the contractor who is prohibited by Section 3737 R. S. from transferring his contract or order, or any interest therein, to any other party.

Sale of Intoxicants on Railways to Be Discontinued

One of the first things concerning which Mr. McAdoo gave a final decision after his return was the sale of intoxicants on railways. In General Order No. 39, which he issued Monday, he ordered that the sale of liquors and intoxicants of every

character in dining cars, restaurants and railroad stations under federal control may be discontinued immediately.

Chesapeake & Ohio Directed to Put On More Cars

Director General McAdoo went over the Chesapeake & Ohio on an inspection tour on his return trip to Washington, Friday, August 9, and seeing the crowded condition of the passenger trains directed Federal Manager Stevens to give the public the necessary service by putting on additional cars or running a second section of all trains that are crowded and do not afford the traveling public the necessary facilities. This additional service is to be made effective immediately.

Progress on the Compensation Contract

Negotiations on the compensation contract have proceeded far enough during the past few days to permit of the publication of a new tentative draft. The draft contains several changes which make it more favorable to the railways, but it promptly drew forth objections from both the American Investment Bankers' Association and the National Association of Owners of Railroad Securities. The new tentative draft bears the date of August 7, and shows those revisions which have been made since the draft of July 5, reference to which was made in the *Railway Age* of July 12, page 50.

ACCEPTANCE

In section 3 relating to acceptance the last clause (c), has been amplified to read as follows: "The Federal control act, being in section 16 thereof expressly declared to be emergency legislation enacted to meet conditions growing out of war, nothing in this agreement shall be construed as expressing or prejudicing the future policy of the federal government concerning the ownership, control, or regulation of the company, or the method or basis of the capitalization thereof, and the recitals or provisions of this agreement shall not be used, as evidence or otherwise, by either party hereto in any pending or future proceeding which involves the acquisition or valuation of the company's property or any part thereof; but nothing in this paragraph shall be taken or construed as affecting the settlement and discharge contained in paragraph (a) of this section nor as limiting or qualifying any of the provisions of said paragraph for the purposes thereof."

OPERATION AND ACCOUNTING

Some extensive changes as between the two tentative drafts occur in Section 4 relating to operation and accounting during federal control. Paragraph (a) of this section begins in both drafts: "All amounts received by the director general under paragraphs (c), (d) and (e) of section 2 hereof and all other amounts collected or realized upon by him from current operating assets belonging to the company or arising from railway operations prior to midnight of December 31, 1917, shall be credited by him to the company." The draft of July 5 then continued "and the director general shall, to the extent of the cash received or realized from such assets, pay and charge to the company all expenses arising out of railway operations prior to January 1, 1918, including reparation claims, and may pay and charge to the company any of such expenses, including reparation claims, in excess of the cash so received or realized."

In the new draft of August 7 this is made to read: "Unless objected to by the company, the director general may in any case, and in cases where the current assets, including materials and supplies taken over by him, under the provisions of this agreement, are in his judgment clearly in excess of the current liabilities of the company paid or assumed by him, shall pay and charge to the company all expenses arising out of railway operation prior to January 1, 1918, including reparation and other claims."

The remainder of the clause relates to the striking of balances at four quarterly periods and to their payment or

carrying forward at 5 per cent interest "unless the parties shall agree upon a different rate." This is now amplified by the addition of the words, "but in cases where the current assets taken over clearly exceed the current liabilities of the company as hereinbefore provided, the payment of the amount due by the company may at its option be postponed until the end of federal control, bearing interest in the meantime."

Clause (h) of this same section has also come in for considerable attention and has been amplified especially so as to cover contracts made with subsidiary companies, etc. The clause as it appears in the tentative draft of August 7, reads as follows, the changes as between it and the draft of July 5 being signified by italics:

The director general shall at his option be substituted for the period of federal control in the place of the company in respect of *the benefits and obligations of contracts relating to operation in force January 1, 1918, (including contracts made by subsidiaries for the use and benefit of the company and the right to abrogate or change and make new contracts with express companies for the period of federal control), except as to contracts between the company and subsidiary companies which shall be treated as arrangements or practices,* and the director general shall in like manner at his option be substituted for such period in respect of the benefits and obligations of arrangements and practices in force *during the test period (July 5 draft read "in force January 1, 1918")* in regard to fuel, materials and supplies for the operation of the property described in paragraph (a) of section 2 hereof and of any additions and extensions thereto obtained from any mine, oil field, or other source of supply owned or controlled by the company, it being understood that under such arrangements or practices, if availed of by the director general, *he shall to the extent necessary to offset any increase in the standard return growing out of the furnishing by the company or of its subsidiaries, during the test period, of fuel, materials, and supplies under an arrangement or practice at less than the then cost or the then market value thereof for railroad purposes, be charged for such fuel, materials and supplies a price expressed in dollars and cents per unit below or above the then cost or the then market value thereof for railroad purposes (as the practice of the company may have been) in the same amount that the prices charged the company during the test period were below or above the then cost or the then market value thereof for railroad purposes.*" From here on the clause remains unchanged.

It is provided that, in view of the differing situations of the various carriers, a uniform standard clause covering the subject matter of this paragraph will not be insisted upon and it is left open for such separate treatment as may be agreed on in each case.

Paragraph (j) of this section is amended so that nothing in it "shall be construed to require the director general to make any capital expenditure necessary to preserve a franchise or ordinance not heretofore availed of by the company."

In paragraph (m) it was provided that the company should have the right at all reasonable times to inspect the books and accounts kept by the director general relating to the property of the company, or to the operation thereof. A further provision has been added in the new draft, reading, "and the director general shall during federal control furnish the company with a copy of the operating reports relating to its property, and as soon as practicable after the end of the fiscal year shall furnish to the company a complete list of its equipment as of the end of such fiscal year."

UPKEEP

One of the most important concessions secured is that having to do with upkeep in Section 5. The contract of July 5 provided that the director general at his sole discretion "could expend such sums in addition to those expended as may be requisite for the safe and proper operation of the property

interest bearing obligations must be issued in the future in approximately like proportions, and this certainly will be impossible to accomplish if uncertainty exists as to the value of the underlying assets and other unliquidated properties. The committee therefore believes that it is most important for the preservation of sound credit that the contract should contain positive and definite assurance that dividends which have been earned and paid in the past will continue to be paid during Federal control in order

to certain credit on a basis which will permit future financing to be effected along sound and conservative lines.

"The committee believes further that, in addition to assurance of sufficient compensation to pay interest and dividends during Federal control, the contract will fail to inspire confidence in investors unless the assurance that property will be returned to them at the end of Federal control with its earning capacity unimpaired or proper provision is made for compensation for such loss as may be occasioned through diversion of traffic or as a result of operation as a public system.

"The unified operation of the railroads under Federal control will ultimately result in the diversion of business from one road to another. At the end of the Federal control certain roads may find that their business and good will have largely been diminished or destroyed."

In conclusion the committee says:

"We are aware of the fact that there has been a good deal of discussion as to various provisions of the contract between the representatives of the railroad administration and the representatives of the railroads, but it has seemed to us proper, and we submit to our duty, to submit and urge upon your consideration the various suggestions to which we call attention, from the standpoint of fairness to present investors, and of the important bearing which they may have upon credit and upon the larger problem of government financing. The administration, by its declarations before referred to, has created in the minds of holders of railroad securities distributed throughout the country a confidence that the prompt payment of the usual interest and dividends to which they are entitled will not be impaired or affected by the surrender of the railroads to the government. The administration unquestionably intends to carry out those declarations in good faith.

"It seems to the committee that it is of vital importance, and that the administration itself must desire, that confidence shall not now be impaired by any doubtful or indefinite or ambiguous language put into the contract itself. The declarations of the government in the contract should be as positive and absolute as those made when it secured the legislation and took over the railroads. Anything less will only excite distrust and destroy confidence, and, we believe, ultimately greatly embarrass the entire financial programme of the railroad administration and possibly affect the entire financial plan of the government for the conduct of the war."

PROTEST OF SECURITY OWNERS

The objections of the National Association of Owners of Railroad Securities were contained in a report issued also on Friday by S. Davies Warfield, president of the association. Mr. Warfield's report said in part:

A meeting of the Committee of Seventy was held at the Willard Hotel, Washington, D. C., on July 23.

"Samuel Untermeyer and B. H. Inness Brown, of counsel, then took up the details of the suggested amendments with the government representatives. The details in further negotiations were now left in the hands of your two smaller committees and counsel, who have been conducting the negotiations with the government representatives from the beginning. Conferences with the government representatives have been practically continuous since that time and are still continuing.

"As a result of these negotiations we now advise you of the modifications in the contract which have been thus far granted us, and are now set forth in the latest tentative draft of contract issued by the government representatives, dated August 7.

THESE MODIFICATIONS ARE AS FOLLOWS, VIZ.:

SECTION 4. OPERATION AND MAINTENANCE.

"This section of the draft of contract of July 5 permitted the government to charge against a railroad and deduct from its standard return all current liabilities paid by the government for the said railroad over and above its cash assets other than working capital contributed by it without allowing credit for supplies and materials turned over by the said railroad. These supplies and materials were to be accounted for by the government only at the end of the federal control. The railroad was to be required to make good to the government the excess of liabilities so paid or have the same deducted from its standard return.

"Important modifications to this section have been granted the effect of which is to give the railroad credit for all supplies and materials turned over and at the option of the railroad to defer the payment of the balance as between excess assets and current liabilities until the end of federal control whenever it appears that the total current assets, including supplies and materials, are clearly equal to the total current liabilities. This relieves the railroads from having to raise and pay to the government large amounts of cash and tends to further stabilize and make more certain the standard return."

Mr. Warfield then speaks of the charge in Section 5, relative to upkeep and excess maintenance:

"The specific purposes for which expenditures for excess maintenance may be made are now defined; formerly they were not. We still contend, however, that while this modification is a decided improvement, no such charge should be made in priority to fixed charges and to such dividends as were paid during the test period. Such charges for excess maintenance should be carried over until the end of federal control, so that the standard return shall be a fixed amount and not subject to reduction during federal control.

"On this branch of the subject and as affecting this and other provisions of the contract no change has been, and it still has not been, made. The standard return shall be a fixed known sum on which the company and those who deal with it can confidently rely as a basis of credit and as a fund out of which its fixed charges and dividends can be paid, as was contemplated by the President's proclamation.

"A final decision has not been reached on the important fundamental clause of the contract known as the 'Acceptance Clause' (Section 3). A slight change has been made in this clause along the lines of the suggestions made. We have asked a further modification which is still under consideration by the government representatives. Even this, however, will only partially relieve the drastic and unjust character of this clause. In amplification of the objections to clause (a) of this section of the contract we refer you to the discussion thereof by counsel herein mentioned and urged to you under date of July 20.

"The question of the right of court review of decisions, under the contract, of the Interstate Commerce Commission also remains under consideration.

"No substantial progress has yet been made affecting the broad powers of the director general in the making of additions and betterments without

limitation and charging the same against the companies. Under the proposed contract, the cost of additions and betterments made by the director general may be deducted from the standard return before the payment of interest, dividends, or other charges, paid by the railroad during the test period. Our contention is that no deduction for any class of capital expenditures should be made from the standard return until after such dividends have been provided for, and that abnormal additions shall be accounted for only at the termination of federal control. Taxes and rentals of leased lines and properties are, however, now provided for and come before any deductions for the cost of additions and betterments from the standard return.

"Changes in some of the details of the contract have also been made, but there are still many particulars in which we regard the provisions of the latest revised draft as unjust to the railroads and the owners of their securities.

"The modifications granted, above mentioned, are important, but we feel that the representatives of the government are unduly exacting in declining thus far to grant other modifications of the fundamental provisions of the contract which seem to us to be essential to railroad credit and to the protection of the security owners, the equity of which is indisputable. We feel that the government and counsel will continue the negotiations in such directions as may be deemed expedient, in the hope of securing the further relief sought."

Insurance and Fire Protection Section Securing Information

The Insurance and Fire Protection Section is sending out questionnaires asking for detailed information about the fire protection methods of the railways and their practice concerning marine insurance. The head of the section is Charles N. Rambo, who reports to John Skelton Williams, director of the Division of Finance and Purchases.

The letter to the regional directors states:

It is desired that close attention be given to all fire dangers and the adequate and reasonable protection of properties, and that the work of inspection of properties against hazards and fire loss and damage and the results of the inspections may be co-ordinated, the following information is desired as a preliminary step in perfecting a plan of organization:

1. What is now being done by each railroad under federal control in your region with regard to inspections against fire loss and damage and the minimizing of fire hazards?
2. How many general fire inspectors, whose entire time is utilized in going over all properties of each road, are now employed by each road?
3. How many district fire inspectors or fire marshals are employed and in what districts?
4. Could the duties of any of these inspectors or marshals be enlarged by taking in additional property in your territory without lessening the effectiveness of their present service?
5. How often are inspections made of all properties, also of the large and important properties.
6. Are fire brigade organizations maintained at all important properties and under careful supervision and drill?
7. What is now being done with inspector's reports and their recommendations?
8. Are recommendations followed up to see that prompt action is taken to eliminate dangers or properly protect the properties?
9. What is now being done in connection with recommendations requiring special appropriations and expenditures?

In the general insurance questionnaire, which was sent out to all railroads by the director general, certain questions regarding the inspection service were asked under Form 7. Since that time, however, under General Order No. 24, issued May 16, 1918, by the director general and a letter sent to the carriers, they were instructed not to renew any expiring fire insurance on property under federal control and not to take out any new fire insurance policies upon such properties. The latter, however, suggested care for fire prevention in the following terms:

"If the termination of insurance in accordance with this order results, as to any particular property, in the discontinuance by the insurance company of inspection or other measures for prevention of loss, it will be desirable to adopt proper substitute therefor, and the carrier shall make reasonable and proper temporary provision for such inspection and

other preventive measures, *reporting its action to this office.*"

In the letter relating to marine insurance and fire protection, dated July 24, Mr. Williams says:

"We should like to have from such of the railroads or their affiliated companies in your region as may have, or handle, marine transportation risks and liabilities, information with respect to the marine insurance results during the years 1915, 1916 and 1917, so that we may review the data with a view to effecting economies incident to operating expenses.

"The information desired for each of the years would be as follows: (a) The amount of insurance placed; (b) the premiums paid thereon; (c) the losses incurred thereunder. This information is desired for hulls and cargoes separately, and for each general class of risks separately, that is, for marine insurance placed in connection with hulls and cargoes in harbor, bay, river or canal transportation, Great Lakes transportation and ocean coastwise transportation. I should also like to have any other general information that the railroads may have with respect to the entire subject which would be of value."

Shop Men Satisfied with Recent Increases

Reports received by officers of the Railroad Administration are to the effect that officers and men alike are well satisfied with the increases in pay to shopmen announced in Supplement No. 4 to General Order No. 27. Mechanical officers in different parts of the country who have been heard from say that many skilled men who had left them to go into other work have begun to return to their railroad jobs and some say that the advanced wages are proving sufficient to attract also skilled mechanics new to railway work. In fact on most railroads there are more mechanical department employees on the payrolls now, in both the car and the locomotive departments, than there were at this time last year.

When the recent increase in wages to shopmen was announced by the director general two weeks ago it was the general consensus of opinion that in view of the pass privileges and the steady and permanent employment in railway shop work, the men would be well satisfied. This conclusion is now being borne out.

On August 9 the director general announced in Supplement No. 5 to General Order No. 27 (relative to wages of shopmen) that:

Effective August 1, the wages, hours and other conditions of employment of employees of the operating department of the Pullman Company will be the same as those fixed in Supplement No. 4 to General Order No. 27 for corresponding classes of railroad employees, but none of the provisions named therein will be retroactive prior to August 1, 1918.

The Board of Wages and Working Conditions last week heard the employees and this week the management relative to the wages of telegraphers and telephoners, train dispatchers, agents located at stations, line repairers, levermen or interlockers, towermen or train directors, block operators and staffmen.

Operating Conditions in the Allegheny Region

Mr. McAdoo has received the following report from C. H. Markham, director of the Allegheny Region, summarizing the work of the railroads in that region for the two-months' period ended July 31, 1918:

Transportation conditions during June and July were fair and showed continued improvement. Freight traffic, considering the volume, moved with reasonable promptness. There was no congestion, as the movement of business to the larger industrial centers and for export is controlled by permits. The embargo against lumber from the South has been removed except as to points on the seaboard between Washington and Jersey City, where it is moved on permits.

During June and July the car supply was generally good and met the demand.

In June anthracite coal loading was 63,187 cars, increase, 4,179 cars over last year; bituminous, 191,767, increase 22,781. July anthracite loading was 69,630 cars, increase, 2,329 cars, bituminous, 223,014 cars, increase, 35,100.

Coal dumped at tidewater increased 223,537 tons in June, and 444,916 tons in July, as compared with corresponding months last year.

Blast furnace operations reports for the last week in June and July show

	June	July
By-product ovens in operation	85 per cent	93 per cent
Blast furnaces in operation	94 per cent	93 per cent
Open hearth and Bessemer converters in operation	86 per cent	85 per cent

and the operations not affected by any transportation deficiencies.

There has been a material improvement in our perishable service in the past 60 days, and the vegetable movement from the trucking sections of Maryland, Delaware and New Jersey is being handled in a manner satisfactory to shippers. The Southern peaches were handled in excellent shape.

The heavy passenger business was well handled, and passenger train schedules were maintained with reasonable regularity.

Troop movements have been heavy throughout June and July but were handled in a most satisfactory manner.

Shortage of mechanics and laborers is retarding progress in repairing bad order cars, resulting in an accumulation above normal. Repairs to locomotives are progressing satisfactorily.

Constant study is being given the question of co-ordinating facilities and service, and the handling of traffic via the most favorable routes.

Since June 1, 204 unifications have been effected, relieving a large number of employees for other service. There have been 36 diversions of freight traffic of considerable magnitude for the purpose of relieving congested routes and districts, using routes which are shorter or have more advantageous grades, or increasing capacity of certain routes for other traffic. Typical of this is the rerouting of Baltimore & Ohio freight and passenger trains over the Pittsburgh & Lake Erie tracks between McKeesport and New Castle Junction, and the co-ordination of passenger traffic on the Pennsylvania, and Philadelphia & Reading, between Philadelphia, Norristown, Reading and Pottsville, effecting a saving of 322,296 passenger train miles yearly, all of which represents a yearly saving of approximately \$1,240,000.

Additions and betterment work is progressing well considering the difficulty in obtaining labor and materials.

Half Rates on Cattle Feed

Owing to the severe drought in western Texas which has seriously hindered the growth of grass and other feed for cattle, the Division of Traffic, working with the Department of Agriculture, has put in effect half rates on cattle feeds of various kinds to this section from different sources of supply throughout the west.

Mileage Scrip

The Division of Traffic is hoping to put the \$30 scrip book, illustrated in last week's *Railway Age*, on sale about the 20th of this month. A \$15 book is also being prepared, which it is hoped will be put on sale about September 20.

195 Miles' Haul Per Car Saved by Re-Routing

The following summary showing a total reduction of 1,739.639 car miles, or 195 miles haul per car, is taken from a statement to the director general relative to the carloads of freight re-routed at various points west of the Mississippi

river, covering various periods from April to the middle of July.

	Total carloads rerouted	Reduction in haul (Car miles)
At Minnesota, Transfer, Minn., May 25 to July 15	2,724	327,222
At Peoria, Ill., June 11 to July 15	1,191	88,533
At Kansas City, Mo., June 12 to July 15	446	80,435
Pekin, Ill., June 22 to July 15	24	1,534
At various points, oil from Casper, Wyo., June 22 to July 19	31	8,488
Various points, wheat from O. W. R. & N. Ry. to Minneapolis, April 24 to June 11	1,093	452,335
At various points, fruit from Southern California rerouted via Colton and L. A. & S. L. R. R., April and May	810	376,650
By various lines in Chicago switching district for three weeks ending July 13	334	41,013
By various lines, eastbound traffic diverted to Lake Michigan car ferry routes, for two weeks ending July 13	626	46,726
By C. & N. W. Ry.—April, May and June	339	25,528
By D. M. & N. Ry.—June	7	796
By M. & St. L. Ry.—June	19	13,479
By C. & N. W. St. P. Ry.—June	375	35,028
At El Paso, Tex., March 1 to June 28	714	166,645
By California lines, April to June	146	80,653
Total	8,999	1,754,641
Average reduction in haul per car		195 car miles

Ties to Be Paid for on Delivery

THE FORM 7 CROSS tie check illustrated shows the negotiable certificate which the Southern Regional Director has instructed all roads in his territory to use, beginning not later than September 1, to provide for payment on delivery of cross ties purchased. As noted in circular letter No. 366, it has been considered necessary that ties should be paid for on delivery by a negotiable tie check of this

chasing committee and, (5) an inspector's memorandum to be kept in the inspector's book. The railroads have been instructed to look after the safe bonding of their tie inspectors in a bonding company for the proper performance of their duties at not less than \$5,000 each and have also been advised that in case of any shortage of funds for the purchase of cross ties by prompt payment, they shall apply to the director of finances and purchases at Washington for necessary funds.

The form shown which is now adopted as standard for all roads in the Southern Region is one that has been used for a number of years by several roads in the South. It is to be approximately 57½ in. by 8 in. in size.

"One Ton More Per Car"

THE PHOTOGRAPHS showing poor loading and perfect loading of bituminous coal demonstrate that greatly increased coal production can be gained if all cars are loaded to maximum capacity.

Some indication of the results possible of accomplishment is obtained from the fact that one more ton loaded on the average on each car leaving the mines in April, May, June and July of this year, would have produced an additional output of over 200,000 tons per week or 10,000,000 tons per year. But even "One more ton per car" would require only two per cent increase in the carload on the average, whereas, tests conducted by the Association of Transportation and Car Accounting Officers show that fully eight per cent of coal carrying capacity is now not utilized in the average loading.

THE PEOPLE AND WAR TAXES.

—More than \$3,500,000,000 has been collected in internal revenue taxes, including income and excess profits taxes, for the fiscal year. This exceeds by over \$100,000,000 the estimates made a few months ago, and by over \$200,000,000 the estimates made a year ago when the revenue measures were passed by Congress. The success in collecting this large revenue is attributed by the Treasury Department to the patriotism and co-operation of the American people in promptly and cheerfully meeting the war burdens imposed upon them.

A HINT TO ENGLISH TRAVEL-

ERS.—Intending visitors to Brighton will probably have a more comfortable journey if they act on a hint which comes from official quarters—avoid week-end travel (if they must travel at all).

kind so that the production of cross ties will be stimulated to the greatest possible extent. There is further provision for the prompt repayment to the forwarding road by the road receiving the cross ties.

The tie check is in quintuple form, including: (1) an original or inspector certificate for the producer, which when properly endorsed becomes a sight draft on the railroad treasurer; (2) a duplicate for the railroad purchasing agent; (3) a triplicate for the assistant auditor of disbursements of the railroad; (4) a memorandum for the regional pur-

and study the time-table for Tuesdays, Wednesdays and Thursdays. On a recent Saturday at London Bridge and Victoria, the stations were inundated by would-be passengers, and as the trains went off hundreds were turned away again and again, with the result that in the end the booking offices had to be closed. The railway company does not urge people to travel, except for strictly business purposes, but it points out that more comfort may be met with in mid-week. It is impossible to put on extra trains.—*Railway Gazette, London.*

UNITED STATES RAILROAD ADMINISTRATION
Form 314a
Atlantic Coast Line Railroad
CROSS TIE CERTIFICATE

Received from L. Smith of Waynetown, N. C., July 1919 for 10 ties near Waynesboro, N. C.

No.	Kind	Quantity	Grade	Per Cent	Value
(No.) <u>209</u>	(Kind) <u>W. O.</u>	<u>4</u>	<u>100</u>	<u>100</u>	<u>\$ 192.00</u>
(No.) <u>888</u>	<u>H. O.</u>	<u>4</u>	<u>100</u>	<u>100</u>	<u>202.50</u>
(No.) <u>176</u>	<u>Heart Pine</u>	<u>4</u>	<u>100</u>	<u>100</u>	<u>127.75</u>
(No.) <u>100</u>	<u>Sap Pine</u>	<u>4</u>	<u>100</u>	<u>100</u>	<u>47.00</u>
					\$ 569.25

Loaded and Shipped to

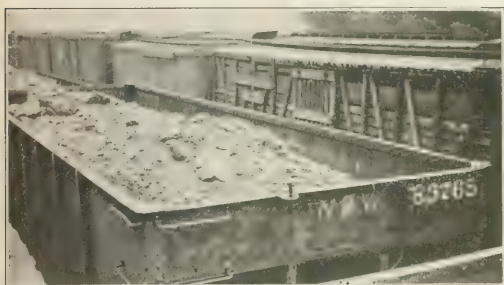
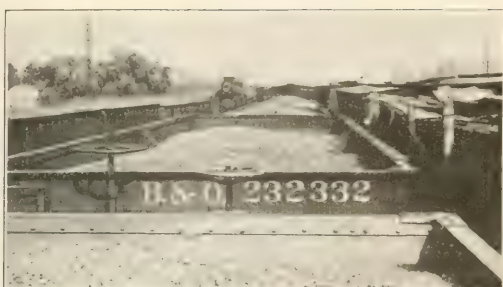
Billed to <u>Cent. R.R. of N.J.</u>		To <u>John D. R. M. Destination</u>		At <u>Plainfield, N.J.</u>	
Car Initial	Car Number	No. Ties	Car Initial	Car Number	No. Ties
<u>S. A. L.</u>	<u>2026</u>	<u>365</u>			
<u>Ill. Central</u>	<u>15724</u>	<u>720</u>			

Left on Right-of-Way Line of Road

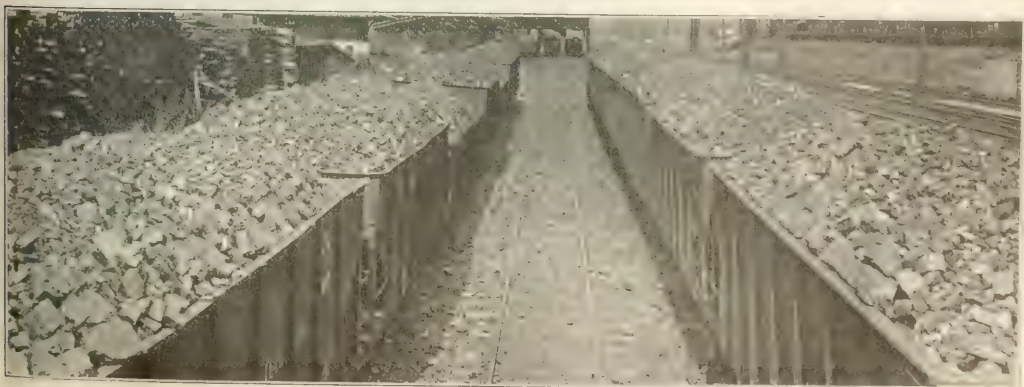
No. Ties	Station	Mile Post	Station	No. Ties	Station	Mile Post	Station

This Certificate to be filled out with indelible pencil only. Any erasure, alteration, or mutilation makes this certificate void.

Certificate for Payment for Cross Ties



Examples of Badly Loaded Coal Cars



Coal Cars As They Should Be Loaded

Suggests Railroad Administration Control for Packers

Federal Trade Commission Says They Have Undue Influence
Through Ownership of Cars, Yards, Etc.

THAT THE RAILROAD ADMINISTRATION take over the stock cars, stockyards, and refrigerator cars and establish central wholesale markets and storage plants open to all on equal terms, are the remedies suggested by the Federal Trade Commission for the evils it finds in the meat packing industry as at present conducted by the "Big Five." These recommendations and the other findings of the commission concerning the meat packing industry were made public by order of the President Thursday, August 8. The report is a severe denunciation of the methods followed by the so-called "Big Five."

The letter of submittal to the President bears the date of July 3 and some of the things recommended have already taken place. The Railroad Administration has taken over the stock cars, but, as was noted in the *Railway Age* of July 5, page 16, it has not taken, except in a few cases, any of the stockyards railways.

Such parts of the summary of the report as deal with the stock and refrigerator cars or with railway matters generally are given herewith:

A letter of submittal to the President, bearing the date of July 3, contained the following statement: It appears that five great packing concerns of the country—Swift, Armour, Morris, Cudahy, and Wilson—have attained such a dominant position that they control at will the market in which they buy their supplies and the market in which they sell their products, and hold the fortunes of their competitors in their hands.

If these five great concerns owned no packing plants and killed no cattle and still retained control of the instruments of transportation, of marketing and of storage, their position would not be less strong than it is. The producer of live stock is at the mercy of these five companies because they control the market and the marketing facilities and, to some extent, the rolling stock which transports the product to the market. The competitors of these five concerns are at their mercy because of the control of the market places, storage facilities, and the refrigerator cars for distribution. The consumer of meat products is at the mercy of these five because both producer and competitor are helpless to bring relief.

The stock car is a part of the equipment of the common carrier whose services are necessary to the producer of meat animals so that he may reach the market. The railroads furnish suitable cars for the transportation of other kinds of freight, and as to the use of such cars the miner of coal or the manufacturer of furniture are on an equality, but in the matter of transportation of live stock to a small degree there comes in a private ownership and a control and a manipulation of the means of transportation—the stock car—so it is that we recommend:

1. *That the government acquire, through the Railroad Administration, all rolling stock used for the transportation of meat animals and that such ownership be declared a government monopoly.*

In the transportation of all other kinds of freight the transportation companies provide proper and suitable freight depots. The proper and suitable freight depot for live stock is a stockyard with its equipment of exchange buildings, terminal railways, and means of distributing full, unbiased, helpful market information, etc. We therefore recommend:

2. *That the government acquire, through the Railroad Administration, the principal and necessary stockyards of the country, to be treated as freight depots and to be oper-*

ated under such conditions as will insure open, competitive markets, with uniform scale of charges for all services performed, and the acquisition or establishment of such additional yards from time to time as the future development of live-stock production in the United States may require. This to include customary adjuncts of stockyards.

A requisite for the proper transportation of fresh meat and dairy products is that type of rolling stock known as refrigerator cars. The railroads supply proper, special types of cars for other classes of freight but cars and icing facilities necessary for fresh meats are in private ownership. This ownership furnishes these five great packing companies one of their most powerful means for controls, manipulations and restraints. Lacking access on equal terms to these facilities competitors of the five great packers are at their mercy, and, competition being stifled, the consumer similarly is helpless. We therefore recommend:

3. *That the government acquire, through the Railroad Administration, all privately owned refrigerator cars and all necessary equipment for their proper operation and that such ownership be declared a government monopoly.*

Proper freight houses are provided by common carriers for the various sorts of freight except meat and perishable products. The indicated freight depot for such commodities is a cold-storage house. Such a depot used as a distributing station, if free of access to all, would constitute an agency for fair and free competition. Such a depot in private hands, as now, constitutes an invincible weapon for monopoly and control and manipulation. We therefore recommend:

4. *That the federal government acquire such of the branch houses, cold-storage plants, and warehouses as are necessary to provide facilities for the competitive marketing and storage of food products in the principal centers of distribution and consumption. The same to be operated by the government as public markets and storage places under such conditions as will afford an outlet for all manufacturers and handlers of food products on equal terms. Supplementing the marketing and storage facilities thus acquired, the federal government establish, through the Railroad Administration, at the terminals of all principal points of distribution and consumption, central wholesale markets, and storage plants, with facilities open to all upon payment of just and fair charges.*

The Commission believes that these four suggestions strike so deeply at the root of the tree of monopoly that they constitute an adequate and simple solution of a problem the gravity of which will be unfolded to you in the pages which follow:

The following statements are taken from the summary of the report:

The monopolistic position of the Big Five is based not only upon the large proportion of the meat business which they handle, ranging from 61 to 86 per cent in the principal lines, but primarily upon their ownership, separately or jointly, of stockyards, car lines, cold storage plants, branch houses, and the other essential facilities for the distribution of perishable foods.

Instruments of Control and Monopoly

The actual and potential powers of these corporate groups and individuals are far greater and much more menacing to the welfare and true prosperity of the nation than this enumeration of industrial possessions would indicate. This

greater menace lies in the fact that the Big Five have entrenched themselves in what may be called the strategic positions of control of food distribution. These strategic positions, which serve not only to protect the controls which the big packers have already acquired, but to insure their easy conquest of new fields, are:

- (a) Stockyards, with their collateral institutions, such as terminal roads, cattle-loan banks, and market papers.
- (b) Private refrigerator-car lines for the transportation of all kinds of perishable foods.
- (c) Cold storage plants for the preservation of perishable foods.
- (d) Branch-house system of wholesale distribution.
- (e) Banks and real estate.

Stockyards.—The stockyards are the depot markets through which practically all animals which move in interstate commerce pass. Ownership, partial or complete, of these markets is not only a source of great profit, but affords a fundamental business advantage.

How completely the Big Five control these markets will appear from the following list:

Location of Yards	Percentage of stock controlled by Big Five	Number of big packers interested
Brighton, Mass.	95.0	1
Chicago, Ill.	(*) 100.0	(*) 1
Connellsville, Pa.	100.0	1
Dallas, Tex.	100.0	1
Denver, Col.	100.0	2
East St. Louis, Ill.	83.5	4
St. Louis, Mo.	(*) 100.0	(*) 1
El Paso, Tex.	79.0	1
Fort Worth, Tex.	69.3	2
Jacksonville, Fla.	99.2	1
Jersey City, N. J.	91.4	2
Central Union Stock Yards	99.2	2
Kansas City, Kans.	67.3	3
Laramie, Wyo.	90.0	1
Louisville, Ky.	25.7	1
Milwaukee, Wis.	95.5	1
Nebraska City, Neb.	100.0	1
Newark, N. J.	99.0	1
New Orleans, La.	86.1	1
New York, N. Y.	97.4	1
Oklahoma City, Okla.	84.7	2
Omaha, Neb.	(*) 60.2	1
Pittsburgh, Pa.	97.0	1
Portland, Ore.	92.1	2
Sioux City, Iowa	75.1	3
St. Paul, Minn.	63.5	3
St. Joseph, Mo.	84.2	2
South San Francisco, Cal.	91.0	2
West Philadelphia, Pa.	(*) 45.8	1
Wichita, Kans.	59.6	1
Yankton, S. D.	(*)	(*)

*The Commission has definitely located Armour's interest in the Chicago Stock Yards Co. as 19.4 per cent. There is also evidence that Swift and Morris were parties to the negotiations by which Armour acquired his interests, but it has not yet been possible to locate Swift & Morris stock, because of the system by which the stockholders' names are concealed through the issuance of "bearer warrants" for the stock.

†90 per cent owned by East St. Louis yards.

‡Including Allerton family interests.

§82 per cent owned by Sioux City yards.

The big packers' control at these markets is much greater than these statistics indicate. In the first place they are the largest and in some cases practically the only buyers at these various markets, and as such hold a whip hand over the commission men who act as the intermediaries in the sale of live stock.

The packers' power is increased by the fact that they control all the facilities through which live stock is sold to themselves. Control of stockyards comprehends control of live-stock exchange buildings where commission men have their offices; control of assignment of pens to commission firms; control of banks and cattle-loan companies; control of terminal and switching facilities; control of yardage services and charges; control of weighing facilities; control of the disposition of dead animals and other profitable yard monopolies; and in most cases control of all packing-house and other business sites. Packer-owned stockyards give these interests access to records containing confidential shipping information which is used to the disadvantage of shippers who have attempted to forward their live stock to a second market.

Private car lines and transportation privileges.—The Big

Five own 93 per cent of the total of all kinds of cars owned by interstate slaughterers, including refrigerator, stock, tank, box, flat, and gondola cars. The most important of these from the standpoint of monopolization are the refrigerator cars.

The Big Five own 91 per cent of all refrigerator cars properly equipped for the shipment of fresh meat that are operated upon the railroads of the United States. The railroads have almost no equipment suitable for shipping dressed meat, and, consequently, unless an independent packing company is large enough to afford to make a heavy outlay for refrigerator cars, it is practically impossible for it to attempt to ship fresh meat out of the locality in which it is produced. The smaller independents, therefore, confine themselves either to pork packing or to cattle slaughter for local consumption.

Icing stations advantageously located on the lines of the trunk railroads between St. Louis, Chicago, and the Atlantic seaboard are owned and operated by three of the five packers. At these stations the packer cars are iced as well as all cars carrying perishable products, including the shipments of competitors. Besides serving as a particular advantage to the owners in that their own ice service is secured at cost, these stations put them in a position to secure valuable information concerning the shipments and customers of competitors.

From a competitive standpoint, however, a great advantage which the big packers have enjoyed has been the preferential treatment accorded their cars. The big packers' cars have been carefully handled, promptly returned, and used only for the shipment of the packers' own commodities. The small packers, on the other hand, have been subject to extreme delays in securing the return of their cars. Six months for a trip from St. Louis to New York and return was not at all uncommon, and there are a number of cases where nine months elapsed before the car came back to its owner. The railroads have also been accustomed to take liberties with the independents' cars, as, for example, permitting their beef cars to be used for the shipment of onions.

The freight tonnage controlled by the big packers has for years given them a great leverage in all their dealings with the railroads. Until the Interstate Commerce Commission interfered this power was used to obtain money rebates, and in recent years to secure special privileges and concessions. The big packers sometimes acted in combination, throwing their joint power against the railroad or group of railroads from which special privileges were demanded. It is interesting to note in this connection that the packers have organized various companies to sell railroad equipment and supplies, such as bumping posts, metal bearings, waste, ice, and coal. These companies have been profitable.

Branch houses and car routes.—The packers' distribution of their products is effected through a system of branch houses located in the large towns and cities, and a system of refrigerator "peddler car" routes which reach the smaller communities. Swift & Co. reach a larger number of cities and towns by peddler car than all other packers, while Armour & Co. have developed a system of delivering from their branch houses by trucks, reaching by this means over 20,000 towns, and making their total number of towns greater than Swift & Co. The number of such branch houses and car routes controlled by the Big Five follows:

	of branch
Armour interests ..	343
Swift interests	154
Morris interests ...	154
Wilson & Co., Inc.,	

This system of wholesale distribution

houses and peddler cars is the bulwark of monopoly. There is virtually no limit to the possible expansion of their wholesale merchandising short of the complete monopolization of the primary distribution of the nation's food.

Recommendations

Here follow the four recommendations noted above:

The stockyards, and their essential adjuncts, such as exchange buildings and terminal railroads, must be acquired and operated by the government under such conditions that the producer will be assured of a fair market, reasonable charges, open bidding, full and helpful market information, the limitation of violent fluctuations in price, and the elimination of unnatural market influences. Moreover, the measure authorizing the acquisition of the stockyards should provide for the acquirement by right of eminent domain of such sites adjacent to the yards as may be necessary for their proper expansion and for the location of such independent, municipal, or co-operative abattoirs or packing houses as may be established. This will open the way for the independent packers and butchers, big and little, to establish their plants and secure their live stock under such conditions as will enable them to compete actively with the big packers. Furthermore, we believe that the establishment of such open, competitive markets will be followed by a large increase in live-stock production.

The necessity for acquisition by the government of refrigerator and other private car lines and icing stations is so obvious, particularly since the railroads have been brought under federal operation, that argument seems unnecessary.

Acquisition of the stockyards and car lines alone will not secure the fundamental improvements which we are seeking. Figuratively speaking, we shall have opened only two of the doors by which the big packers have obstructed the channels of food commerce, while the third remains closed. An independent packer may with government-owned yards and cars find it possible to secure and ship his products upon terms of equality with the big packers, but unless he has an opportunity to dispose of them under fair conditions, his competition will not be effective and the consumer will not be benefited.

It is for this reason that we consider the provision of proper marketing and storage facilities by the federal government through branch houses and establishment of central

wholesale markets and storage places to be an essential feature of a system which will provide for the American people adequate supplies of food at reasonable prices during both war and peace.

The Packers' Reply

The report of the Federal Trade Commission immediately on its publication drew forth answers from the packers. J. Ogden Armour said in part:

"I will take up in their order the detailed recommendations:

"First—That the government acquire all rolling stock used for the transportation of meat animals: all cattle and live-stock cars in the country today are under the control, direction and operation of the United States Railroad Administration.

"Second—That the government acquire, through the Railroad Administration, the principal and necessary stockyards of the country: the government, through the Bureau of Markets, Department of Agriculture, assumed the direction, regulation and control of all these stockyards on July 25 last, under the proclamation of President Wilson.

"Third—That the government acquire, through the Railroad Administration, all privately owned refrigerator cars: the control and operation of such cars was submitted to the Railroad Administration, and it is my understanding that upon the recommendation of the United States Food Administration it was decided best to leave these cars in the control of the packers, to enable them the more efficiently and reliably to insure prompt delivery of the necessary amounts of meats at the sea-board and other points to fulfil government requirements.

"Fourth—That the Federal government acquire such of the branch cold storage plants and warehouses as are necessary to provide facilities for competitive marketing. The facilities herein referred to are already under the control of the government through the United States Food Administration as above referred to."

THE UKRAINIAN RAILWAY STRIKE is extending, according to press despatches, which say that 200,000 men are out, and that all efforts by the Germans to keep the traffic moving have failed. A German service train from Kiev was recently held up and the cars turned over.



Photo by Central News Photo Service, New York

American Troops Entraining for the Western Front

A Comparison of the Locomotive of 1900 and Today

Discussion at Fuel Session of the Spring Meeting, American
Society of Mechanical Engineers

AT THE SPRING MEETING of the American Society of Mechanical Engineers, held at Worcester, Mass., on June 6, 1918, discussions were presented on the topic, "What Is the Relative Economy of the Locomotive of 1900 and Today?" by J. E. Muhlfeld, president of the Locomotive Pulverized Fuel Company, and H. B. Oatley, chief engineer of the Locomotive Superheater Company. These papers are of interest, not only for the summary of the developments of the past 18 years, but also for the suggestions as to the direction in which future developments may be expected to lead. The papers are given practically in full.

Discussion by John E. Muhlfeld

The general development of the steam locomotives in use in the United States since 1900 can be best stated by the following tabulation, which is approximately correct:

STEAM LOCOMOTIVES IN THE UNITED STATES

Year		Single expansion cylinder	Two- cylinder com- pound	Four- cylinder com- pound	Mallet articu- lated com- pound	Total lo- comotives
1900	Number	36,600	1,000	900	...	38,500
	Average tractive effort, lb. . . .	19,000	28,000	29,000	29,000	...
	Average weight on drivers, lb. . . .	85,000	125,000	130,000	...	...
1905	Number*	48,949	900	1,800	...	51,650
	Average tractive effort, lb. . . .	23,000	31,000	32,000	25,000	...
	Average weight on drivers, lb. . . .	100,000	140,000	145,000	335,000	...
1910	Number†	56,425	875	1,500	200	59,000
	Average tractive effort, lb. . . .	27,000	31,500	40,000	72,000	...
	Average weight on drivers, lb. . . .	120,000	142,000	175,000	320,000	...
1915	Number‡	62,600	650	1,300	800	64,750
	Average tractive effort, lb. . . .	30,500	32,000	33,000	79,000	...
	Average weight on drivers, lb. . . .	135,000	145,000	148,000	350,000	...

*Includes one superheater locomotive.

†Includes 3,000 oil burning locomotives and 300 with superheaters.

‡Includes 4,250 oil burning locomotives and 14,000 with superheaters.

Prior to the year 1900 considerable development work had been done on two, three and four-cylinder types of compound locomotives by Mallet, Webb, Pitkin, Mellin, Vaucalain and others. Pitkin's two-cylinder system was applied to a Michigan Central 10-wheel locomotive in 1889, and Vaucalain's four-cylinder system was first introduced on a Baltimore & Ohio eight-wheel locomotive in October of the same year. These and other developments caused the adoption of both the two and four-cylinder systems in new locomotives, the maximum application being reached during 1904, when approximately 1,000 two-cylinder, and 2,000 four-cylinder compound locomotives were in existence.

Previous to 1900 Schmidt, Pielock and others had done considerable experimenting with superheated steam, the former having succeeded in 1894 in producing a boiler and motor in which superheated steam of relatively low pressure was used at about 700 deg. Fahr.

The failure of the compound locomotive to produce the economy predicted, due largely to the factors of indifferent design, lack of proper maintenance and operation, cheap fuel and road failures, resulted in the general return to the single expansion cylinder locomotive, and this, with the demand for greater steaming capacity per square foot of boiler heating surface, naturally brought about consideration of the use of superheated steam. The results of further experiments by Vaucalain, Vaughn, Horsey, Cole, Emerson, Jacobs and others, along the lines of high and low degrees of superheat, in combination with either high or low steam pressures, by means of smokebox, fire tube, or a combination of both types of superheaters, resulted in the fire tube type being now practically a standard part of all new, and in being rapidly applied

to all existing saturated, steam locomotives in the United States.

While the Cole and Vaucalain balanced compound types of locomotives as brought out since 1900—along the lines of the French DeGlehn system—have not made much progress, the Mallet articulated compound system introduced on the Baltimore & Ohio in 1904 is now in use on over fifty railways in the United States and aggregates over 1,500 locomotives. This latter type of locomotive not only enables the extreme concentration of great power over a flexible wheel base within axle load limits, but also reduces the stresses by greater distribution and lightness of parts, and through the combination of high pressure, superheating, compounding, simpling and reduction of unbalanced pressure gives the maximum direct and reserve tractive effort for from 25 to 35 per cent less fuel and water consumption per ton mile than a superheated single expansion locomotive.

STATUS OF STEAM AND ELECTRIC LOCOMOTIVES

With regard to the present status of the relative economy of steam and electric locomotives in the United States, as compared with the results obtained in 1900, general conditions have very substantially changed and the predominating factors today are manual labor and fuel for operation. While the inauguration of the use of fuel oil on almost 4,500 steam locomotives has somewhat improved the firing and steam generation conditions, the increasing cost and demand for oil for more essential purposes and the reducing supply, will soon make its use for locomotive fuel prohibitive. However, the use of oil as a locomotive fuel has long since demonstrated that the mechanical feeding and burning of fuel in suspension, whether gaseous, liquid or solid, for the production of steam in a self-contained motive power unit, is the most logical, successful, effective and economical method for generating power and moving long haul, heavy tonnage traffic on railways.

Even where hydro-electric power is available the self-contained steam power plant locomotive will show a much lower cost for fixed charges, maintenance and operation than the electric unit, as the transmission and conversion of electric current into drawbar hauling capacity is a very wasteful and expensive process with the present state of the electrical art. In fact, the principal economies brought about in the electrical field during the past quarter century have been in the production and use of steam for the generation of current and not in the electrical apparatus.

As applied to a long haul railway, the metering and conveying of extremely high voltage current from various power plant sources into transmission mains, through switching substations, transforming and converting, conveying to contact lines and converting into great hauling capacity at the drawbar results in enormous line and bonding dead losses, which will bring the cost of even hydro-electric current per drawbar horsepower hour to from six to seven mills. This cost, which, in combination with copper limitations, fixed train speeds up and down grades, general tie-up of operation in case of failure, and like factors will hardly admit of comparison with steam locomotive boilers operating at equivalent to 700 per cent of the rated capacity of stationary boilers, with a 75 per cent combined furnace, boiler and superheater efficiency, furnishing a boiler horsepower for each 1½ sq. ft. of evaporating surface and producing a drawbar horsepower hour for 2¼ lb. of coal.

FUTURE DEVELOPMENTS OF THE STEAM LOCOMOTIVE

And at that the steam locomotive is still in its infancy so far as economy per ton mile is concerned. The atomization and burning of liquid or solid fuels in suspension will enable the elimination of grates and other metal work from the combustion zone and permit of higher furnace temperatures and more complete and effective combustion, which, in combination with higher steam pressures, compounding, higher superheating of both high and low pressure steam, utilization of waste gases and steam for feed water heating and purification, better boiler water circulation, reduced cylinder clearances and back pressure, improved steam distribution, lower factor of adhesion, higher percentage of propelling to total weight, less radiation, elimination of unbalanced pressures and weights, application of safety and labor-saving devices, and the greater refinement and perfection of general and detailed design, equipment and control throughout, will yet enable it to produce a drawbar horsepower hour per pound of coal. Furthermore, it is not inconsistent now to predict that a self-contained steam-electric articulated compound locomotive, combining the advantages of both steam and electric motive power, will shortly find a useful field in services where maximum power and efficiency at high speeds, greater utilization of existing waste heat, high starting and low speed torque and rapid acceleration are required and where an exclusive electrification system would not be permissible from the standpoint of first cost, or justified on account of the combined expense for operation and maintenance.

Discussion by H. B. Oatley

A measure of the real advance made during the past eighteen years in the development of the locomotive is obtainable only when the question is considered in its broadest sense. When viewed in this light the question may fairly be answered by the statement that the locomotive of today is at least 50 per cent more effective than the locomotive of 1900. The leading factors that produce this result are,

- Adoption of highly superheated steam.
- Increase in size of locomotives.
- More positive control of mechanical operation and better steam distribution.
- Improved combustion.
- Increased average speed over the division.
- Increase in the percentage of time available for revenue earning service.

Fuel economies through the use of highly superheated steam of not less than 20 per cent, in all classes of service, have been demonstrated, and are unanimously accepted by all railroad men who are informed on this subject. The fact that today over 21,800 locomotives out of a total of approximately 65,000 that are in service on American railroads are using superheated steam is emphasized by realizing that over 95 per cent of the steam locomotives built during the past five years have been thus fitted. When it is realized that figures as low as two pounds of coal per i.h.p. hr. have been obtained on engines using highly superheated steam, and that in general road operation, under all conditions of weather, a figure of three pounds of coal per i.h.p. hr. is obtained, it is particularly difficult to accept as accurate a recently published statement attributed to E. W. Rice in his argument for the electrification of steam roads in which he says "at least six pounds of coal are required per horsepower-hour for the work performed on steam locomotives." Such a statement is unfair to the railroads in this country, and should have been accompanied by supporting data.

INCREASE IN SIZE OF LOCOMOTIVES

The increase in the size of locomotives during the past decade and a half is strikingly shown by the comparisons of locomotives given in the tables:

COMPARISONS OF THE SIZE OF LOCOMOTIVES DURING THE PERIOD FROM 1910 TO 1918

		Classes of Service			
		1900	1905	1918*	1918*
Year built	.....	1900	1905	1918*	1918*
Type	.....	4-6-0	4-6-0	4-6-2	4-6-2
Road	.....	L. S. & M. S.	B. & O.	U. S. Std.	U. S. Std.
Total weight, lb.	.....	171,000	229,500	300,000	350,000
Weight on drivers, lb.	.....	133,000	150,500	180,000	240,000
Cylinder dia. and stroke, in.	.....	20 by 28	22 by 28	27 by 28	28 by 30
Wheels, dia., in.	.....	36	74	76	69
Boiler pressure, lb. per sq. in.	.....	210	225	200	200
Tractive effort, lb.	.....	24,990	35,000	43,800	58,000
Max. i.h.p.	.....	1,398	1,816	2,624	3,284
Fuel	.....	Bit. coal	Bit. coal	Bit. coal	Bit. coal
Freight Service					
Year built	.....	1900	1917	1918	1918
Type	.....	2-8-0	2-8-0*	2-8-2*	2-10-2*
Road	.....	I. C.	D. & H.	U. S. Std.	U. S. Std.
Total weight, lb.	.....	216,000	297,000	322,000	390,000
Weight on drivers, lb.	.....	196,000	266,000	240,000	300,000
Cylinder dia. and stroke, in.	.....	23 by 30	27 by 32	27 by 32	30 by 32
Wheels, dia., in.	.....	57	63	63	63
Boiler pressure, lb. per sq. in.	.....	210	210	190	190
Tractive effort, lb.	.....	49,690	66,000	60,000	74,000
Max. i.h.p.	.....	1,853	2,755	2,493	3,082
Fuel	.....	Bit. coal	Pulv. coal	Bit. coal	Bit. coal
Pusher Service					
Year built	.....	1903	1918	1918	1918
Type	.....	0-6-6-0	2-8-8-2*	2-10-10-2*	2-10-10-2*
Road	.....	B. & O.	U. S. Std.	Virginian	Virginian
Total weight, lb.	.....	334,500	540,000	684,000	684,000
Weight on drivers, lb.	.....	334,500	480,000	617,000	617,000
Cylinder dia. and stroke, in.	.....	20 and 32	25 and 39	30 and 48	30 and 48
Wheels, dia., in.	.....	by 32	by 32	by 32	by 32
Boiler pressure, lb. per sq. in.	.....	235	240	215	215
Tractive effort, lb.	.....	71,300	101,000	147,000	147,000
Max. i.h.p.	.....	2,450	3,725	5,030	5,030
Fuel	.....	Bit. coal	Bit. coal	Bit. coal	Bit. coal

* Equipped with superheater and brick arch.

The Consolidation of 1900 and of 1918 illustrates the growth in one type of engine which would not have been possible economically had it not been for the successful solution of the problems of superheating, improved steam distribution, mechanical stokers, the use of pulverized fuel, large fire-box volume and the increased knowledge of boiler design which permitted the successful combination of these devices in one engine. The same conditions are responsible for the growth in the 4-6-2 type passenger locomotive, as well as in the 2-8-2 type and the 2-10-2 type engines, which have had a rapid development and widespread adoption during the better part of the period 1900-1918. There are now over 5,000 of the Mikado type locomotives that have been placed in service during the past eight years, and over 900 of the 2-10-2 type. Over 4,000 Pacific type engines have been built since 1910. All of these have used superheated steam, and a very large proportion of them have been equipped with fire-brick arches.

The increase in the size of locomotives has been a great factor in cutting down the costs of transportation, by permitting not only wonderful increases in the average weight of trains, but in the incidental advantages accompanying greater train loads, particularly with respect to increasing the capacity of single track roads. The average tractive effort of all engines operating in the United States in 1900 was 17,000 lb. In 1918 it had increased to 36,000 lb. or 126 per cent.

The annual report of the Illinois Central for 1917 contains a striking illustration of the increase in train loads made possible by the development of the present-day locomotive. In 1908 the average train load per revenue train mile was slightly under 410 tons. In 1917 it was approximately 700 tons, more than 70 per cent increase in nine years.

INCREASED EFFICIENCY OF DESIGN AND OPERATION

Improved conditions of combustion have been brought about by the study and development of adequate air openings in the ash pan and through the grates, proper proportioning of combustion chambers, the extended use of water-tubes and fire-brick arches, greater knowledge as to the proper length and diameters of boiler tubes, and incidentally better design of, and closer attention to, the front end draft appliances. Full credit should also be given, in this particular, to the

efforts on the part of the railroad mechanical officers in the instruction of firemen and engineers in the proper firing and handling of engines. These efforts have shown marked results in eliminating fuel waste from the tanks, at coaling stations and in the handling of the coal on the locomotive. The present interest in feed water heating is commendable, and advantageous results, when viewed from all angles, have been demonstrated.

Greater average speed over the road has resulted from the building of locomotives of greater power and efficiency, as well as from better knowledge of the proper rating of engines. Overloaded locomotives which are stalled in bad weather or on ruling grades are today exceptional. Twenty years ago they were of very frequent occurrence.

Locomotives of the present day are in revenue earning work a decidedly greater portion of the time than was the case at the beginning of the present century. Greater efforts on the part of the mechanical organizations to keep locomotives ready for service, have contributed toward this improvement. The progress in design of locomotive and tender parts subject to wear and the necessity for renewal, have produced, in recent years, details which give far greater mileage between shoppings and thus contribute to increase the hours per day that the locomotive is in service.

FUTURE DEVELOPMENTS

Promise for future development, probably as noteworthy during the next generation as during the past, will come from the efforts being steadily made along the following lines:

- (1) Increase in steam pressure.
- (2) Greater boiler capacity.
- (3) Higher degrees of superheat.
- (4) Extension of the use of feed water heating.
- (5) Increased use, and improvement in methods, of burning pulverized fuel.
- (6) Modification in engine design to produce higher thermal efficiency.
- (7) Adoption of steam-electric self-contained units.
- (8) The adoption of condensing operation for the engine.

It is realized that a prophet treads on dangerous ground, but considerable thought has been given and noticeable progress made at the present time, which gives the writer confidence to make the above statement. No one who is familiar with the subject of the steam locomotive will contend that the present development represents the maximum that is obtainable, and it is not ultra-optimistic to believe that at least equal progress will be made in the next eighteen years to that which has been accomplished since 1900. It is believed that in spite of the improvement of electrical apparatus the development in the steam locomotive has crowded into the future consideration of the general electrification of steam railroads. Full value is held of the hydro-electric installations that have been made during the past ten years, and of the electrifications made to meet particular operating conditions. This statement is made with full appreciation also of the character of installations where electricity will excel steam, even though there is no direct financial economy in such operation.

The Serious Condition of the Railways in Mexico

Interesting Report by the Latin-American Division of Bureau
of Foreign and Domestic Commerce

SO LITTLE INFORMATION is coming out of Mexico today concerning the railway situation in that misguided country that the following report* issued by the Latin-American division of the Bureau of Foreign and Domestic Commerce should prove of more than ordinary interest.

This is the second report on the railways of Central and South America that has been issued by the division. A report on the railways of Colombia was issued about two months ago and a report on Brazil will soon be given out. The division, which is under the direction of Julius Klein, is also planning to issue reports on the railways of other countries in South and Central America from time to time.

The report on Mexico follows:

Every month that the war continues shipping difficulties increase proportionately to the need of war materials. Mexico is a treasure house near at hand, the utilization of whose wealth depends largely upon one factor, the condition of her railways.

Development Before the Revolution

During the period of comparative quiet which Mexico enjoyed between 1877, the beginning of President Diaz's regime, and 1911, the beginning of the revolutionary period, a marked economic advance was made. Perhaps the most

notable result of this period is the present rather extensive railway system. In 1910, when President Diaz retired, Mexico had some 16,000 miles of railway, including about 3,000 miles of narrow gage line (mostly unimportant local roads) and 8,200 miles of government owned or controlled line. As in most of the Latin American countries, the railroads of Mexico have been built, each one for some special purpose, with little regard to any general plan. Consequently, in some parts of the country, two or more roads compete for traffic which is scarcely sufficient to support one, while rich mineral and agricultural sections remain undeveloped because of their isolation. Acapulco, the best natural harbor of Mexico and the natural outlet for a rich section of the country, is little used because it lacks railroad connections with the interior.

In 1912, approximately \$1,057,770,000 American capital was invested in Mexico, \$321,302,800 English, and \$143,466,000 French. Of this American capital \$235,464,000 was invested in railway stocks and \$408,926,000 in railway bonds; \$81,237,800 English capital in railway stocks and \$87,680,000 in railway bonds; \$17,000,000 French capital in railway bonds; \$125,440,000 Mexican capital in railway stocks and \$12,275,000 in railway bonds; \$75,000 from other countries in stocks and \$38,535,380 in bonds.

Railway Companies

Under the Diaz government concessions granted to private companies for railroad construction provided for the automatic return of the roads to the government after a stated period, usually 90 years, upon the payment by the government of compensation for rolling stock, buildings, and materials on hand at the date of the transfer.

In 1903, the government began to buy controlling interests

* The report is prefaced by the following statement: Available information on present Mexican railway conditions is so scanty that no responsibility can be assumed for accuracy as to details. Conditions are changing so rapidly that the purpose of this article is merely to present the few reports which have been received concerning labor and traffic conditions, and whatever reconstruction is now going on.

The last annual report of the National Railways of Mexico was issued June 30, 1916, and can not be considered thoroughly satisfactory, even up to that date. A number of articles, chiefly statements of opinion, have appeared in the "London Economist." A select bibliography upon this subject, including the "Commerce Reports," will be supplied upon request.

in three of the most important railways of the country and in 1909 united these three lines under the name of the National Railways of Mexico. This company, in which the government owned 50.3 per cent of the stock, was gradually extended to include other roads, until it became by far the most important system of the country. Since 1914 this system and practically all the privately owned lines have been seized and operated by the Carranzist government under the name of the Constitutionalist Railways of Mexico.

National Railways of Mexico—This company owns 6,818 miles of line and controls an additional 1,220 miles. The following roads are owned: The old National Railway, 803 miles in length, extends from Laredo on the northern border to Mexico City, traversing Nuevo Leon and San Luis Potosi, and is the only outlet for mining districts from which zinc and lead are now being exported to the United States. From Monterey, a branch extends to Matamoros on the border and a second branch west to Torreon. The Mexican Central extends from Ciudad Juarez on the border across the great central uplands to Mexico City and has numerous branches. One of these extends to Tampico and connects with the Laredo line at San Luis Potosi. A second branch extends to Manzanillo on the Pacific. The Mexican International extends from Ciudad Porfirio Diaz south through the state of Coahuila and then east to Monterey and west to Durango. According to a recent report, construction work has been resumed on the branch from Durango to Mazatlan opening up a new timber region from which cross ties may be obtained. The same report states that construction work has been begun on a new station in Durango and that an extension of the road running northwest from Durango is to be built to Guanacevi, a mining camp. The line from Durango to Canitas was open for traffic May 15, 1918, since which date there has been daily train service. At Canitas, connections are made with the Mexican Central from Torreon to Mexico City, the entire trip requiring about 36 hours. The Vera Cruz and Isthmus road connects the port of Vera Cruz with the Tehuantepec Railway. The Pan American Railway extends from a station on the Tehuantepec Railway along the Pacific coastal plain to a point on the Guatemala border.

The Inter-oceanic and the Mexican Southern are owned by British interests but are controlled by the government and form part of the National Railways system. The Inter-oceanic Railway runs from Vera Cruz to Mexico City. The Mexican Southern runs from the city of Puebla through the State of Oaxaca to the City of Oaxaca and some 60 miles farther to Ejutla.

The following table is a comparison of the amounts of rolling stock belonging to the National Railways of Mexico, June 30, 1913, and rolling stock belonging to the Constitutionalist Railways, 1916:

	National Railways, 1913		Constitutional Railways, 1916	
	Standard gauge	Narrow gauge	Standard gauge	Narrow gauge
Passenger coaches.....	435	118	414	161
Freight cars.....	16,661	1,831	13,222	1,397
Locomotive (type not specified).....	720		670	

Only those repairs absolutely necessary to the continuance of traffic have been made by the Carranzist government to National Railways' property and consequently most of the rolling stock included in the above figures for 1916 is in very poor condition. In a report presented by Senor Pani, director general of the Constitutionalist Railways to the chairman of the board of directors of the National Railways, June 30, 1916, the following estimates are given of the costs of repairs needed on National Railways property:

ESTIMATED COSTS OF NEEDED REPAIRS ON NATIONAL RAILWAYS

Tracks.....	\$13,666,805
(Includes purchase of 16,080 cross ties, 86,671 tons of rails, accessories and tools.)	
Buildings (repairing and reconstructing).....	1,387,000
Signal, water and fuel stations (repairing and reconstructing)....	384,500
Loading platforms, fences, and other small structures.....	189,500
Bridges.....	4,279,024

Rolling stock:		
To replace that destroyed or condemned during revolution.....	\$2,500,000	
To repair that now in use.....	2,000,000	
Total.....		\$4,500,000
		\$24,436,833

The net earnings of the National Railways Company were \$21,126,335 Mexican currency in 1912-13 and only \$2,286,609 in 1913-14. Dividend and interest payments ceased in 1914 when the company property was seized by the Carranzist government. According to Senor Pani's report made in 1916, the matured debt of the National Railways, June 30, 1916, was \$53,964,350.24 U. S. currency. The amount of interest due on the company's obligations and on operating expenses for the year was \$11,385,100. Since, as has been stated, the government seized the lines of the National Railways Company in 1914, the company's report of June 30, 1916, shows no operating expenses except the minor item of the maintenance of its offices in New York, London and Mexico to look after the interests of the stockholders. Credits were \$449,993, leaving the amount due for these items \$10,935,107.

Mexican Railway—This system has 520 miles of line, including the main line from Vera Cruz to Mexico City and several branch lines. With the exception of the short period between September 1, 1916, and March 31, 1917, the property of the company has been under the control of the Mexican government since November, 1914, and during this entire time only the most necessary repairs have been made. It is estimated that an outlay of about \$10,000,000 will be necessary to restore the road to its former good condition when the company once more assumes control.

The capital authorized and issued is about \$29,000,000. The net earnings of the company for 1913 were \$2,503,453. Since the seizure of the road by the Mexican government, small payments on account have been made to the company for compensation, but large sums are still due on this account and for freight and passengers carried. The amount of deferred interest on the debentures of the company outstanding July 1, 1917, was about \$2,000,000. The second seizure of the road by the Mexican government in 1917 seems to have completely discouraged the company and they close their 1917 report with the following statement: "The small payments received for compensation together with the funds on hand will enable the skeleton of an organization to be preserved for a time, both here (London) and in Mexico."

Tehuantepec Railway—This company owns the line (184 miles) which crosses the isthmus from Puerto Mexico on the Atlantic to Salina Cruz on the Pacific, and also completed port works on both coasts. Before the revolution, S. Pearson & Son, Ltd., of London, the builders of the road and port works, and the Mexican government were partners in this company, each with an equal amount of capital invested. The property was seized by the Carranzist government in April, 1917; and in December, 1917, Congress passed a decree authorizing the president to dissolve the contract with S. Pearson & Son, Ltd., and stating the amount to be paid for the property: \$2,000,000, in the form of special bonds issued by the secretary of the treasury bearing an annual interest not to exceed 5 per cent and payable after 36 years is to be paid for the acquisition of the property and an additional \$1,750,000 indemnity for losses sustained during the revolution. Congress states that the government expects to realize, after the obligations to S. Pearson & Son are paid, \$8,500,000 on property values and stocks.

Mexican Northwestern—This company is incorporated under the laws of Canada and controls various lumber mills and timber land in northern Mexico as well as 512 miles of railway, 370 of which it owns. The Mexican Northwestern runs from Ciudad Juarez to Chihuahua and is reported to have suffered more from the revolution than any other road in Mexico.

The Southern Pacific of Mexico—This road is owned by the Southern Pacific of the United States and has approximately 1,000 miles. The main line extends from Nogales, Arizona, southward through the state of Sonora and down the west coast to Tepic from which point it is eventually to go to Guadalajara and Mexico City. The road was not seized by the Mexican government until 1917. The company suffered considerably between 1910 and 1913, the traffic loss for this period being estimated at \$3,000,000 and the cost of maintaining the property during the same period \$511,000 in excess of revenue collected. Claims have been presented to the Mexican government but have not been paid. Capital stock of the company is \$75,000,000 authorized.

Interoceanic—This road is reported to have been almost entirely destroyed during the early part of the revolution. No returns having been received from Mexico, it was impossible to make the usual statement of accounts on June 30, 1917. At the end of June, 1916, there was a debit balance against the net revenue account of about \$2,500,000 and this was increased during the year to about \$3,500,000. The moratorium granted in 1915 affecting the 4 per cent debenture stock, the $4\frac{1}{2}$ second debenture stock, and the rentals of leased lines has been extended until May, 1920. The only sums received from Mexico since the company's property was seized by the government in August, 1914, were \$4,000 remitted in 1916 and \$5,000 recently received from the National Railways on account of office expenses.

Mexican Southern—The whole of the company's undertaking has been leased to the Interoceanic since January, 1910.

United Railways of Yucatan—This company was incorporated under the laws of Mexico in 1902. Since 1914, the road has been operated directly by the local government of the state of Yucatan in conjunction with the Compania de Fomento del Sureste. The company has lines from Merida to Progreso and Campeche and from Merida east and south through the state of Yucatan. The company has a share capital of \$11,500,000 and \$4,125,000 first mortgage 5 per cent redeemable gold bonds issued in London. Net revenue for 1912 was \$1,447,937.

There were 500 miles of railway operating on schedule time, January, 1918, in the consular district of Progreso, which included most of the peninsula of Yucatan and the trackage was reported to be in good condition although it had had little care. The rolling stock, however, was reported to be badly in need of repair. This road is now the only one operating on the peninsula and the company has several extensions planned, one of which is to connect with the Isthmus of Tehuantepec road.

Railways Since 1914

The Carranzist administration issued a decree in December, 1914, authorizing the seizure of all railroads deemed necessary for military and commercial purposes, these roads to be called the Constitutionalist Railways of Mexico and to be administered by a new department of the government known as the "Direccion General." As the troops pushed north the roads were seized and used for the transporting of the army, but after August, 1915, when Mexico City was finally occupied, the railway directors found themselves confronted with a new and grave problem, the supplying of food to the starving population of northern and central Mexico. Conditions could hardly have been worse than they were and the administration deserves credit for what it has accomplished toward the restoration of traffic to a normal state.

The railroads in the north at that time had suffered more than those in the south; their bridges, tracks, and buildings had been destroyed and their rolling stock destroyed or rendered unfit for service. The new government found it impossible to purchase new equipment in the United States and local military authorities refused to return rolling stock under their control. Brigandage continued to flourish in the

north, companies took advantage of the scarcity of freight cars, the general disorganization of trade and the scarcity of supplies, and succeeded in exacting exorbitant charges for the moving of freight. Local authorities hindered the free movement of freight by placing all sorts of restrictions on supplies leaving the section under their jurisdiction.

On June 8, 1918, the line between Cordoba and Tierra Blanca was closed. Threats by bandits continue to make service on the Tehuantepec very unreliable. Military protection is necessary everywhere.

Mexican newspapers are unduly optimistic and report traffic in almost every part of the country, as well as contemplated construction of several new roads, among which are the lines to be constructed in Yucatan and Chiapas. They report the resumption of through Pullman service between Mexico City and the border, where connections are made for various points in the states. According to them, additional rolling stock is being turned over to the government by local military authorities who no longer need it, and this stock is being repaired for commercial use. They announce the settlement of the dispute between the Santa Fe and the Constitutionalist Railways relative to rolling stock, including 200 freight cars belonging to the Santa Fe which had remained under Mexican control since the beginning of the Revolution and most of which had been destroyed. The government agreed to pay an indemnity of 170,000 Mexican dollars to the Santa Fe. The Pennsylvania is also to receive indemnity for rolling stock lost during the revolution.

Financial Situation

Until November, 1916, practically all revenues of the Constitutionalist Railways were received in paper money, which the law compelled them to accept. Freight and passenger rates were increased from time to time but could not be increased sufficiently to keep pace with the decline in value of the two issues of paper currency. While, as Senor Pani points out, the government may have been enabled to redeem more than one hundred million pesos of the Vera Cruz issue by receiving it through the railroads, the practical result was, of course, the running of the roads at a loss, and a lack of capital to purchase supplies or hire efficient employees.

In November, 1916, the legal freight and passenger rates were re-enacted, to be collected in coin or "infalsificable" (uncounterfeitable) paper in accordance with the actual value of the latter. Since this decree has been in force, the financial state of the railways has been slightly better. The Mexican Review for April, 1918, reports the depositing in the National Treasury of \$125,000 surplus for December after the payment of all operating expenses of the Constitutionalist Railways. The surplus deposited for January was \$375,000. The same article states that negotiations are under way for the securing of a loan for the rehabilitation of the Constitutionalist Railways, the loan to be secured on the receipts of the road. The total amount needed is placed at \$150,000,000.

Foreign Interests in Mexican Railways

Foreign bondholders and stockholders have watched, powerless, while their holdings have been seized and much of their property destroyed. According to the London Economist, the government has forced the railways to accept worthless paper currency in payment of passenger and freight charges and has failed to keep solemn promises to return certain roads to their owners on given dates. This journal holds forth little hope for an improved outlook for foreign investors in Mexican railways and it renews regularly the statement that the present policy of the government is openly hostile to British interests.

The second seizure of the Mexican Railway in 1917 and the acquisition of the Tehuantepec Railway seem to indicate that the government has no intention of relinquishing its control of the railroads but purposes rather to extend it.

W. H. Newman

W. H. NEWMAN, who died on Saturday of last week, was the genius of the Grand Central Terminal in New York. He was president of the New York Central Lines, including all of the lines in the so-called Vanderbilt system, from 1901 to 1909. It was a critical period in the development of the eastern trunk lines and it was during this period that the Pennsylvania built its tunnels under the North and East rivers, and gained its entrance into New York City. It was during this period that the program for the Morgan-Mellen development of New England transportation facilities was arranged. Mr. Newman was a man of broad vision and had he been given a free hand in the development and management of the New York Central Lines it might well have been that there would have been no critical period for the stockholders of these companies such as they went through in 1910 to 1915.

Mr. Newman's training was that of a traffic man and what the New York Central lacked was an operating man with adequate authority and ability. An able operating vice-president on the lines east of Buffalo as well as on the lines west of Buffalo was all that would have been necessary to supply the lack, if lack there was, in Mr. Newman's experience and knowledge. If a strong operating man had been vice-president of the New York Central & Hudson River to work in conjunction with the vice-president in charge of operation of the Lake Shore & Michigan Southern, a very different history might have been written of the New York Central during the last ten years.

Mr. Newman's work should have been to supervise and co-ordinate the New York Central system, to lay out broader policies of development and management and to lead the various boards of directors. He should have had the final power to approve or disapprove organization changes in the system. Unfortunately, both for the New York Central security holders and for the best interests of railroading generally, Mr. Newman did not get this full measure of authority and freedom of action. He resigned as president in February, 1909, but remained a director, and took personal charge of the plans for the new Grand Central terminal. Besides, therefore, acting as a consulting railroad executive, he was responsible for the really beautiful structure which the Grand Central terminal has become. It was his idea—which bids fair to be carried out to an eminently successful conclusion—that the Grand Central terminal property should be made self supporting by the erection over the underground yard between 42nd street and 57th street of a series of buildings—hotels, office buildings, exhibition halls, etc.—renting for sufficient to pay interest and taxes not only on the ground above which they stand, but upon the entire terminal, including the station building itself.

The Grand Central terminal will stand a lasting and beautiful monument to Mr. Newman; but more than this, Mr. Newman's breadth of vision and foresight helped to change the character of the growth of New York City from 42nd street to 59th street. He foresaw the movement uptown of the great retail shopping district and he planned the buildings to be erected over the New York Central tracks accordingly. What he foresaw has actually taken place, and the building of the Biltmore Hotel, the Grand Central Palace and now the Commodore Hotel, has been a most important factor in the character of the development of this whole section of the city. There is something of the romance of American achievement, and of the development of New York City especially, in the fact that this man who in 1869 was a station agent on the Texas & Pacific, should have left his mark so strongly and so beautifully embedded in the constantly growing metropolis of America.

W. H. Newman was born in 1847 in Prince William County, Virginia. He began railroad work in 1869 as station agent on the Texas & Pacific at Shreveport, La. In 1872, he was made general freight agent of the Texas & Pacific by Colonel Thomas A. Scott, then president of that road and later president of the Pennsylvania Railroad. At that time, there was a group of men connected with the Texas & Pacific, many of whom were or later became distinguished citizens. Besides Col. Scott and Mr. Newman, there was General Grenville M. Dodge who was chief engineer, William A. Wallace who was vice-president, William Mahl who was auditor and was later vice-president and controller of the Harriman lines and A. J. Cassatt, a director who was later president of the Pennsylvania. In 1883 Mr. Newman became traffic manager of the so-called Southwestern System lines which included the Texas & Pacific, International & Great Northern, Galveston, Houston & Henderson and Missouri, Kansas &



W. H. Newman

Texas Lines lying in the states of Texas and Louisiana. Two years later he was made traffic manager of the Missouri Pacific.

While Mr. Newman was with the Southwestern System Lines, C. P. Huntington was president of the Southern Pacific; Edwin Hawley was general eastern agent and Frank Trumbull was with the Missouri, Kansas & Texas as freight claim auditor of this line and of the Missouri Pacific Lines, while Judge Robert S. Lovett was in the legal department of the Texas lines of the Southern Pacific. In 1887 Mr. Newman was made third vice-president of the Missouri Pacific, but in 1889 went to the Chicago & Northwestern as vice-president. He served his apprenticeship under James I. Hill as second vice-president of the Great Northern in 1896, '97 and '98; and in the latter year was made president of the Lake Shore & Michigan Southern. Two years later he was made president of the New York Central and all of the New York Central Lines.

R. B. A. on Government

Purchasing Policies

THE RAILWAY BUSINESS ASSOCIATION COMMITTEE on Government Purchasing Policies, A. L. Humphrey, chairman, has sent the following letter to Thomas W. Gregory, attorney-general of the United States, and John Skelton Williams, director of finance and purchaser of the Railway Administration:

We request your consideration of the contract provision recommended by the President through the department of justice under which the contractor would warrant the government that no contingent selling fee had been paid or promised.

We are a committee of the Railway Business Association. This is a national organization of manufacturing, mercantile and engineering concerns which deal in equipment, material, supplies or services for steam railroads. The Association includes more than 300 members maintaining industrial plants or commercial offices in practically every state in the Union. A large proportion of these concerns either employ sales agencies on contingent commissions or are themselves employed by manufacturers as contingent commission sales agents.

The contract warranty under discussion has been laid before our association by both these classes of our members, who inquire whether the department of justice intends the recommended warranty to apply to the method of doing business according to which they have operated for many years and to which their arrangements are adjusted. There are among our members and their advisers two interpretations of the warranty covenant.

One opinion is that the attorney general could not have intended to eliminate established sales agencies since his letter of transmittal made no mention of such enterprises, while explicitly citing the class of commission brokers designed to be reached. The language is as follows: "Owing to the tremendous increase in government business and the speed with which it must be executed some manufacturers because of ignorance or mis-information have thought it necessary to negotiate with the government through contract brokers or contingent fee operators."

This letter, it is contended, makes it obvious that the practice which the government desires to stop is one growing out of war conditions and that the commission agents under condemnation are those who have undertaken during the past year to insert themselves between the contractors and the government to perform a service or alleged service which in normal times was performed without the payment of a commission or was not performed at all.

The other opinion is that whatever may have been the attorney general's intention the language of the warranty plainly describes the established method common before the war and in practical application some regular commission agents in order to do business since the warranty came into use have had to transform themselves into jobbers, buying the goods outright and taking the risks which heretofore have been assumed by the manufacturer. For these reasons we ask the government to consider:

First, announcement of an interpretation of the warranty covenant explicitly specifying the category of selling methods which it is designed to eliminate and modification of the contract provision accordingly.

Second, embodiment in the covenant of a declaration that nothing in the contractor's warranty is to be considered incompatible with the continued employment of sales agencies where this was his method of doing business before the war.

In the hope of affording the government practical aid in framing a definition, we have endeavored to compile facts of the business situation by gathering statements from our

members as to their practices. Manufacture in its present-day form consists of two fundamental and interdependent functions: (1) making and (2) selling. Some manufacturers—probably a majority—have broadly speaking two departments, a manufacturing and a selling department—the latter consisting of an organized selling force usually giving all its time to the company and compensated for the most part on a basis which includes a percentage commission on the amounts receivable from the goods sold. Many manufacturers who have organized sales forces of their own conduct the entire business on a commission compensation with no salary factor.

There are many manufacturers who market the whole or a part of their output through mechanism which is not a part of their own organization. There are two principal forms of such outside mechanism.

1. Regular organized selling firms or companies whose business is exclusively that of selling output of one or more manufacturers in a common field, the lines being non-competitive.

2. Brokers or commission men in local markets or areas throughout the country who act for a manufacturer upon his motion in a particular matter or who may initiate and submit to the manufacturer a tentative order or contract for goods.

The manufacturer may maintain a salaried selling organization of his own, in many instances depending also upon one or the other of these two forms of outside selling mechanisms—the authorized agent or the broker—to get orders or contracts for his product, particularly in new territory or in dealing with customers more or less unknown to the manufacturer. Thus it is plain that the payment of commissions contingent upon the amount of sales or upon the price obtained or upon both is characteristic of a wide range of business transactions, both those conducted by companies which maintain their own sales forces, and those conducted through independent agencies either regularly appointed for specific territory or acting as occasion arises.

The independent sales agency is often made the "representative" of the manufacturer in a specific territory. Such agents, in addition to selling the product of the company, look after its interest in the territory assigned to them, and not only refrain from handling the product of competitors, but are advertised by the manufacturer in the various trade papers and lists as people from whom information regarding the company's product may be obtained. The manufacturer often adapts himself to conditions, using his own sales staff in territory where this seems to be the most serviceable method, and employing agencies in other territory.

One of our members produces a specialty which has become standardized on nearly all of the steam and electric railways of the country. Particularly because they are specialties the company requires representatives of its own who can make inspections and go into technical matters relating to installation and methods of upkeep of its products. The Middle Western territory is looked after by company men from the Chicago office, the Eastern and Southern territory from the New York office. The volume of business in New England and on the Pacific coast would not justify a branch office at those points nor traveling expenses to send men with sufficient frequency from the New York or Chicago office; proper economy in operation, therefore, combined with proper service to customers, dictated the policy of giving an agency to qualified representatives in those sections. Another member who employs a similar method mentions as one of the functions of selling agencies to deal with complaints concerning the performance of material or appliances in use. One member about a year ago discontinued its sales force and turned over the selling function for the whole country to one selling organization with headquarters in New York and with

branch offices in Philadelphia, Pittsburgh, Chicago and San Francisco. This selling company is said to employ a large force of trained experts and the arrangement was entered into in the belief, based upon experience, that sales would increase and selling-cost diminish.

What chiefly, we assume, concerns the government is the question whether in a given transaction the payment of a contingent fee has served to increase the cost of the goods to the government. It appears from statements made by a number of our members that the commissions paid to sales agents are in lieu of a stated amount in the shape of salary and expenses. Out of such compensation the agency maintains offices and defrays traveling expenses besides salaries of representatives who do the work. The government in many instances owes the existence of some purveyors and hence of competition to their using agencies, since the limited size of the business would preclude the employment of salaried men covering the whole country.

The smaller selling cost made possible by the contingent fee system arises out of the fact that the commission agent has other principals and usually concentrates in a certain territory. A clear-cut proof that the contingent fee method need not of itself increase the price to the buyer is found where a company has a salaried salesman in one territory and commission agents in another, while its price quotations are the same for all regions. One member has selling agencies in St. Paul and Atlanta but nowhere else. This arrangement has stood for years. The same selling prices prevail in those territories as apply on all other territories in the country; the base prices are uniform. It would therefore appear that the prices quoted by that company are lower rather than higher because of its employment of selling agents in the Northwest and in the Southeast, because the contribution which the St. Paul and Atlanta districts make to selling cost is smaller in proportion as the contingent fee is less expensive than that of salesmen's salaries and expenses and maintenance of branch offices. As another member expresses it, "We are not quoting or charging the railroad more on our products on account of having an agency in St. Paul and in Minneapolis, as we are paying our agent for his services out of our profit."

The company quoted above as having recently changed from the salaried salesman system to employment of one selling agency to represent it throughout the country remarks that the commission paid represents an amount far less than the company would have had to expend in doing the work itself, "besides having additional worry of looking after the organization of an adequate sales department." In addition to the question whether a contingent fee in a given instance carries an added cost to the buyer or is merely in lieu of a salesman's salary and expenses, it is suggested by one of our members, and, indeed, seems to be suggested by the letter transmitting the warranty provision, that contingent fee operators have been taking or collecting a form of graft based upon alleged acquaintance or influence with the purchasing authorities. We have no doubt some of the smaller and less experienced manufacturers present a shining mark for plausible mountebanks. The stranger with glib address may not only convince the novice in this sort of thing that he can influence the placing of business but may cause fright lest a rebuff will be followed by retaliation resulting in impediment to orders. In such cases, we presume, the price quoted to the government would be more likely to be based on the bidder's belief as to what figure would win a contract than upon any consideration of cost with or without a contingent fee added; and that the most deserving object of solicitude on the part of the government is the innocent manufacturer who is made to disgorge a contingent fee for services which probably were never rendered. Stories are current in Washington of agents who made ap-

proaches to several competing concerns and then proceeded to collect from the successful bidder.

A preponderant volume of transactions between manufacturers and the railways, including central purchases at Washington and regional purchases by individual roads, is conducted by parties among whom there are no strangers. When the Railroad Administration is about to order equipment or other appliances consideration of bidders is obviously based upon knowledge of the various makers, their established business methods and their character. The same thing is true where the individual railroad or the regional purchasing committee contemplates purchases. Whether at Washington or throughout the country the negotiations connected with railway purchases involve arduous labors by somebody authorized and competent to represent the manufacturer. If a sales agent whose compensation is in the form of a contingent fee is usually the representative of a given manufacturer, everybody concerned, from the chairman of the Central Purchasing Section down to the local storekeeper on the railroad, knows all about him—who he is, why he is there, and what factor his activities will be and ought to be in the negotiations. In this respect railway purchasing is doubtless quite different from government purchasing in a wide sphere of other departments to which the warranty covenant has been recommended by the department of justice. The Hon. John Barton Payne, general counsel for the Railroad Administration, replying to an inquiry by one of our members, says under date of July 23: "It would not seem to me that an agent regularly employed would come within the provision of the order referred to." Pervading the replies received by us from our members on this subject is an obvious conviction that established sales agencies will not be further disturbed when the department of justice and the division of railway finance and purchases have had opportunity to consider sales agencies in this field and the function which they perform.

Disturbance, however, is actually spreading among them. It has been understood that the matter was still under official consideration, but manufacturers are receiving from their agents contracts containing the warranty covenant, and it is their earnest hope that the two departments of the government concerned will be able as soon as convenient to issue some instruction to all concerned which will make clear governmental recognition of the established sales agency as a usual reputable form of business which there is no purpose to disturb as an incident to eliminating contingent fee operators of objectionable types.

Completing Buildings on Time

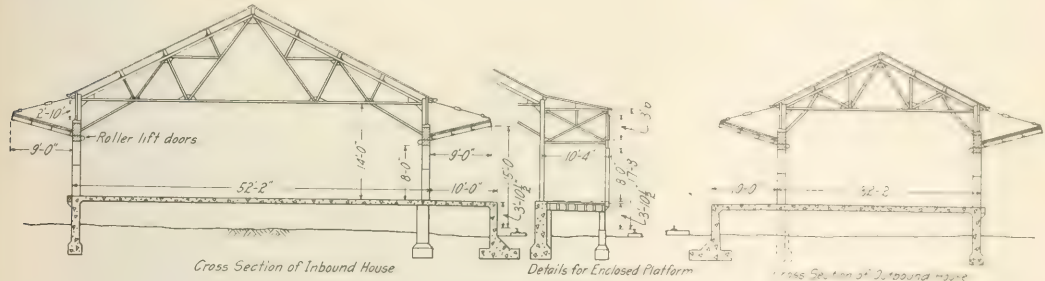
THE RAPID CONSTRUCTION of railway buildings which will be so sorely needed this coming winter is very much desired by those concerned, and makes specially important any means that can be brought to bear to increase the speed with which such buildings can be completed. The possibilities of rapid construction demonstrated by the Austin Company of Cleveland, O., with the use of a system of standard buildings for industrial purposes is therefore of special interest. Through this system many buildings of considerable size have been completed in only 30 days' time; more elaborate ones in 60 days' time, and multiple-story, mill construction and concrete buildings in a somewhat longer time. The main fact is that a dependable record has been established for the completion according to schedule of all work undertaken.

Organization and systematic methods are, of course, responsible for a considerable measure of this success, but the foremost element is a system of standard building de-

signs which not only possess a flexibility of size and proportions that insures adaptability to a great many purposes and locations, but also permits of the fabrication of stock members in advance of the awarding of the contract, since they may be used interchangeably in a great many of the designs. As a consequence large stocks of standard columns, trusses, purlins, etc., are kept in readiness to be

and monitors. There are also designs with main center aisles and side aisles, the main aisles affording accommodations for various lengths of traveling cranes. There are also mill construction and reinforced concrete designs.

For application to such railroad buildings as car repair shops, forge, boiler or wheel shops, practically no departure from the standard designs is necessary. For locomotive



Standard Designs for Freight Stations

shipped immediately after any work is authorized, thus saving the time ordinarily occupied by the fabrication of the structural steel. Similarly there are stocks of lumber in the sizes and lengths required for roofs, floors, etc.; also standard doors and windows, ventilators and hardware fixtures which will apply in a large majority of the buildings erected.

The organization is, of course, trained and experienced in the erection of this particular class of structures—especially in the assembling of detailed features, many of which are duplicated in the various designs. As a result the men

erecting shops, machine shops, roundhouses and freight houses, on the other hand, special railroad standards have recently been devised. In the case of the locomotive erecting shop the modification has consisted primarily in provision for an aisle wide enough to accommodate the traveling cranes used in handling locomotives. The designs prepared allow for such aisles in widths of 64, 70, 80, 90 and 100 ft. The length of the panels on the other hand in such buildings, as with the other Austin buildings, is 20 ft. For roundhouses a reinforced concrete type with brick curtain walls has been devised.

The drawing illustrates the type of structure developed for the application of this system to freight houses. This consists of a steel frame with brick curtain walls supported on a concrete foundation. The floor is also of concrete supported on an earth fill, although the wearing surface may be made of any other desired material without modifying the original design. The width of the houses, adopted after a careful study of the plans obtained from many railroads and of the recommendations of the American Railway Engineering Association, have been made 32 ft. 2 in. for the outbound house and 52 ft. 2 in. for the inbound house, measured out to out of walls. Both the inbound and the outbound houses are provided with canopies on both the street and the track sides, projecting a distance of 9 ft. On the track side this canopy covers a 10-ft. platform, thereby setting the supporting columns of the building back a sufficient distance from the track so as not to interfere with any position of the car doors.

To meet the wishes of those who desire to have trucking on the track side done entirely within the building an alternative design has been prepared in which this trucking platform is covered by a cantilever frame from which continuous sliding doors are suspended along the edge of the platform. Thus trucking is done from the cars directly to the inside of the house while retaining the advantage of having the columns set back away from the cars. The design provides for an asbestos shingle roof and roller lift doors with continuous transoms above the door lintels on each side of the building. Many of these details, however, may be modified without affecting the standard in principle or interfering with the rapidity of construction. The same applies to the architectural treatment of the ends of the building or any other portions that lend themselves to this purpose. These may be modified to harmonize with other structures in the vicinity.



A Modified Standard Building With Columns of 10 ft. Additional Length and Designed for Traveling Cranes

know exactly what to do and in a large measure can be directed according to pre-determined schedules from day to day which ordinarily vary but little on the different jobs. The same applies to the billing and assembling of material. There is much less opportunity for delay because of the failure to provide a certain class or kind of material than in the case of work done according to a special design.

The designs follow accepted practice in industrial building construction as to arrangement, structural design and detail and with opportunity for sufficient variation to meet any usual needs. Thus the industrial building designs include buildings with flat roofs, pitched roofs, saw-tooth roofs

General News Department

Dining car waiters, according to a recent decision in Missouri, are not classed by the draft board as in non-essential service.

C. E. Drayer, formerly field engineer on the New York, Chicago & St. Louis, and later secretary of the Cleveland Engineering Society, has been appointed national secretary of the American Association of Engineers.

Remaining on the wing continuously for 30 hours and 30 minutes is the latest feat recorded in the world of aviation. This record, as reported by the Navy Department at Washington, on August 2, was made by Ensign P. J. Barnes, who is attached to the American Naval Air Forces in European waters.

Regulations for the transportation of explosives originally issued by the Interstate Commerce Commission in 1910 have been revised and now appear in a new issue which is to go into effect November 1, next. This pamphlet fills 274 pages and copies may be had from the superintendent of documents, Government Printing Office, Washington, at 20 cents each.

Freight stations of the Baltimore & Ohio and the Western Maryland, at Hagerstown, Md., have been consolidated. A similar consolidation has been ordered at Westfield, Mass., of the freight facilities of the Boston & Albany and the New York, New Haven & Hartford; also at Willimantic, Conn., of the New York, New Haven & Hartford and the Central Vermont.

Bandits, said to be followers of Villa, held up a northbound passenger train on the Mexican Central at a point 50 miles south of Chihuahua on August 10, and according to a press dispatch from El Paso, Texas, they killed 26 passengers and 40 soldiers, the soldiers being on the train as members of a guard. About 70 persons were wounded and the dead were stripped of their clothing and valuables.

Thefts of cotton and other commodities from freight cars and lighters in and around New York during the six past months have amounted to hundreds of thousands of dollars, and eleven other men have recently been indicted. Thefts of cotton have become so serious that the banks handling the bills of lading are threatening to curtail facilities. It is said that captains of lighters are paid \$20 a bale for shutting their eyes to thefts of cotton—and that after paying the captain for 10 bales the thieves take away 20 or 30 bales.

Inspectors of safety appliances and inspectors of hours of service are wanted by the Interstate Commerce Commission, and the Civil Service Commission announces examinations of candidates to be held on October 2 and 3. Applications should be sent to the Civil Service Commission, at Washington, which will arrange for an examination at the place selected by the applicant. The salary is \$3,000 a year. Applicants must be between 25 and 50 years of age and must have had extensive experience in railroad work.

The Highway Transport Committee of the Illinois State Council of Defense plans to establish a motor truck transportation service within a radius of 35 miles of Chicago to release railroad freight cars for long distance service. It is planned to establish return load bureaus in Chicago and the surrounding zone and to enlist the co-operation of shippers, receivers and commercial associations to make the return load bureaus effective. It is said that from 250 to 300 cars a day, or 75,000 to 90,000 cars a year, are used for l. c. l. freight service within the Chicago switching district.

Ten years imprisonment in the penitentiary at Atlanta was the sentence imposed on Henry Burnsweig of Jersey City, N. J., in the Federal District Court at Newark, N. J., on August 12, together with a fine of \$5,000. Burnsweig was convicted of

having in possession nine bales of stolen silk. Judge Haight in passing sentence said:

"The 'fence,' so called, is responsible for a great part of thieving. These crimes would not occur but for the opportunities to dispose of the loot. I am going to impose the extreme limit the law provides on all fences convicted before me." The silk Burnsweig had in his possession was part of a shipment of 110 bales stolen from a car of the Central of New Jersey. Daniel Mecca and Wesley Thurston, New York youths, convicted of having conspired to steal the 110 bales, were also sentenced, Mecca for two years and Thurston one year.

Technical schools and universities desiring to introduce the teaching of safety, whether as a regular addition to the curriculum, or only occasionally, can secure all needed aid from the National Safety Council, Chicago, Ill. W. H. Cameron, secretary, and can have the service of competent lecturers, in many departments, without pay, except the necessary expenses of the speakers. This announcement is made in a pamphlet recently issued by the Council, embodying the report of a committee on the promotion of safety education in technical schools and universities. This pamphlet names 18 subjects suitable for inclusion in a scheme of safety education and a half dozen or more lecturers under each topic. On accident prevention on railroads the lecturers named are H. W. Belnap, United States Railroad Administration, Washington; Marcus A. Dow, New York Central; Isaiah Hale, Atchison, Topeka & Santa Fe; R. C. Richards, Chicago & North Western; W. C. Wilson, American Museum of Safety.

Record Grain and Coal Loading in Central Western Region

During the month of July the roads comprising the Central Western region loaded 42,759 cars of grain, an increase of 18,097 cars, or 73.4 per cent over the corresponding month last year. During the same month these lines loaded 155,945 cars of coal, an increase of 23,974 cars, or 18.2 per cent over the same period last year.

Shipping Board Survey of Southern Ports

A survey of southern ports has just been made by representatives of the port and harbor facilities commission of the Shipping Board. It included Wilmington, Charleston, Savannah, Brunswick and Jacksonville. The committee inspected docks, piers, repair plants, terminal connections, marine railways, bunkering facilities, warehouses, and available sites for expansion. A comprehensive report on ports inspected will be made to Chairman Edward F. Carry of the port and harbor facilities commission.

Short Line Railroad Association

The Short Line Railroad Association, at its meeting in Washington, D. C., August 7 (noticed in the *Railway Age* of August 9, page 269) devoted its discussions mainly to the details of the form of contract with the government which had been presented by the executive committee. Nothing was done toward settling the definite wording of the paragraphs, but the opinions of the different members were recorded for the benefit of a committee on contracts and legislation, which is to continue negotiations with the administration.

About 70 members were represented and this was the first general meeting held by the association in nearly two years. The secretary reported the membership as having grown from 110 roads in August, 1916, to 179 at the present time. The length of road covered is 8,789 miles.

The present officers of the association were re-elected and the by-laws were amended so as to permit the use of letter ballots.

REVENUES AND EXPENSES OF RAILWAYS

SIX MONTHS OF CALENDAR YEAR 1918

Name of road.	Average mileage operated during period.	Operating revenues.			Maintenance of way and structures.		Operating expenses.			Operating ratio.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) last year.
		Freight.	Passenger.	Total.	Way and structures.	Equip- ment.	Traffic.	Trans- portation.	General.				
Alabama & Vicksburg.....	141	\$686,360	\$277,442	\$1,063,551	\$110,174	\$223,362	\$32,276	\$483,858	\$646,359	83.49	\$67,187	\$111,497	-\$64,901
Albany & Vicksburg.....	141	1,174,607	1,512,521	2,687,128	359,251	299,243	31,622	806,786	57,338	96.43	78,600	24,697	-27,783
Arizona Eastern.....	293	1,279,375	200,373	1,479,748	359,995	1,119,753	15,634	544,693	102,311	93.17	132,670	78,865	-1,361
Baltimore & Ohio.....	179	7,235,550	1,235,550	8,471,100	1,458,842	3,409,116	5,836	683,954	54,736	138.97	171,279	491,651	339,723
Birmingham & Gulf.....	36	1,532,583	23,561	1,556,144	228,170	264,006	7,994	332,955	27,684	51.44	728,027	670,681	-38,139
Birmingham Southern.....	44	564,773	7,753	572,526	77,454	187,420	5,511	335,872	23,777	60.841	22,130	36,707	27,684
Burlington Northern.....	584	7,118,340	616,239	7,734,579	1,107,382	2,588,726	100,288	3,948,034	2,967,471	99.13	69,895	160,405	-90,595
Canadian Pacific Lines in Maine.....	229	1,093,646	1,093,646	2,187,292	276,125	2,973,125	17,246	891,109	15,602	110.15	57,000	190,737	562,965
Chesapeake & Ohio.....	229	2,538,352	304,043	2,842,395	409,483	689,407	29,754	1,028,160	62,876	80.63	5,979,597	1,107,972	1,107,972
Chicago & North Western.....	324	1,839,271	116,179	1,955,450	324,383	831,972	33,989	467,497	27,941	100.63	37,000	159,346	551,240
Chicago, Milwaukee & St. Paul.....	332	767,697	85,538	853,235	79,792	175,077	35,912	228,568	26,055	75.11	134,591	20,944	114,149
Colorado & Wyoming.....	42	175,547	14,740	190,287	53,393	97,273	5,651	164,492	18,773	61.96	175,878	42,884	160,841
Cripple Creek & Colorado Springs.....	116	350,642	60,737	411,379	36,774	60,821	405,838	13,944,498	18,773	61.96	175,878	42,884	160,841
Delaware, Lackawanna & Western.....	955	2,000,667	4,506,642	6,507,309	2,134,595	5,602,852	16,723	2,288,566	26,055	99.73	4,539,543	1,407,963	2,975,776
Denver & Salt Lake.....	253	721,172	121,684	842,856	296,267	366,952	5,895	477,504	21,704	113.49	285,053	54,000	-197,592
Detroit & Toledo.....	289	920,242	146,863	1,067,105	190,307	161,510	13,532	341,200	33,669	56.47	411,908	65,662	117,582
Detroit & Toledo Shore Line.....	601	1,855,616	146,810	2,002,426	477,964	335,113	44,741	1,130,280	57,581	100.80	123,271	198,350	500,086
Duluth, Winnipeg & Pacific.....	175	686,016	141,829	827,845	121,621	139,131	16,723	4,494,559	203,580	77.57	1,066,847	470,753	1,066,847
Elk Worth & Fort Grand.....	235	804,095	155,701	959,796	104,089	108,427	11,443	251,156	9,253	15.81	15,481	3,178	8,851
Florida, Jacksonville & Atlantic.....	144	158,580	158,580	317,160	138,733	178,427	1,137	14,498	31,206	60.76	206,233	17,000	16,836
Florida, Jacksonville & Atlantic.....	144	158,580	158,580	317,160	138,733	178,427	1,137	14,498	31,206	60.76	206,233	17,000	16,836
Fort Worth & Texas.....	207	840,842	213,823	1,054,665	556,199	562,362	11,476	251,156	9,253	15.81	15,481	3,178	8,851
Grand Rapids & Northern.....	116	1,067,236	2,485,759	3,552,995	845,005	1,271,333	98,643	2,930,816	43,774	89.08	807,108	685,063	676,537
Grand Valley.....	144	2,429,209	6,112,452	8,541,661	1,136,946	1,387,028	18,723	4,994,559	203,580	77.57	1,066,847	470,753	1,066,847
Long Island.....	1,306	1,733,465	1,733,465	3,466,930	1,136,946	1,387,028	18,723	4,994,559	203,580	77.57	1,066,847	470,753	1,066,847
Louisiana & Arkansas.....	1,306	1,733,465	1,733,465	3,466,930	1,136,946	1,387,028	18,723	4,994,559	203,580	77.57	1,066,847	470,753	1,066,847
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Louisiana & Arkansas.....	1,306	1,733,465	1,733,465	3,466,									

Pullman Maids

Leslie Gilbert, federal farm help specialist for Alabama, in a report to the farm labor conference being held by officers of the United States Department of Agriculture at Birmingham, Ala., has recommended the substitution of women for Pullman car porters.

Automatic Firedoors and Vestibule

Cabs for Locomotives in New York

The New York law (section 77 of chapter 649) requiring locomotives to have automatic fire doors and "vestibule" cabs applies to any locomotive operated by steam. The act will go into effect January 1, 1919, unless the director general or his representative shall otherwise direct. All new locomotives placed in service after the act takes effect must be equipped with these appliances, and all existing locomotives must be so equipped the first time they are taken to the shop for general repairs.

Proper Maintenance of Freight Cars

In Circular No. 4-A, dated August 1, and superseding Circular No. 4, issued July 8, the executive committee of the Master Car Builders' Association gives the following instructions to members: When empty cars of 60,000 lb. capacity or over are placed on shop or repair tracks for repairs, they must not be returned to commercial service until they have been placed in condition to meet all M. C. B. inspection without exceptions, including United States Safety Appliance requirements.

Coal Production

During the week ended August 3 the output of bituminous coal not only decreased over 3 per cent from the preceding week, but recorded the third successive week of decreased production, says the weekly bulletin of the United States Geological Survey. Production of bituminous coal, including lignite and coal made into coke, during the week was estimated at 12,422,000 net tons, a decrease compared with the week preceding of 398,000 net tons, but an increase over the same week of the year 1917 of 1,563,000 net tons or 14.3 per cent.

Anthracite shipments during the week ended August 3 decreased 1,310 carloads or 3.2 per cent, the total movement amounting to 39,362 carloads.

The percentage of full time output lost on account of car shortage during the week ending July 27 was 7.4 per cent, the last four weeks having shown increases. The car shortage average is brought up particularly by the figures for the Kentucky fields and the Fairmont field in the state of West Virginia.

The car shortage is understood to be due in many cases, not to a lack of cars, but to a serious shortage of firemen, both for switching and for road engines.

Canadian Board of Mediators

The Canadian Railway War Board announces that an agreement has been signed between the six great railway brotherhoods and the Railway War Board by which all railway labor disputes which cannot be settled between the men and the officers of the individual roads will be finally referred to the Railway Labor Board of Canada.

This board consists now of six labor leaders (one from each of the brotherhoods) and six railway executives. It is provided that their decision on any matter referred to them will bind, on the one hand the employees thus represented, and on the other hand the Canadian railways. In case of disagreement the board will choose a referee and if a referee cannot be agreed upon, the governor-general-in-council, through the minister of railways and canals will be asked to make the appointment.

The board consists at present of the following men: U. E. Gillen, Grand Trunk; S. N. Berry, Order of Railway Conductors; A. D. MacTier, Canadian Pacific; Ash Kennedy, Brotherhood of Locomotive Engineers; F. P. Brady, Canadian Government Railways; J. M. Mein, Order of Railroad Telegraphers;

S. J. Hungerford, Canadian Northern; James Murdock, Brotherhood of Railway Trainmen; George Hodge, Canadian Pacific; W. V. Turnbull, International Brotherhood of Maintenance of Way Employees; A. J. Hills, Canadian Northern, and George K. Wark, Brotherhood of Locomotive Firemen and Enginemen.

Parlor Cars versus Gondolas

[Extract from a recent letter in the New York Sun.]

A certain express train for this city, stopping at Stamford, Conn., had three parlor cars. All the passengers in those three cars could have been transported in one coach. There was an absolutely unnecessary load of 100 to 200 tons hauled from Boston to New York. Incidentally, the train was about one hour late at Stamford.

The other day an express stopping at Stamford had two parlor cars, while in the coaches there were ten or fifteen passengers standing all the way to New York (33 miles). By substituting one coach for the two parlor cars all the passengers could have had seats. In view of the fact that whole communities were put in peril last winter by lack of coal, and that only 20 per cent of coal ordered by consumers for next winter has been delivered, it is a crime to run parlor cars which pander to the luxury loving taste of the selfish and thoughtless at the expense of comfort and safety of the general public. Parlor cars, private cars, club cars and under many conditions dining cars, are an offence to those having the interests of our country at heart and a menace to our war efficiency.

The Chicago Terminal Problem

W. G. McAdoo, director general of railroads, made an inspection of freight terminals in Chicago on August 7, in company with railroad officers. The party started from the Chicago & North Western passenger terminal and followed the North Western tracks to Western avenue and from Western avenue south to Wood street; from Wood street they went over the Chicago Junction to the Union Stock Yards which the party toured by automobile; from the stock yards they passed over the Chicago & Western Indiana to South Chicago and from South Chicago over the New York Central to the La Salle street passenger station. Mr. McAdoo, referring to the complicated nature of the Chicago terminal problem, said that he had no definite announcement to make as to improvements or changes. With reference to the passenger terminal situation he said that there was a possibility that the Grand Central station would be abandoned for passenger traffic. The feasibility of this step, together with other proposed changes in the handling of passenger traffic in Chicago, has been studied for some time by a committee on co-ordination of passenger terminals of which C. T. Ames, superintendent of terminals of the Chicago, Rock Island & Pacific, at Chicago, is chairman, and the work of which is under the supervision of J. H. Brinkerhoff. The committee will not be ready to submit a report for some time.

A Twenty-five Million Dollar Government

Shop to Be Built in France

The importance of the railroad guns, many illustrations of which have appeared from time to time in the *Railway Age*, is indicated by an announcement from the War Department that the chief of ordnance has approved plans for the manufacture of the machine tool equipment which the United States Government will install in France for the relining of the heavy railroad guns in use by the American Forces. The plans call for the expenditure of between \$25,000,000 and \$30,000,000, possibly more. The machine tool alone will cost between \$12,000,000 and \$15,000,000, and will consist of gun-boring lathes, engine lathes, rifling machines and grinders.

A large number of these gun-boring lathes are designed for a 102-inch swing. To make these lathes there is under construction at one of the machine tool factories in this country a giant planer 500 feet long, costing \$450,000, and

the lathes it will help make will approximate, in the aggregate, \$6,500,000.

The relining of guns is one of the important salvage operations in the war, saving time and money. Owing to the tremendous heat generated by the charge when the big guns are fired, their accuracy cannot be assured after a few hundred shots unless they are relined, notwithstanding the fact that all other parts except the lining are practically as good as new.

Report of Bureau of Explosives

The Bureau of Explosives, 75 Church street, New York City, now representing 282,098 miles of railroads, has issued its annual report for 1917, dated April 15, 1918, and signed by W. S. Topping, assistant chief inspector. Colonel B. W. Dunn, chief inspector, has returned to active duty in the War Department. The inspectors of the bureau have during the year condemned as unsafe for transportation 2,291 boxes of high explosives, a number considerably larger than the condemnations in 1916, but very much less than the record for 1915. About 400 kegs of black powder were condemned. The total number of inspections made by the bureau in the year was 13,256.

The railway transportation losses chargeable to explosives and other dangerous articles during the year 1917 amounted to \$1,169,574, of which the amount chargeable exclusively to explosives was only \$9,590. The only record of persons killed in this yearly account is four, under the head of inflammable liquids. The report gives the usual very full and complete statements of all sorts of accidents coming under the departments of transportation which are inspected by the bureau. The total number of fires due to transportation of dangerous articles was 1,114, with a property loss of \$999,699. The 42 fires occurring in the transportation of gasoline are set forth in detail in a separate table. There were 59 fires in the transportation of charcoal, mostly due to spontaneous combustion. Appendices filling 70 pages give a full history of the doings of the Bureau during the year.

Mr. McAdoo's Aims

Secretary McAdoo issues another statement about his aims. The first one embraces all that is essential:—"The winning of the war, which includes the prompt movement of the men and material that the government requires. To this everything else must be subordinated." That far everybody will follow Mr. McAdoo. The government's control of railroads, so far as the public desires, begins and ends right there. The public does not expect Mr. McAdoo to attempt to revolutionize methods or railroad operation. It is in no mood to have Mr. McAdoo experiment with various schemes for the supposed permanent betterment of railroads. This is no time to open a school to teach our railroad managers how to manage their own business. That sort of thing can wait until the war is fought to an end.—*St. Louis Republic*.

In his declaration of general policy, Director General McAdoo naturally puts the winning of the war first. * * * It is just because government operation was adopted solely as a war measure that it has so far been successful. But such gains in efficiency as have been made are due to the fact that the government has required the railroads to do things which it would not permit them to do under private operation. One of the first steps of the Railroad Administration toward rendering adequate service was to make an increase in freight and passenger rates such as the country has never seen before. But the railroad corporations, if the letter and the spirit of the railroad control act are carried out, will be guaranteed while the war lasts profits which they would have regarded as satisfactory during any of the ten years before the war. As for Mr. McAdoo's hope to "humanize the science of railroading," it has so far been realized in an advance of wages possible only with an increase of roughly 25 per cent. in freight rates, and more than that in passenger fares. Mr. McAdoo might have summed up the whole railroad program in a brief mention of the fact that the long deadlock in rate adjustment was broken by war. All the rest follows.—*Wall Street Journal*.

Traffic News

The regional passenger traffic committees are now considering the adoption of uniform minimum rates for parlor car and sleeping car tickets on railroads of the United States.

E. A. Stedman, vice-president of the American Railway Express Company, delivered an address on August 13, at a noon-day luncheon before the Traffic Club of Chicago, on the subject of "The New Express Service."

Statistics of traffic through the canals at Sault Ste. Marie, Mich. and Ont., during July, show that 3,246 vessels passed through these waterways, carrying 10,746,246 short tons of freight eastbound, and 2,616,098 short tons westbound.

Barge line service is to be begun by the United States Railroad Administration on the Warrior river, Alabama, on September 1. By September 15 it is expected that there will be in service three towboats and six steel barges. The barges of existing transportation companies are to be taken over. It is planned to maintain regular service between Cordova and New Orleans.

Plans for the establishment of store door delivery of freight in New York City are still in process of formation, and the date of their going into effect is not yet settled; but it is expected that it will be September 1. Commissioner James S. Harlan, who is in New York City, supervising the preparations, says that the plan is receiving cordial co-operation on every hand. The regulations will cover all freight received at piers, including carload lots.

The Minneapolis Chamber of Commerce has filed application with the Railroad Administration for the removal of grain rate discriminations against Minneapolis resulting from the 25 per cent rate advance. The order increasing rates provided for an advance of 25 per cent in grain rates with the exception that in no instance was the rate to be advanced more than 6 cents per 100 lb. As the result of this provision many through rates from western points to Chicago are now lower than rates from the same points to Minneapolis. This condition, it is pointed out, encourages the shipment of grain directly to Chicago with the result that the storage facilities at Minneapolis are not utilized to capacity, while those in Chicago are overburdened. It is also contended that the situation is disadvantageous from the point of view of car supply, as western grain cars unloaded in Minneapolis can make two or three trips to the northwestern grain fields to one trip if forced through to Chicago. It is reported that the Railroad Administration will remedy this maladjustment in rate relationships at an early date.

Suspension of Through Export

Bills of Lading Rescinded

The Railroad Administration has yielded to the protest of bankers and exporters and on August 12 rescinded the order suspending the issuance of through export bills of lading on shipments through Pacific coast ports, which was to have gone into effect on September 30. This means that merchants will be free to continue their foreign business through Pacific coast ports by direct dealings with customers abroad instead of surrendering their banking business to coast institutions. The objection of the Railroad Administration to the through export bill of lading was that it made the carriers responsible for shipments until transferred to shipboard with the result that they could not collect demurrage for the ever increasing detention to cars at ports on account of the shortage of ocean carriers. The Railroad Administration now expects to remedy this condition by another method, namely, by inserting provisions in the tariffs requiring the payment of demurrage on cars containing export shipments after they have been detained for a reasonable period at the ports. Through export bills of lading have not been issued on shipments through eastern and gulf ports for several months past, because of the serious congestion at the seaboard and the scarcity of shipping on the Atlantic.

Commission and Court News

Interstate Commerce Commission

The American Railway Express Company has filed tariffs with the commission increasing the rates for transportation of daily newspapers.

The Public Service Commissions of Washington and Oregon and the Public Utilities Commission of Idaho have filed complaints with the Interstate Commerce Commission against the carload class and commodity rates on fresh fruits, fresh vegetables, fruit juices, canned fruits, canned vegetables and containers from points of origin in their states. They claim that the rates in effect since the Director General's increase of 25 per cent in freight rates last June are unreasonable and disturb the relationship between their own and other markets. Complaints have also been filed against the recently increased express rates on these commodities.

Personnel of Commissions

Samuel H. Ordway has been appointed a member of the Public Service Commission of New York, First District, in place of Oscar S. Straus, resigned. Mr. Ordway was formerly president of the State Civil Service Commission. The chairmanship of the Public Service Commission, vacated by Mr. Straus, now passes, by the governor's designation, to Commissioner C. B. Hubbell.

Court News

Limitation of Liability for Freight

Rugs in bales not exceeding in value \$50 a bale were classed as first class, and when boxed, with a stated value from \$50 to not exceeding \$100, as 1½ times first class; and, if of a value of over \$100 or when value was not stated, 3 times first class. The Missouri Supreme Court holds that a shipment of rugs in bales at the first class rate could not be limited in case of damages to \$50 per bale; there being no alternative rate for shipment of rugs in bales for the shipper to choose, and consequently no consideration for his agreed limiting recovery.—*Der Doosian v. Atchison, T. & S. F. (Mo.)*. Decided April 9, 1918. Rehearing denied April 26, 1918.

Regulation of Grade Crossings

In view of art. 4, § 14, of Utah Public Utilities Act, repealing all acts or parts of acts inconsistent therewith, the Utah Supreme Court holds that the act provides the exclusive method of regulation, control, and license of the use of grade crossings by railroads regulated in art. 4, § 14, thereof. In view of the latter section, giving the commission exclusive power to prescribe manner and terms of installation, operation, maintenance, use, and protection of a crossing of a public road by a railroad, the commission had power, and it was its duty to act on an application of a railroad to cross a city street.—*D. & R. G. v. Public Utilities Comm. of Utah (Utah)*, 172 Pac., 479. Decided April 5, 1918.

Latitude in Providing Cars

The Arkansas Supreme Court holds that reasonable latitude should be accorded a railroad in providing the character of car in which to carry particular kinds of freight; but it would be wholly unreasonable to allow it to arbitrarily characterize a certain product as perishable, and exact that the shipper use the cars provided, if practicable to use some other character of equipment at a much less freight rate. It being practicable to ship a carload of apples from Russellville to Little Rock, Ark., a short haul of 50 to 60 miles, in a common box car, a plaintiff shipper, who demanded a box car for the shipment, but was forced to take an iced car at an additional rate, was held entitled to recover the additional rate paid by him.—*Missouri Pac. v. Fields Bros. (Ark.)*, 203 S. W., 1036. Decided May 6, 1918.

Supply Trade News

L. R. Boyer, formerly with the United States Bureau of Standards, has entered the service of E. & T. Fairbanks & Co., scale manufacturers, with headquarters at St. Johnsbury, Vt.

J. E. Flansburg, formerly in the traffic department of the Chicago & North Western, has been appointed traffic manager of the American Manganese Steel Company, at Chicago, Ill.

W. H. V. Rosing, formerly in the employ of the St. Louis-San Francisco, has become associated with the Globe Seamless Steel Tubes Company of Milwaukee, Wis., as assistant mill manager in charge of the engineering and mechanical departments.

P. A. Greene, for many years identified with the Gibraltar Manufacturing Co., manufacturer of the Gibraltar bumping post, has become connected with the Mechanical Manufacturing Co., Chicago, and will represent this company in the further introduction of the Ellis bumping post.

E. P. Dillon, manager, power division, of the Westinghouse Electric & Mfg. Co., at New York, has resigned to become general manager of the Research Corporation, New York. Mr. Dillon entered the service of the Westinghouse company in 1909, having been previously connected with various mining and electrical companies in Colorado. For several years he served as assistant to manager of the railway and lighting department, at East Pittsburgh. In 1917 he was transferred to the New York office as manager of the railway and power divisions.

The annual meeting of the Signal Appliance Association was held at the McAlpin Hotel, New York, on August 13. The secretary's report showed that there are now 53 members of the association. By unanimous resolution the officers, executive committee and committee men continue until the next annual meeting. The new constitution and by-laws which were drafted at the meeting held in Chicago last March were unanimously adopted. Under this new constitution the activities of the association are appreciably enlarged and immediately become more workable under war conditions. It was decided to send all baseball suits and kindred paraphernalia to the Ball and Bat Fund at Washington for use by our forces overseas. Further activities of the association have been suspended, subject to call at any time by the executive committee. The meeting was followed by a luncheon.

Trade Publications

FLEXIBLE SHAFT COUPLINGS.—Bulletin No. 26 of the Smith-Serrell Company, Inc., 90 West street, New York, issued recently, describes the construction and operation of Francke flexible shaft couplings of the heavy pattern type. Directions are given for size selection and installation.

WESTINGHOUSE INSTRUMENTS AND RELAYS.—The Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has issued a revised edition of catalogue 3-B, listing and describing Westinghouse switchboard, portable and precision instruments, ammeter shunts, transformers and relays. The catalogue contains 104 pages, 8½ in. by 12 in., and gives complete information about each instrument, describing the principle of operation and construction, as well as the work to which the instruments are especially adapted. Wherever possible each particular type of apparatus is listed on only one page and where more than one page is required the several pages are confined to a description and listing of only one particular type, so that it is not difficult to find desired information. Several new types of apparatus are listed for the first time in this edition.

ENGLISH RAILWAY WOMEN WORKERS to the number of 50 participated in a procession of homage before their King and Queen at Buckingham Palace on June 29.

Financial and Construction

Railway Officers

Railway Financial News

MISSOURI, KANSAS & TEXAS.—See editorial comments elsewhere in this issue.

READING COMPANY.—Drexel & Co. of Philadelphia are offering \$4,800,000 Reading Company's equipment trust 4½ per cent certificates, Series F, on a 6 per cent basis. The block of certificates now offered is the balance of an old issue of \$6,000,000, of which \$1,200,000 was paid off to July 1, 1918, leaving \$4,800,000 outstanding. Certificates to the amount of \$300,000 are due January 1, 1919, and each January and July thereafter until and including July 1, 1926.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company has completed plans for the construction of a new one-story power plant, 100 ft. by 100 ft., at Shopton, Ill.

The Santa Fe has secured the right-of-way for a line from Carrollton, Mo., to Moberly, 60 miles. The proposed construction of this line is part of a program which will provide the Chicago, Burlington & Quincy and the Atchison, Topeka & Santa Fe a joint low-grade line between Kansas City and St. Louis.

The Santa Fe has commenced the construction of extensive new freight and passenger terminal facilities at Tulsa, Okla.

CHESAPEAKE & OHIO.—This company has awarded a contract to the Arnold Company, Chicago, for the construction of additions to its shops at Huntington, W. Va., to cost approximately \$500,000. The improvements include a brass foundry, 55 ft. by 240 ft.; a blacksmith shop, 60 ft. by 288 ft.; an erecting shop, 113 ft. by 400 ft.; a transfer table pit, 72 ft. by 600 ft., and miscellaneous machinery and equipment which will be installed in the buildings.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to G. A. Johnson & Son, Chicago, for the construction of a seven-stall enginehouse at Bensld, Ill. The North Western will also build a frame, mechanical coaling station at that place.

ILLINOIS CENTRAL.—This company plans the construction of terminal facilities at Central City, Ky., including a 12-stall brick roundhouse with an 85-ft. turntable, a one-story brick power house and machine shop, a 100,000-gal. water tank of wood on a steel frame, two conveyor pits and a concrete stack.

LAKE ERIE & WESTERN.—This company has awarded contract to the Arnold Company, Chicago, for the construction of a 20-stall roundhouse and an oil house at Lima, Ohio, and a 10-stall roundhouse at Peru, Ind. The company also contemplates building a locomotive repair shop to take the place of the shops destroyed by fire at Lima, Ohio, some time ago. The location, however, has not yet been decided.

MICHIGAN CENTRAL.—This company has given a contract to the Walbridge-Aldinger Company, Detroit, Mich., for the construction of a boiler and tank shop for the repair of locomotives at Jackson, Mich. The building will be of brick and steel construction, 215 ft. by 270 ft., and will cost approximately \$355,000.

OREGON, CALIFORNIA & EASTERN.—This line has been completed and was recently put in operation between Klamath Falls, Ore., and Olene, 10 miles. Construction work is in progress on ten miles additional between Olene and Dairy.

PENNSYLVANIA RAILROAD, WESTERN LINES.—This company has awarded contract to the Walbridge Aldinger Company, Detroit, Mich., for the construction of an enginehouse and other engine terminal facilities at Canton, Ohio.

Railroad Administration

Regional

Martin J. Alger has been appointed executive assistant to A. H. Smith, regional director of the Eastern region, with headquarters at New York.

Federal and General Managers

J. E. Gorman, federal manager of the Rock Island Lines, has had his jurisdiction extended to include the Clinton & Oklahoma Western, effective August 1.

The authority of F. P. Gutelius, general manager of the Delaware & Hudson, with office at Albany, N. Y., has been extended over the Greenwich & Johnsonville and the Schoharie Valley.

E. P. Bracken, vice-president in charge of operation of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed general manager of that road and the Quincy, Omaha & Kansas City, with the same headquarters.

Phil Carroll, general manager of the Texas & Pacific and of the Louisiana Railway & Navigation Company (lines west of the Mississippi river), has had his jurisdiction extended to include the trans-Mississippi terminal, with headquarters at Dallas, Texas.

W. A. Webb, general manager of the Missouri, Kansas & Texas Railway of Texas, the Wichita Falls & North Western, the Ft. Worth & Denver Lines and the Houston & Texas Central, has had his jurisdiction extended to include the Abilene & Southern and the Union Terminal of Dallas, with headquarters at Dallas, Texas.

W. E. Maxson, general manager of the Gulf, Colorado & Santa Fe, the Ft. Worth & Rio Grande, the St. Louis, San Francisco & Texas, the Texas Midland and the International & Great Northern (from Spring to Ft. Worth, and the Madisonville branch) has had his jurisdiction extended to include the Ft. Worth Belt, the Ft. Worth Union Passenger Station and the Houston Belt & Terminal, with headquarters at Galveston, Texas.

A. G. Whittington, general manager of the St. Louis-Southwestern Railway of Texas, the International & Great Northern (excluding the line from Spring to Ft. Worth and the Madisonville branch) the Trinity branch of the Missouri, Kansas & Texas Railway of Texas, and the Beaumont & Great Northern, has had his jurisdiction extended to include the Galveston, Houston & Henderson and the Houston & Brazos Valley, with headquarters at Houston, Texas.

Operating

W. S. Campbell, manager and chief engineer of the Kentucky & Indiana Terminal, at Louisville, Ky., has been appointed general superintendent, with office at Louisville, Ky.

J. E. Long has been appointed superintendent of safety of the Delaware & Hudson, with office at Albany, N. Y.

J. H. Meyers, assistant terminal trainmaster of the Baltimore & Ohio, with office at Seymour, Ind., has been appointed superintendent of terminals, with office at Cincinnati, Ohio.

J. L. Lunsford has been appointed trainmaster of the Southern Railway, Appalachia division, with office at Appalachia, Va., vice S. H. Goodwin, resigned to enter military service.

W. M. Lynch, division superintendent of the Texas & Pacific, at Alexandria, La., has also been appointed superintendent of the Louisiana Railway & Navigation Company (lines west of Mississippi river) and the Trans-Mississippi Terminal, with headquarters at Alexandria.

E. W. Fowler, superintendent of transportation of the Chicago Great Western, at Chicago, has been appointed general superintendent of transportation, with the same headquarters, effective August 1.

C. H. Wood has been appointed supervisor of car service of the Southwestern region, succeeding **W. E. McGarry**, who has resigned to enter the service of the Terminal Railroad Association of St. Louis, effective August 1.

G. H. Hill has been appointed chief train despatcher of the Chicago, Milwaukee & St. Paul, Coast division, and the Tacoma Eastern, with office at Tacoma, Wash., vice **T. E. Coyle**, resigned to accept service with another company.

C. O. Bradshaw, general superintendent of the middle district of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., has been appointed terminal manager at Milwaukee, in charge of the terminal operations of all lines at that point, effective August 9.

Walter B. Pollock, deputy marine director of the Eastern Region, with headquarters at New York, has been appointed marine director of both the Eastern and the Allegheny regions, in general charge of the operation of all railroad owned floating equipment in New York harbor.

W. S. Cooper, assistant to the vice-president in charge of operation of the Chicago, Milwaukee & St. Paul, at Chicago, whose portrait and biographical sketch were published in the *Railway Age* on March 17, has been appointed assistant to the general manager of lines east of Moberg, S. D., effective August 1.

E. F. Marshall, trainmaster on the Denver & Rio Grande, Utah lines, at Helper, Utah, has been appointed assistant superintendent of the Green river division, with the same headquarters, in the place of **W. R. McPherson**, who has been given a leave of absence. **E. S. Wright** has been appointed trainmaster of the Salt Lake division, with headquarters at Helper, Utah, succeeding Mr. Marshall.

J. B. Arbogast, superintendent of terminals of the Louisville & Nashville, with office at Louisville, Ky., has been appointed terminal manager at Louisville, with jurisdiction over the terminals of all lines within the switching limits of Louisville, Ky., Jeffersonville, Ind., and New Albany, Ind. **H. W. Purvis**, division superintendent of the Seaboard Air Line, with office at Jacksonville, Fla., has been appointed terminal manager at Jacksonville, Fla., with jurisdiction over the terminals of all lines within the switching limits of Jacksonville.

L. B. Allen, general manager of the Chicago, Burlington & Quincy, lines east of the Missouri river, with headquarters at Chicago, has been appointed assistant general manager, with jurisdiction over the lines east of the Missouri river, with the same headquarters. **G. W. Holdrege**, general manager of the lines west of the Missouri river, with headquarters at Omaha, Neb., has been appointed assistant general manager, with jurisdiction over the lines west of the Missouri river, with headquarters at Omaha. **W. F. Thiehoff**, assistant general manager at Omaha, has been appointed assistant to the general manager, with the same headquarters. **L. B. Lyman**, assistant general manager at Chicago, has been appointed general superintendent of the Illinois district, which will hereafter include the Beardstown division, with headquarters at Galesburg, Ill. **F. L. Johnson**, general superintendent at Galesburg, has been transferred as general superintendent of the Missouri district at St. Louis, Mo.

G. J. Derbyshire, general manager of the Chesapeake & Ohio of Indiana, has been appointed general superintendent, with office at Peru, Ind., and the following officers of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Indianapolis, Ind., have had their authority extended over the Chesapeake & Ohio of Indiana: **R. R. Harris**, superintendent of freight transportation; **J. R. Cannagh**, superintendent of car service, and **C. S. Rhoads**, superintendent of telegraph.

The jurisdiction of the general officers of the Chesapeake & Ohio has been extended over the Ashland Coal & Iron Railway, the Sandy Valley & Elkhorn Railway, and the Long Fork Railway. **W. G. Brobeck**, has been appointed super-

intendent of the Ashland Coal & Iron Railway, with jurisdiction over all Ashland terminals, and office at Ashland, Ky., and **H. R. Laughlin** has been appointed superintendent of the Sandy Valley & Elkhorn and Long Fork railways, with office at Jenkins, Ky.

C. M. Barber has been appointed chief special agent of the Texas & Pacific, the Louisiana Railway & Navigation Company (lines west of the Mississippi river) and the Trans-Mississippi Terminal, with headquarters at Dallas, Texas. **O. B. Webb** has been appointed chairman of the central safety committee of the same roads, with headquarters at Dallas, effective August 1.

The following officers of the Texas & Pacific were appointed to the same or new positions on that road, effective August 1, with jurisdiction also over the Louisiana Railway & Navigation Company (lines west of the Mississippi river) and the Trans-Mississippi Terminal; **R. H. Gaines**, assistant general manager at Dallas, Texas; **W. H. DeFrance**, who was division superintendent at Ft. Worth, Texas, assistant to the general manager, at Dallas; **W. T. Long, Jr.**, assistant to the general manager at Dallas; **R. M. Seale**, superintendent of car service at Dallas; **Frank Tremble**, superintendent of telegraph at Dallas, and **S. D. Johnson**, superintendent dining car service at Ft. Worth.

Harley E. Folsom, whose appointment as general superintendent of the second district of the Boston & Maine, with headquarters at Lyndonville, Vt., has already been announced

in these columns, was born on January 14, 1850, in Lyndon, Vt., and was educated in the common schools. In September, 1870, he began railway work with the Connecticut & Passumpsic Rivers and from 1875, to 1887, was superintendent of the same road which was then leased to the Boston & Maine. He later served as division superintendent of the Connecticut & Passumpsic division, including the Connecticut River, Vermont Valley and Sullivan County Railroads. In 1901, he was elected president

of the St. Johnsbury & Lake Champlain, and in 1908 was elected president of the Vermont Valley, and four years later of the Connecticut & Passumpsic Rivers. On July 15, he was appointed general superintendent, second district, of the Boston & Maine as above mentioned, and resigned the presidency of the above named roads.

Financial, Legal and Accounting

J. M. Danner has been appointed auditor and local treasurer of the Abilene & Southern, with headquarters at Abilene, Texas.

Frank V. Whiting has been appointed general claims attorney of the Chesapeake & Ohio Railway of Indiana, with office at New York.

W. C. McLendon, treasurer for the Houston & Brazos Valley, at Freeport, Texas, has been appointed local treasurer of that road, with the same headquarters.

A. J. Biard, general auditor of the Texas & Pacific, at Dallas, Texas, has also been appointed auditor of the Trans-Mississippi Terminal, with the same headquarters.

L. S. Smith, local treasurer of the Texas & Pacific, at Dallas, Texas, also has been appointed local treasurer of the Trans-Mississippi Terminal, with the same headquarters.

T. C. Dunn, treasurer of the Houston Belt & Terminal, with headquarters at Houston, Texas, has been appointed local treasurer of that road with the same headquarters.



H. E. Folsom

O. W. Matthews, secretary and treasurer of the Ft. Worth Belt at Ft. Worth, Texas, has been appointed auditor and local treasurer of that road, with the same headquarters.

D. W. McLeod, auditor of the Gulf, Colorado & Santa Fe, has been also appointed auditor of the Ft. Worth Union Passenger Station, with headquarters at Galveston, Texas.

T. W. Mathews, assistant comptroller of the Seaboard Air Line, with office at Portsmouth, Va., has been appointed federal treasurer, vice Robert L. Nutt, resigned to accept service with the corporation.

A. S. Steirer, auditor of the Union Terminal of Dallas, at Dallas, Texas, has been appointed auditor of that road, with the same headquarters. **J. W. Everman** has been appointed local treasurer at Dallas.

A. R. Howard, local treasurer of the International & Great Northern, with headquarters at Houston, Texas, also has been appointed local treasurer of the Galveston, Houston & Henderson, with the same headquarters.

F. W. Meyer has been appointed auditor of the Oregon Short Line, with headquarters at Salt Lake City, Utah, succeeding **F. W. Charske**, who has resigned to enter the service of the corporation, effective August 5.

A. C. Torbert, local treasurer of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Texas, has been also appointed local treasurer of the Ft. Worth Union Passenger Station, with the same headquarters.

J. W. McCullough, auditor of the New Orleans, Texas & Mexico and the St. Louis, Brownsville & Mexico, with headquarters at Houston, Texas, has also been appointed auditor of the Houston Belt & Terminal, with the same headquarters.

W. J. Werner, auditor of the International & Great Northern, with headquarters at Houston, Texas, has had his jurisdiction extended to include the Galveston, Houston & Henderson and the Houston & Brazos Valley, with the same headquarters.

H. S. Buescher, general claim agent of the Texas & Pacific, at Dallas, Texas, has been appointed freight claim agent of that road, the Louisiana Railway & Navigation Company (lines west of the Mississippi river) and the Trans-Mississippi Terminal, with the same headquarters.

Thomas J. Ludlam has been appointed general auditor of the Long Island Railroad, with office at New York, vice **A. B. Bierck**, who has been assigned to duty as general auditor of another system of roads in the Allegheny region, and **F. W. Nichols** has been appointed auditor of receipts.

L. J. Hackney, general counsel of the Cleveland, Cincinnati, Chicago & St. Louis, has been appointed also general solicitor of the Chesapeake & Ohio of Indiana, with office at Cincinnati, Ohio, and **H. C. Starr**, assistant general counsel of the C. & O. of Ind., with office at Richmond, Ind., has been appointed assistant general solicitor of the same road.

A. B. Bierck has been appointed general auditor of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City, and the Port Reading Railroad, with office at Philadelphia, Pa., vice **W. H. White**, general auditor of the P. & R., resigned, and **F. M. Snyder**, general auditor of the C. & N. J., assigned to other duties.

Charles Ehlers, auditor of the Mississippi Central, at Hattiesburg, Miss., has been appointed federal treasurer, and **G. F. Tucker**, controller of the Gulf & Ship Island, at Gulfport, Miss., has been appointed general auditor of the Mississippi Central, the New Orleans Great Northern and the Gulf & Ship Island, with headquarters at Hattiesburg, Miss., effective August 1.

J. W. Terry, general solicitor of all of the lines originally placed under the jurisdiction of **J. S. Pyeatt**, federal manager, has had his authority extended to include the lines recently added to Mr. Pyeatt's jurisdiction, as follows: The Abilene & Southern, the Ft. Worth Belt, the Ft. Worth Union Passenger Station, the Houston Belt & Terminal and the Union Terminal of Dallas, with headquarters at Dallas, Texas.

George Thompson, general solicitor of all of the lines originally placed under the jurisdiction of **J. L. Lancaster**, federal manager, has had his authority extended over the lines recently added to Mr. Lancaster's jurisdiction, viz.: The Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Terminal. Mr. Thompson's headquarters are at Dallas, Texas.

L. F. Sullivan, general auditor of the Chesapeake & Ohio, with office at Richmond, Va., has had his authority extended over the Chesapeake & Ohio of Indiana; **J. A. Hancock**, local treasurer, with office at Richmond, Va., is now federal treasurer, and **J. P. Nelson**, valuation engineer and real estate agent of the Chesapeake & Ohio, with office at Richmond, Va., has been appointed also real estate agent of the Chesapeake & Ohio of Indiana.

W. W. Baldwin, vice-president of the Chicago, Burlington & Quincy, at Burlington, Iowa, has been appointed acting federal treasurer of that road and the Quincy, Omaha & Kansas City, with headquarters at Chicago. **H. D. Foster**, assistant general auditor of the Chicago, Burlington & Quincy, at Chicago, has been appointed general auditor of that road and the Quincy, Omaha & Kansas City, with headquarters at Chicago. **R. B. Scott**, general solicitor of the Burlington, at Chicago, has been appointed also general solicitor of the Quincy, Omaha & Kansas City, with headquarters at Chicago, effective August 9.

J. L. Cramer, secretary and treasurer of the Pere Marquette, has been appointed local treasurer of the same road, also the Grand Trunk, western lines, the Detroit & Toledo Shore Line and the Fort Street Union Depot Company, with office at Detroit, Mich.; **C. S. Sikes**, general auditor and **J. O. Talbott**, assistant general auditor of the Pere Marquette at Detroit, have been appointed to the same positions on all the above roads; **A. C. Rhodes**, auditor of station accounts of the Pere Marquette, at Detroit, has been appointed general accountant of all the above roads. The following appointments have been made on the Pere Marquette, Grand Trunk Lines: **Fred Horton**, auditor station accounts; **K. A. Karlson**, auditor disbursements; **Paul Heitmann**, assistant auditor disbursements; **A. J. Anderson**, auditor freight traffic; **C. E. Connally**, assistant auditor of freight traffic; **F. W. Niemann**, auditor passenger traffic and **H. F. Farrell**, auditor overcharge claims.

Traffic

H. K. Mack has been appointed supervisor of coal traffic from the Southern Illinois coal fields for the Southwestern region, with headquarters at Herrin, Ill.

C. J. Brister, traffic manager of the Cleveland, Cincinnati, Chicago & St. Louis, with office at Cincinnati, Ohio, has had his authority extended over the Chesapeake & Ohio of Indiana.

H. E. Shepard, formerly commercial agent of the Central of Georgia at Tampa, Fla., and later assigned to service on the line of the Central of Georgia, has been appointed commercial agent, with office at Macon, Ga., vice **H. R. McLean** transferred.

H. A. Koach, formerly assistant chairman of the Railway Ticket Protective Bureau, with headquarters at Chicago, has been appointed an inspector of passenger traffic of the Railroad Administration, with headquarters at Washington, D. C. His duties will be to investigate and prosecute railroad ticket scalpers and to handle other cases of misuse of passenger transportation.

J. B. Payne, traffic manager of all of the lines originally placed under the jurisdiction of **J. L. Lancaster**, federal manager, has had his authority extended to include the lines recently added to the jurisdiction of Mr. Lancaster, as follows: The Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Terminal. Mr. Payne's headquarters are at Dallas, Texas.

J. L. West, traffic manager of all of the lines originally placed under the jurisdiction of **J. S. Pyeatt**, federal manager, has had his authority extended to include the lines recently added to Mr. Pyeatt's jurisdiction, namely: The Abilene & Southern, the Ft. Worth Belt, the Ft. Worth

Union Passenger Station, the Houston Belt & Terminal and the Union Terminal of Dallas, with headquarters at Dallas, Texas.

P. S. Eustis, passenger traffic manager of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed also passenger traffic manager of the Quincy, Omaha & Kansas City, with the same headquarters. **George H. Crosby**, freight traffic manager of the Burlington, with headquarters at Chicago, has been appointed also freight traffic manager of the Quincy, Omaha & Kansas City, with the same headquarters.

Roy Bullen, general agent, freight department, of the Grand Trunk, having resigned and **T. C. Burgess**, commercial agent, having been assigned to other duties, **James Waugh** has been appointed commercial agent of the Grand Trunk lines in Canada, with office at Minneapolis, Minn. **C. J. Pierce**, manager of the National Despatch-Great Eastern Line, has been appointed general agent, freight department of the Grand Trunk lines in Canada, in charge of traffic to and from points in the New England states, with office at Boston, Mass. Mr. Pierce will continue to act as manager of the National Despatch-Great Eastern Line, in respect to the business that line handled prior to June 1.

W. W. Blakely has been appointed division freight agent of the Baltimore & Ohio, Pittsburgh division, Connellsville to New Castle Junction, including branches; Wheeling division, Moundsville to Holloway, including branches, with office at Pittsburgh, Pa.; **M. H. Jacobs**, general freight agent of the Western Maryland, with office at Baltimore, Md., has been appointed division freight agent of the Baltimore & Ohio—Hyndman to Connellsville, both inclusive, including branches; Green Junction to Montana, inclusive, and the Western Maryland—Frostburg to Connellsville, with office at Uniontown, Pa.; **H. C. Piculell** has been appointed division freight agent of the Baltimore & Ohio—Wheeling and Ohio River divisions south of Moundsville to Kenova, including R. S. & G. and R. M. & C. V. branches, with office at Parkersburg, W. Va.

Engineering and Rolling Stock

R. H. Clayton, relay inspector in the signal department of the New York Central, lines west of Buffalo, has been appointed signal inspector.

W. A. McGee has been appointed mechanical engineer of the New York Central, lines west of Buffalo, with headquarters at Cleveland, Ohio, vice **M. V. Bailliere**, resigned.

William F. Murray has been appointed master mechanic of the New Jersey Southern division of the Central of New Jersey, with office at Lakehurst, N. J., to succeed **William Montgomery**, retired.

H. C. Eich, superintendent of motive power of the Chicago Great Western, at Oelwein, Iowa, has been appointed general superintendent of machinery, with the same headquarters, effective August 1.

W. H. Vance, engineer maintenance of way of the St. Louis-Southwestern, has had his jurisdiction extended to include the Louisiana & Arkansas and the Illinois division of the Missouri Pacific, with headquarters at St. Louis, Mo.

J. G. Roney has been appointed assistant engineer of the eastern division of the Texas & Pacific, with headquarters at Marshall, Texas, and **M. S. Toops** has been appointed assistant engineer of the Rio Grande division at Big Springs, Tex.

Guy J. Congdon has been appointed supervisor of fuel of the Chicago Great Western, with headquarters at Chicago, effective August 1. Mr. Congdon had been previously employed in the perishable freight department of the Illinois Central, at Chicago.

M. L. Ford, assistant engineer of the Texas & Pacific, at Alexandria, La., has been appointed assistant engineer also of the Louisiana Railway & Navigation Company (lines west of the Mississippi river) and the Trans-Mississippi Terminal with the same headquarters, effective August 1.

B. L. Wheatley has been appointed superintendent of fuel economy of the Chicago, Rock Island & Pacific and the Chicago,

Rock Island & Gulf, with headquarters at Chicago, succeeding **H. Clewer**, whose appointment as regional supervisor of fuel conservation for the Pocahontas region was announced in the *Railway Age* on August 2.

A. W. Foscue, division engineer on the St. Louis-Southwestern of Texas, at Mt. Pleasant, Texas, has been appointed assistant engineer on the middle division, with the same headquarters. **W. T. Eaton** has been appointed assistant engineer on the southern division, with headquarters at Tyler, Texas, effective August 1.

B. L. Wheatley, master mechanic of the Chicago, Rock Island & Pacific and the Chicago, Rock Island & Gulf, with office at Fort Worth, Texas, has been appointed superintendent of fuel economy of the same roads, with headquarters at Chicago, vice **H. Clewer**, appointed supervisor of the fuel conservation section for the Pocahontas region.

W. L. Breckinridge, engineer maintenance of way of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed chief engineer of that road and the Quincy, Omaha & Kansas City, succeeding **A. W. Newton**, chief engineer of the former road, who has joined the staff of the Burlington corporation, effective August 9.

E. F. Mitchell, chief engineer of all of the lines originally placed under the jurisdiction of **J. L. Lancaster**, federal manager, has had his authority extended to include the lines recently added to Mr. Lancaster's jurisdiction, viz.: The Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Valley, with headquarters at Dallas, Texas.

A. C. Jessen has been appointed assistant engineer on the San Antonio division of the International & Great Northern, with headquarters at San Antonio, Texas. **T. S. Bond** has been appointed assistant engineer on the Grand division of the same road, on the Galveston, Houston & Henderson and the Houston & Brazos Valley, with headquarters at Palestine, Texas, effective August 1.

F. Merritt, chief engineer of all of the lines originally placed under the jurisdiction of **J. S. Pyeatt**, has had his authority extended to include the lines recently added to Mr. Pyeatt's jurisdiction, namely: The Abilene & Southern, the Ft. Worth Belt, the Ft. Worth Union Passenger Station, the Houston Belt & Terminal and the Union Terminal of Dallas, with headquarters at Dallas, Texas.

The following officers of the Cleveland, Cincinnati, Chicago & St. Louis have had their authority extended over the Chesapeake & Ohio of Indiana: **C. A. Paquette**, chief engineer, and **H. Baldwin**, assistant chief engineer, both with headquarters at Cincinnati, Ohio. **D. J. Mullen**, superintendent of motive power; **F. K. Murphy**, assistant superintendent of motive power, and **I. S. Downing**, general master car builder, the three latter with headquarters at Indianapolis, Ind.

A. P. Prendergast, mechanical superintendent of the Texas & Pacific at Dallas, Tex., has been appointed also mechanical superintendent of the Louisiana Railway & Navigation Company (lines west of Mississippi river) and the Trans-Mississippi Terminal, with headquarters at Dallas. **J. J. Carey**, general master mechanic of the Texas & Pacific at Dallas, also has been appointed general master mechanic of the Louisiana Railway & Navigation Company (lines west of the Mississippi river) and the Trans-Mississippi Terminal, with the same headquarters.

C. F. Womeldorf has been appointed assistant engineer in the capital expenditures division, of the Northwestern Region, with office at Chicago, and with jurisdiction over the roads in Illinois, Iowa, Missouri, Wisconsin and Michigan; and **T. G. Hastie** has been appointed assistant engineer in the capital expenditures division of the Northwestern Region, with office at Spokane, Wash., with jurisdiction over the roads in Montana, Idaho, Washington, Oregon; and also the roads in the remaining states under the jurisdiction of **H. M. Tremaine**, assistant engineer.

Robert Bruce Ball, whose appointment as chief engineer of the Atchison, Topeka & Santa Fe, Coast Lines, with headquarters at Los Angeles, Cal., was announced in the *Railway Age* on August 2 was born in Missouri on Decem-

ber 17, 1878. Mr. Ball was educated at Leland Stanford Junior University, graduating in 1904, and in June of that year he entered the service of the Atchison, Topeka & Santa Fe, as a transitman. In November, 1906, he was promoted to assistant engineer, and in January, 1910, he was promoted to division engineer. Two years later he was appointed engineer on the grand division at Los Angeles, Cal., which position he held until his promotion to chief engineer.

Purchasing

The authority of **W. J. Hiner**, purchasing agent, at Cincinnati, Ohio, and of **C. C. Dibble**, general storekeeper, at Indianapolis, Ind., of the Cleveland, Cincinnati, Chicago & St. Louis, has been extended over the Chesapeake & Ohio of Indiana.

L. N. Hopkins, purchasing agent of the Chicago, Burlington & Quincy and chairman of the regional purchasing committee for the Central Western region, has been appointed also purchasing agent of the Quincy, Omaha & Kansas City, with headquarters at Chicago.

R. L. Irwin, purchasing agent of all of the lines originally placed under the jurisdiction of **J. L. Lancaster**, federal manager, has had his authority extended to include the lines recently added to Mr. Lancaster's jurisdiction, viz: The Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Terminal, with headquarters at Dallas, Texas.

J. E. Anderson, purchasing agent of all of the lines originally placed under the jurisdiction of **J. S. Pyeatt**, has had his authority extended to include the lines recently added to Mr. Pyeatt's jurisdiction, namely: The Abilene & Southern, the Ft. Worth Belt, the Ft. Worth Union Passenger Station, the Houston Belt & Terminal and the Union Terminal of Dallas, with headquarters at Dallas, Texas.

Corporate

Executive, Financial, Legal and Accounting

B. H. Harris, vice-president and general manager of the Chicago, Milwaukee & Gary, with headquarters at Chicago, has been appointed executive vice-president to represent that company in its corporate affairs.

W. S. Wing has been appointed auditor for the receivers of the Denver & Salt Lake, with headquarters at Denver, Colo., succeeding **E. I. Grenfell**, who has resigned to become general auditor of the Colorado & Southern, effective August 5.

The corporate officers of the Gulf, Mobile & Northern are now as follows: **John W. Platten**, president, with headquarters at New York; **E. D. Hogan**, vice-president and auditor, with headquarters at Mobile, Ala.; **C. H. Murphy**, treasurer and **R. F. Brown**, secretary, both with headquarters at New York; **F. S. Coffin**, assistant secretary, with headquarters at Mobile, Ala.

Pearl Wight has been appointed sole receiver of the Texas & Pacific by the United States district court for the western district of Louisiana, succeeding himself and **J. L. Lancaster**, joint receivers. Mr. Lancaster recently resigned to become federal manager of several roads in the Southwestern region, as previously announced in the *Railway Age*. **C. L. Wallace**, assistant to the receivers, has been appointed assistant to the sole receiver. **M. D. Cloyd**, secretary and auditor of the Trans-Mississippi Terminal at New Orleans, La., has been appointed treasurer for the receiver of the Texas & Pacific, with headquarters at New Orleans, succeeding **L. S. Smith**, resigned to become local treasurer of the Texas & Pacific and the Trans-Mississippi Terminal for the United States Railroad Administration.

The corporate organization of the New York Central Lines, which system includes, besides the New York Central Railroad Company, the Michigan Central Railroad Company, and the Pittsburgh & Lake Erie Railroad Company, is now as follows: **C. M. Depew**, chairman (New York Central); **H. B. Ledyard**, chairman (Michigan Central); **J. M. Schoonmaker**, chairman (Pittsburgh & Lake Erie); **W. K. Vanderbilt, Jr.**, president; **A. H. Harris**, vice-president (Law De-

partment); **J. Carstensen**, vice-president; **D. W. Pardee**, secretary; **M. S. Barger**, treasurer; **H. G. Snelling**, assistant treasurer; **E. Freeman**, assistant treasurer; **G. A. Harwood**, corporate chief engineer; **F. H. Meeder**, supervisor of records; **H. M. Bassett**, engineer of roadway and structures; **A. E. Calkins**, engineer of rolling stock; **W. C. Wishart**, comptroller; **L. V. Porter**, assistant comptroller.

Operating

A. L. Holton, general freight and passenger agent of the Interstate Railroad, at Big Stone Gap, Va., has been appointed manager, with headquarters at Big Stone Gap. For the present, Mr. Holton will continue to discharge the duties of general freight and passenger agent.

Engineering and Rolling Stock

A. J. Witchel, assistant to the general superintendent of the Spokane & Inland Empire, the United Railways Company and the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been appointed chief engineer of the Spokane & Inland Empire and the United Railways Company, succeeding **A. M. Lupfer**, who remains chief engineer of the Spokane, Portland & Seattle lines under government supervision.

Railway Officers in Military Service

S. H. Goodwin, trainmaster of the Southern Railway, Appalachia division, with office at Appalachia, Va., has resigned to enter military service as first lieutenant in the railway engineering department of the United States Army.

J. K. Butler, freight traffic manager of the Oahu Railway & Land Company, with office at Honolulu, T. H., has been assigned to duty at Camp Funston, Kan., as captain. He is assistant to the camp quartermaster. Mr. Butler was formerly assistant general freight agent of the Southern Pacific, at San Francisco, Cal.

Obituary

Andrew J. Hitt, local freight agent of the Chicago, Rock Island & Pacific at Chicago, died in that city on August 8. Mr. Hitt was born at Ottawa, Ill., on January 31, 1849, and entered railway service in 1870. From that time until 1892, when he entered the service of the Chicago, Rock Island & Pacific, he was employed in the operating department of the Indianapolis & St. Louis, the Marietta & Cincinnati and the Minneapolis & St. Louis as brakeman, switchman, yardmaster, conductor and general yardmaster. Mr. Hitt was continuously in the service of the Chicago, Rock Island & Pacific for 26 years, having first been employed as superintendent of the eastern division, and later as assistant general superintendent of the lines west of the Missouri river, general superintendent of the entire system, and for a short time following April, 1902, as general manager. For the past 16 years he had been local freight agent at Chicago.

Augustus Mordecai, M. Am. Soc. C. E., for many years a civil engineer on the Erie Railroad, died at his home in Cleveland, Ohio, on July 28, at the age of 70. He was born in Philadelphia and was graduated from the Polytechnic College of Pennsylvania. He served for about a year as a rodmán in construction on the Dutchess & Columbia, now a part of the Central New England. He took part in the construction of the Connecticut Western, the St. Louis, Council Bluffs & Omaha (now a part of the Missouri Pacific) and the Pittsburgh, Virginia & Charleston (now a part of the Pennsylvania). In 1872, Mr. Mordecai went to Cleveland as division engineer in charge of maintenance on the Atlantic & Great Western (now a part of the Erie). For 20 years he remained in Cleveland, associated with the Erie, filling various positions and he was with that road for most of the time until 1906. Since 1909, Mr. Mordecai had been active in Cleveland as consulting engineer, notably in connection with the Belt Line around Cleveland. He had participated in valuation work on the New York Central, the New York, New Haven & Hartford, the Lehigh Valley, the Canadian Pacific and the Detroit United (street) railways. He was a member of the board of directors of the American Society of Civil Engineers in 1895-1897.

EDITORIAL

Railway Age

LITERIAL

For years the technical journals and associations of various kinds have been preaching fuel conservation and methods for obtaining the most work from a pound of fuel. Countless books and articles have been written on the subject. We do not lack for information.

The Real Secret of Fuel Economy

We do, however, lack in *execution*. A real, energetic and widespread propaganda to this end must be carried on throughout this country. On railroads in particular the economies to be effected are tremendous. A small percentage saved there means much to the country at large. The Railroad Administration has appointed fuel supervisors to assist in this great work. Absorb their enthusiasm. Put their suggestions into practice. Pass their messages along. There is not one who cannot do something to save coal. Results will only be obtained by everybody putting their shoulders to the wheel.

What if the railroads should fail in carrying the heavy traffic under the severe weather conditions that will confront them next winter? Will Director General

Are You Ready for Next Winter?

McAdoo, or the Railroad Administration, accept the responsibility for the failure? Hardly. Suppose, for instance, that there should be a shortage of power, or that the condition of the freight cars should be so bad that they cannot meet the service requirements. Will the mechanical officers not be pointedly reminded that they were warned last spring and asked to get the equipment into first class condition? If these officers have not done all they could to repair the equipment and, where it was possible, modernize it and increase its capacity, what excuse will they have to offer? There are sins of commission and sins of omission. The latter are sometimes overlooked and unnoticed, but hardly on the railroads in the present crisis. Twelve weeks or more remain before winter will be upon us. There is still time to do much in putting the equipment into better condition. If you cannot get labor or material put it up to the Railroad Administration and ask for help. It is strictly up to you to be a positive factor and do your full part.

Through Supplement No. 4 to General Order No. 27 the Railroad Administration has dealt most generously with railway shop labor. It has been deemed necessary to grant the men

Labor in the Mechanical Department

increases which may prove reactionary if extreme care is not taken. With a general increase of about 30 per cent added to already increased rates and with back pay coming from about eight months' work, the shop employees will receive what to them will be a large sum of ready money. Whether they receive such an increase in prosperity without a relaxation in their efforts depends much upon the manner in which this increase is given. This advancement of wages will make and has made railway work more attractive to the laboring world. It should make possible the obtaining of sufficient men properly to man the shops. It will tend, on the other hand, to increase absences from work. The manner in which the increases have been apportioned also ma-

terially decreases the stimulus of production through piece work. It will be necessary to increase the discipline to counteract these two evils. The men must be made to realize now as never before, the importance of their work in winning the war. If they do not respond there is the danger of conscription of the labor forces which none of us want, but which the public will demand if production can not be obtained in any other way.

The grouping of two or more railroads under one federal manager has resulted in economies in some instances,

Compensation for Railway Officers

through the elimination of duplicate officers, and in most cases it may be said that this has been accomplished without undue hardship to the men relieved. In many instances they have been offered places made available through a series of demotions but usually they have secured other positions readily because of the present urgent demand for men of all classes who have a faculty for doing things. When, however, an attempt is made to standardize the salaries of corresponding positions on several roads grouped under one management by paring down the higher salaries, hardship, loss of spirit, and general dissatisfaction will be engendered to a degree that is entirely out of proportion to the savings in salary. An instance has recently been called to our attention where two division engineers of over 30 years' service, each receiving \$200 a month have had their salaries reduced to approximately \$150 a month because that was the rate paid to similar men on another road placed under the same federal management. This reduction was put into effect without any change in the duties or responsibilities of the men involved. This ignores the fact that repeated advances in wages to certain classes of employees have so reduced the spread between compensation to these employees and the officers that many men after long years of earnest effort find that they are receiving scarcely more compensation than a locomotive fireman after six months' service. Assuming that the two men referred to were worth the \$200 a month to the road which employed them, the reduction which they now suffer is surely a grave injustice. Decreases in pay in the face of the unprecedented advances in living expenses will dampen the ardor of the stoutest heart, and in these days when the railroads need the best that is in their officers, any measure that will tend to kill a man's enthusiasm or destroy his love for his work should be considered very carefully before it is adopted.

It is greatly to be regretted that Director General McAdoo in emphasizing the necessity for courtesy toward the public

An Unfortunate Expression

on the part of the railway employees should have revived the unfortunate expression, the "public be damned." Possibly he did not intend to have it stand out in his message as it does, and doubtless he overlooked the fact that the newspapers would not miss the opportunity of featuring it in their headlines. Railroad officers have worked hard and faithfully for years to gain the confidence of the public and to live down the

reputation of an attitude which in most cases was undeserved even in the early days of the Vanderbilts. It is not unreasonable to suppose that there would be numerous complaints on the part of the public because of the many curtailments that have been made in railroad service. The Railroad Administration rightfully has done all it consistently could to discourage passenger travel in order to make room for the enormous increase in freight traffic. The railroads have been operated shorthanded and under great difficulties. Magnificent as has been the attitude of the American public in adjusting itself to war conditions it has been a slow process. The public has had to be shown that reduced service was necessary, and in many cases it has been impatient and harsh in its judgments during the process of readjustment—a certain part of the public will find pleasure in filing complaints in Washington at any time and under any circumstances. Meanwhile the unfortunate expression mentioned above will not be at all helpful in upbuilding and strengthening the morale among railway officers and employees. A quiet investigation of the complaints and the discharge of the offenders if found guilty would be much more effective, particularly if coupled with a "Public be Pleased" campaign.

Waste of Man-Power

ONE OF THE MOST DIFFICULT and unpleasant parts of a railroad executive's work was to be continually on the lookout for small leaks. Every railroad man is familiar with the numerous devices which were adopted in an attempt to make general rules which would automatically prevent waste. The rule that some roads had that no new man could be put on the payrolls without endless red tape was designed for this purpose, although it often acted in just the opposite way and useless men were kept on the payrolls because of the fear that they might later be needed and then permission could not be obtained to add a new name. It was, of course, money waste which the executives' efforts were bent upon preventing but no set of rules was an effective substitute for continual individual supervision and earnest thought and care.

Now, under the government regional organization, there is a tendency on the part of every one, officers as well as employees, to lay less stress on the necessity for saving money. This ought not to be so, but it is a fact. There is a real danger that sufficient stress will not be laid upon the fact that conservation of man-power is just as vital to the needs of the country and the proper and effective operation of the railroads as was the necessity for economy to the profitable operation of the railroads for the stockholders. The same loyalty to the man who pays the salary which compelled minute and constant efforts to prevent small wastes under private operation ought now to inspire the railroad officer to bend every effort to save man power for the government which is paying his salary.

In the same way that it was the railroad executive who bore the heaviest part of this burden of preventing small wastes, so now it will be the regional directors and the Railroad Administration which will have to bear the heaviest part of this unpleasant burden. Every new suggestion ought to bear as careful scrutiny now to see if there is waste of man-power in it as did a new proposal formerly to see if there was waste of the stockholders' money. All existing stationery and forms now have to be stamped or printed showing the Railroad Administration superimposed on the particular railroad company using the paper or forms. This may have been necessary but it is one of those things which should be undertaken only after the most careful consideration, for in it lies a large consumption of man-hours for which the justification is not obvious. There are literally thousands of

other chances for waste which might be mentioned but they are familiar to every railroad officer. It is natural when a new general manager takes possession of a set of offices for him to want to have them rearranged to meet his particular requirements; but with the extensive changes which are being made under government control and the great shifting about of organizations, there will be a rather appalling waste of carpenters' work if no attempt is made to utilize the facilities which are already in existence. And so on *ad infinitum*.

The Railroad Administration and the regional directors themselves will of necessity have to set an example in this respect if they hope to be successful in inculcating the proper spirit of man-hour saving in their subordinates.

Improvement Program Badly Delayed

THE FACT THAT ONLY 25 per cent of the five hundred million dollars authorized for Additions and Betterments had been spent on June 30 is not surprising to railway men conversant with conditions. At the same time it is an indication that only a part of the improvement work now under way will be completed in sufficient time for the roads to gain the benefit from it this winter. This is not an encouraging outlook in view of the marked need for increased facilities, and particularly engine terminal facilities, which was so evident last winter. The unusually limited progress which is being made this year is the result of a number of conditions, some of which are common to all forms of construction work. The shortage of labor and the difficulty and delay in securing materials are retarding all building construction and even if these were the only difficulties, work would be seriously delayed.

However, the centralization of control has contributed largely to the delay in the prosecution of improvement work on the railways. Following the taking over of the roads by the government, construction work was consolidated under the Division of Capital Expenditures at Washington, and it has since been necessary to secure authorization from this bureau before work of any magnitude can be undertaken. While this was a necessary step to co-ordinate the railway construction needs of the different properties in order to give preference to those most urgent from the standpoint of the roads as a whole, it resulted in delaying the opening of the work for several weeks in the spring while the roads were preparing budgets and securing approval from the regional directors and the Division of Capital Expenditures. The result was that in spite of the pressing need for improvements and the importance of starting work at the earliest practical date, relatively little work was authorized until May, and two months of the construction season were largely lost. As a matter of fact a relatively large amount of work is even now being placed under contract at this late date.

Another result of centralizing the responsibility for improvement work in Washington has been the natural tendency on the part of the men on the individual roads to leave the pushing of the work of this character to the central organization. To check this tendency the Division of Capital Expenditures and the regional directors are now creating inspection forces which will keep their respective offices in touch with the progress being made on the different projects and enable them to apply the pressure formerly applied by the local managements. In view of the pressing need for the facilities and the unusual difficulties confronting construction work of all kinds in addition to that inherent in the present railway situation, it is to be hoped that every railway man having to do with work of this character will exert his maximum effort to push the work to the earliest possible date of completion.

Private Enterprise or State Socialism?

THERE IS GOING to be a "war after the war" in the United States. It will take the form of a struggle over the question whether the American system of private enterprise in industry is to be continued, or the Prussian system of state socialism is to be substituted for it. Every day some new proposal for government ownership and operation is put forward.

Such proposals are of more or less importance according to the prominence or prestige of those who make them and the publicity they receive. If any or all of the members of the Federal Trade Commission should advocate some socialistic scheme in their individual capacities it would be of no consequence, since the Commission is composed of men whose unofficial views are of no moment. When, however, the Commission in a report recommends government ownership and operation of large properties the recommendation derives importance from its official character. The Commission has found, or thinks it has found, that the five large meat packing concerns have got the producers and consumers of livestock at their mercy because they have acquired control of the market for livestock and of the marketing facilities, and to some extent, of the rolling stock which transports livestock to market. In consequence it recommends permanent government ownership and operation of the "principal and necessary stockyards of the country," of "all privately owned refrigerator cars and all necessary equipment for their proper operation" and of "such of the branch houses, cold storage plants and warehouses as are necessary to provide facilities for the competitive marketing and storage of products in the principal centers of distribution and consumption." These various facilities, the Commission recommends, shall be acquired through and operated by the Railroad Administration. The Railroad Administration is a temporary agency created to operate the railways during the war. How the Commission would have the stockyards, refrigerator cars, etc., operated after the Railroad Administration has ceased to exist it does not indicate.

It would appear that the Commission proceeds on the assumption that government operation of the railroads is to be permanent. The government has taken over the telegraph and telephone systems, and Postmaster General Burleson, who has been put in charge of them, apparently is proceeding on a similar assumption. Various persons and newspapers of some influence are vigorously and persistently advocating government operation of all coal mines and steamship lines.

There is hardly an argument which has been or can be advanced for government operation of railways, telegraphs and telephones, stockyards, coal mines, steamship lines, etc., which can not be advanced for government operation of other large industries. The *Railway Age* is especially interested in the issue of private versus government operation of railways. The recommendations made by the Federal Trade Commission are, however, but one of many illustrations that the railroad question is merely a part of the much larger question of private enterprise versus state socialism.

In the emergency of war the federal government, for more or less substantial reasons of national defense, has assumed the operation of some industries and adopted rigorous control of others. Even the western farmers, in spite of their great political power, have not escaped; they have had the price of their wheat fixed. Once the government has taken over the operation or control of any industry it is always easy to find reasons why operation or control by it should be continued. Already from the experience of war there are being drawn arguments in favor of extending the application of government measures into the time of peace.

The situation which has developed is curious. The advocates of government ownership, most of whom are socialistic

in their tendencies, and many of whom have been mixed up in pacifist and pro-German propaganda, are trying, from our experience with government activities during the war, to draw arguments in favor of state socialism after the war. The owner of the largest group of newspapers and magazines in the United States is through these publications vigorously advocating state socialism. The attorney general of the state of New York recently alleged he had evidence that on at least one occasion Bolo Pasha, recently executed by the French government as a traitor, and Count von Bernstorff, who was then the German ambassador to this country, met at the home of this particular publisher. On the other hand, many individuals and publications whose patriotism in the past has been beyond question are now refraining from criticising Government activities during the war and from drawing from them conclusions adverse to government management because they fear it would be charged that the utterance of such criticisms and the drawing of such conclusions were unpatriotic.

Doubtless it would be far more desirable from the standpoint of both war and peace for the American people to settle their questions of war in time of war and defer the settlement of their questions of peace until the return of peace. But the question of what kind of economic and industrial system we are going to have in this country after the war is second in importance only to the question of what means we must use to win the war. Therefore, when it appears that some are deliberately trying to use the war emergency to promote socialistic projects, and when the advocates of state socialism persist during the war in advocating their system for both war and peace, it becomes not merely inexpedient, but absolutely unpatriotic, for the opponents of state socialism to refrain from weighing and discussing even important war measures with a view not only to their working during the progress of the war, but also to the effect which the way they are now carried out may have on conditions after the war.

There is one significant feature of the Federal Trade Commission's report which seems to have been generally overlooked. This is that in very large measure it is a condemnation of the Interstate Commerce Commission. A large, and probably the larger, part of the power the Trade Commission alleges has been acquired by the packers is due to their control and operation of live stock cars, refrigerator cars and terminal railroads. Now, for years the Interstate Commerce Commission has had control over these facilities by the exercise of which it could have adequately protected the railway companies and the producers and consumers of live stock. Therefore, if the packers have been allowed to so use these facilities as to injure the public it has been due to the inactivity of the Interstate Commerce Commission. Certainly, the fact that the harm which has been done by the packers—if, indeed, harm has been done by them—could have been largely prevented if an important government body had exercised the authority it possessed can hardly be construed into an argument for giving greater authority to another government body.

The *Railway Age* holds no brief for the packers. They have never been, in our opinion, distinguished by philanthropy in their treatment of the railways or the public. At the same time, we are constrained to express the opinion that most of the report of the Federal Trade Commission, and especially that relating to transportation facilities owned by the packers, is tommy-rot of just the kind that might have been expected from a commission that would employ Francis J. Heney as its chief investigator; that its recommendations are simply a part of the general movement for state socialism in this country; and that they have no importance except as a part of that movement. The real question is not whether the government shall become owner and manager of the stockyards, private refrigerator car lines and other properties of the packers, but whether in these, as in other lines,

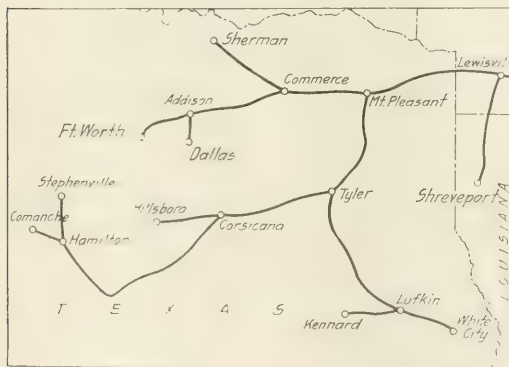
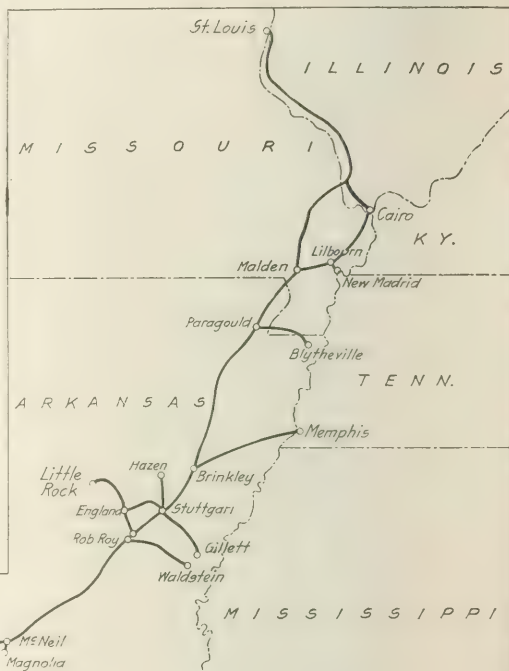
the principle of state socialism, which has been exemplified on the largest scale in Germany, shall or shall not be substituted in the United States for the principle of private enterprise the application of which has been most largely exemplified in this country.

There are many persons who believe that the government is incompetent successfully to regulate private enterprise but is competent to manage large industries. There are many other persons who believe the government, so long as this country remains a democracy, can not be made competent to manage large industries, but that it is competent to regulate private management of large industries and that this is its proper function. Let us hope that we shall not, from the motive of false patriotism, allow the country to become so far committed to state socialism during the period of the war that it will be rendered unable to withdraw from it after the war.

St. Louis Southwestern

IT IS VERY RARE to find a road which has increased its average train load by 100 tons in a single year, but the comparatively few instances where this has been done are for the most part coal roads or roads already having a large average train load. The St. Louis Southwestern's increase in train load in 1917 was remarkable because of the very high percentage which the increase represented. On the St. Louis Southwestern, outside of Texas, the average train load in the calendar year, 1916, was 486 tons; in 1917 it was 617 tons, an increase of 131 tons, or 27 per cent. Although the traffic was diversified, it was not apparently any better balanced. Thus, the number of empty cars per train was 7.82 in 1917 as against 6.69 in 1916, and the percentage of northbound tonnage in 1917 was 59.77 and of southbound

especially transportation expenses in the face of the increases in wage scales and unit costs of fuel. In 1917, the Cotton Belt earned \$17,310,000, an increase of \$3,459,000 or just about 25 per cent over 1916. The total number of passengers carried was 3,059,000, an increase of 14 per cent, but the average length of passenger journey was over 43 miles as compared with less than 37 miles in 1916, so that the number of passengers carried one mile increased over 31



The St. Louis Southwestern

tonnage 40.23, while in 1916 the percentage of northbound was 56.18 and of southbound 43.82. The Cotton Belt received 21 locomotives during the year; 8 of them superheated 10-wheel locomotives and 12 superheated Consolidations. The total increase in the tractive power at the end of 1917 as compared with the end of 1916 was 11.11 per cent.

The Texas lines were not able to make quite as good a showing in increasing train load, the average in 1916 being 251 tons and in 1917 286 tons; but an increase of 14 per cent is a thoroughly creditable showing.

The real achievement made in increasing the train load was presumably responsible in considerable part for the results obtained in holding down operating expenses and

per cent. The rate received per passenger per mile was 2.48 cents, a decrease of about 3 per cent. The total number of tons of freight carried one mile was 1,271,000,000, an increase of 33 per cent.

With these very large increases in the amount of business handled, operating expenses amounted to \$10,897,000, an increase over 1916 of only 17 per cent. Maintenance of way expenditures were increased by 9.68 per cent and maintenance of equipment by 13.48 per cent. The out-of-pocket cost of handling the business (transportation expenses) amounted to \$5,031,000, an increase of 24.25 per cent. This is an extraordinarily fine showing. More economical and efficient operating methods are indicated by almost all of the detailed figures for transportation expenses. Thus, engine service expenses, which include enginemen's wages, water, fuel and lubricants for locomotives, amounted to \$1,857,000, an increase of \$311,000; but of this increase \$106,000 was in enginemen's wages which could not have been far from the added burden of increased wage scales, and \$155,000 was increase in cost of fuel for train locomotives.

Prior to 1916, the St. Louis Southwestern had been allowed to get in rather bad shape, especially in regard to repairs of equipment, and, furthermore, the morale of the operating organization was probably somewhat disturbed by the conditions existing in the general offices. When J. M. Herbert took hold of the property late in 1915, there were a number of conditions which required immediate attention and vigorous

and decided action. In 1916, the showing made in overcoming these conditions was excellent. The drastic program of rebuilding freight cars had been undertaken and was well under way. The decision shown in attacking problems that were left over from the years previous, did wonders toward toning up the morale of the officers and employees and the results obtained in 1917 are really as much attributable to the fearless handling of the situation in 1916 as they are to improvement in conditions in 1917.

In 1917 there was a total of \$1,204,000 spent for additions and betterments to road, and \$257,000 for additions to equipment. The only financing which the company had to do was in connection with its share of the building of the Arkansas & Memphis bridge and terminal. The outstanding bonds of the St. Louis Southwestern were decreased during the year by the purchase of \$670,000 first consolidated mortgage bonds under the sinking fund plan and the payment at maturity of \$118,000 series E equipment bonds and the payment before maturity of \$690,000 of these equipment trust bonds and the paying off of small amounts of other bonds.

The Arkansas & Memphis is a company formed to build a bridge across the Mississippi River at Memphis, Tenn. The company is owned jointly by the Chicago, Rock Island & Pacific, the Missouri Pacific and St. Louis Southwestern. There were \$6,000,000 Arkansas & Memphis first mortgage bonds issued but conditions were such that these bonds could not be sold on any reasonable basis and they were, therefore, deposited as security for \$5,000,000 three-year 6 per cent notes. These notes were sold and in addition each one of the three proprietary companies advanced \$170,000 to the bridge company. The notes fell due on January 1, 1918, and the three proprietary companies re-financed the bridge company by taking \$836,000 stock and \$1,250,000 bonds of the bridge company; to carry out its share of this program the St. Louis Southwestern had to borrow \$1,227,000. The balance sheet on December 31, 1917, shows this amount under loans and bills payable, but since the close of the calendar year \$562,000 has been paid off on this loan, so that there remain only \$665,000 bills payable. On December 31, 1917, there was \$1,295,000 cash on hand.

The St. Louis Southwestern is in a rather peculiar situation as regards making its contract with the government. In at least one of the three years which are to be taken to make the average standard return which the government is to pay as rental, the conditions on the St. Louis Southwestern were such that the accounts for that year probably do not reflect accurately the facts. Furthermore, the expenditures necessitated in 1916 were due to extraordinary causes for which it would hardly seem to be in keeping with the spirit of the President's proclamation, taking over the roads, to penalize the St. Louis Southwestern stockholders. The company is now negotiating with the government in regard to the contract and it may have been that the council report was held up until this rather late date with the hope that negotiations would have been brought to a close.

The following table shows the principal figures for operation in 1917 as compared with 1916:

	1917	1916
Average mileage operated.....	1,754	1,754
Freight revenue.....	\$13,066,975	\$10,369,943
Passenger revenue.....	3,844,990	3,579,364
Total operating revenues.....	17,911,965	13,949,307
Maintenance of way and structures.....	1,777,729	1,620,812
Maintenance of equipment.....	2,915,460	2,569,125
Traffic expenses.....	564,420	546,912
Transportation expenses.....	5,031,343	4,049,331
General expenses.....	590,452	536,503
Total operating expenses.....	10,896,860	9,318,306
Taxes.....	1,075,096	615,814
Operating income.....	5,939,371	3,915,684
Gross income.....	7,159,500	5,438,929
Net income.....	3,873,458	2,222,165
Amortized sinking funds.....	112,860	112,860
Appropriated for investment and physical property	971,348	132,580
Surplus.....	2,489,208	2,083,525

Letters to the Editor

The Proposed Amalgamation of Railway Associations

NEW YORK.

TO THE EDITOR:

I have read with a great deal of interest the editorial in your issue of August 2 on "The Proposed Amalgamation of Railway Associations" and I wish to endorse most heartily everything which you have said and to congratulate you on the way you have said it.

In response to a circular sent out by the American Railway Engineering Association I have already registered a protest against an amalgamation which will tend to destroy the individuality of these associations and especially one, as you point out, which may eliminate from membership all those who are not actually or actively connected with the railways of the United States.

I myself have not been actively connected with a railway organization in the United States, except in a consulting capacity, for over 10 years, but I feel that I have received more benefit from my membership in the American Railway Engineering Association than I can well express, and it would not only be a matter of regret to me to have this association severed or its usefulness reduced in any way, but would also lessen my own efficiency by eliminating one of the most important means of keeping in touch with current practice and developments, which I may need to apply in foreign countries.

F. LAVIS,
Consulting Engineer.

The Virginian Air Brake Tests

PITTSBURGH, Pa.

TO THE EDITOR:

Having read with much interest the article in the July 26 issue of the *Railway Age*, describing the 100-car freight train test of Automatic Straight Air brakes on the Virginian Railway and having received a number of inquiries from railroad officials regarding them and the comparisons made with Westinghouse brakes, I trust that—inasmuch as half of the tests at least were conducted for comparison with equipment manufactured by the Westinghouse Air Brake Company—you will favor me with the opportunity of offering a few observations, based on the comparisons mentioned.

Concurring in the expression of your representative to the effect that "Undoubtedly, the most important consideration in estimating the value of any device having to do with train control is the degree of safety of train operation attending its use. A braking system, to be highly successful, must be capable of retaining the train constantly under a control which not only provides against the loss of life, but also protects the equipment and lading in the train from damage in the face of any situation which reasonably may be expected to arise"; it must be recognized that in order to obtain these results, certain fundamental principles which are absolutely essential must be inherent in the design of such device. Furthermore, taking into consideration that there are over two million freight cars in the United States and Canada, it is essential that any new equipments or improvements over the existing equipment must interchange in a way that, if they do not increase the efficiency thereof or improve upon existing performance, they will at least not reduce this performance to one less satisfactory than at present.

It will also be recognized that to the "degree of safety" factors must be added those factors which will permit of flexible control of the brake and consequent non-interference with transportation since the capacity of a railroad is dependent very largely upon the degree of flexible operation of the brake equipment.

Without any desire to criticize the report or attempt to draw your representative into any extended discussion on the comparative merits of the two forms of brakes tested, there are certain results recorded for which no explanation appears to be made and as the Westinghouse equipment was used as a basis of comparison it seems to me that until a more complete analysis of the performance of the brake is made the reasons for the results obtained must remain more or less obscure to the reader.

If my understanding of the report is correct, there were three break-in-twos going down the grade between Princeton and Rich Creek and two stalls, over a distance of fifteen miles, and another break-in-two between Roanoke and Victoria, to say nothing of the additional break-in-twos that occurred east of Victoria.

There does not appear to have been more than one run made over this grade and none with the train equipped with all Westinghouse brakes, but suffice it to say that if occurrences of the kind reported were common practice, the railroads of this country would be seriously handicapped, especially over grades such as exist on Western roads or on the Eastern slope of the Allegheny mountains, where frequency of trains or headway is so close that trains are almost a continuous line.

The importance of "Retaining trains constantly under a control which not only provides against the loss of life, but also protects the equipment and lading in the train from damage" has long been recognized by air brake manufacturers and the efforts of the best railroad as well as air brake engineering talent in the country has been drawn on for years in an endeavor to accomplish the result desired and in the most practical way.

Let I be misunderstood regarding the graduated release, quick release and brake cylinder maintenance features of which much is claimed for the ASA brake, permit me here to mention the fact that these features have been embodied in a number of earlier forms of brake devices brought out by patents, for example of Baxter, Sauvage, Turner, Dukesmith, Goodnight, Sinclair, Dixon, Guillemet, Chapas, McElroy, Normand, Krimmelbein, Marsh, Williams, Moore, Riggs and others. (In fact, the cylinder pressure maintenance feature was one of the first patents taken out by George Westinghouse), and while many of the aforesaid features were attractive and spectacular in test rack demonstrations, they developed the same lack of flexibility and successful performance when placed in service as were demonstrated by the number of break-in-twos and stalls that took place in the tests mentioned.

The results obtained were quite natural, for the reason that the physical conditions which limit the flow of air through piping, the time element which is governed by the laws of nature, and the mechanical limitations (not to speak of the cost of apparatus) are such as to prohibit the incorporation of these features in long train service without the necessarily unavoidable break-in-twos and stalling of trains such as occurred. In passenger service where the trains are of shorter length these features have been worked out to a practical state of development and are, therefore, operating satisfactorily in every day service at the present time.

There are quite a number of points in the article bearing on both the ASA and the Westinghouse equipment on which further enlightenment would be of interest and which will possibly be brought out in more detail in the report of the Interstate Commerce Commission. One additional point might be mentioned, however, and that is with reference to the

relative amount of air required for the two air brake systems in question. On the single grade test mentioned a locomotive was used on which two new 8½-in. cross compound compressors (300 cu. ft. displacement) were installed just prior to making the run. Whether this capacity is required for the ASA brake is not brought out, but it is certainly not necessary for the Westinghouse equipment, with which trains of similar length are being handled every day in similar service with a single cross compound compressor or even a single 11-in. compressor (66 cu. ft. displacement). Further information on this point would be of interest to ourselves and possibly to your readers as well.

Before closing I wish to take this opportunity of stating that from our long experience as air brake manufacturers no one has recognized more than have we the desirability of some improvements in brake equipment to meet changed conditions in train operation since the present recognized standard equipment was developed. As is known by many railroad officials such an equipment has been developed, but owing to the financial condition of the railways for the past few years, the introduction or demonstration of such devices has been discouraged. It is, therefore, very gratifying to know that the government has now taken cognizance of this important question, and with the assurance that an equipment accomplishing these many desired features is ready for a demonstration, I am in hopes that an opportunity will be afforded for conducting tests in actual service which will not be confined to a *single trip down a hill*, but cover the entire range of representative train operation, and with the equipment in average every day working condition.

A. L. HUMPHREY,

Vice-president, Westinghouse Air Brake Company.

Comparison of Chinese and Japanese Railways

WASHINGTON, D. C.

TO THE EDITOR:

There are a few corrections which should be made in the report which appeared in your issue of June 28, 1918, of the remarks which I made at the National Foreign Trade Convention at Cincinnati last April.

At the top of page 1568 I am quoted as saying, "Manufacturing in Japan is typically along the line of private manufacturing." This should read, "Manufacturing of railway materials in Japan is typically along the line of fostered and protected private manufacturing."

In the first paragraph under "The Japanese in China," on page 1568, the words "Thiazin color" should read "Fushun collieries."

Near the bottom of the second column on page 1568 the statement appears that "There is 152 miles in a branch from Harbin to Chang Sha." The latter city should be Changchun. There is a city named Chang Sha, but it is 1,500 miles from Harbin.

The first paragraph under "Chinese Railways Lightly Equipped," on page 1569, contains the statement that "there is ¾ of a goods car per mile of line in China." This should read, "three and a quarter goods cars per mile of line," and compares with 7.6 goods wagons in Japan, 9.8 freight cars in America, and 17½ goods wagons in Germany; all larger than the Chinese goods wagons.

The first full sentence in the second column of page 1569 should read, "This restricting loan control is losing its effect to a certain extent by the amortizing of the loans and the Chinese gradually taking hold of it, but that has a long time to run and they are needing all the earnings which they have to put back into property to take care of the constantly growing business."

FRANK RHEA,

Commercial Agent, Bureau of Foreign and Domestic Commerce.



M. P. Blauvelt.
Assistant Regional Director.



C. H. Markham.
Regional Director.



L. W. Baldwin.
Operating Assistant.



J. B. Fisher.
Transportation Assistant.



J. T. Carroll.
Mechanical Assistant.



E. B. Temple.
Engineering Assistant.



Chas. R. Capps.
Traffic Assistant.

The Allegheny Region—Operating Conditions

A Network of 11,985 Miles of the Densest Traffic Railroad in
the United States; Coal, Iron and War Materials

THE RAILROADS on which congestion was worst in 1917 are among those included in the Allegheny region which has been placed in charge of C. H. Markham as regional director. This region includes the Pennsylvania Lines East, the Baltimore & Ohio east of Pittsburgh and the Ohio River, the Bessemer & Lake Erie, the Cumberland Valley, the Central Railroad of New Jersey, the Coal & Coke, the Philadelphia & Reading, the Western Maryland, the Cumberland & Pennsylvania and the Pittsburgh & Lake Erie. This region has been created only within the last three months and no attempt, therefore, will be made to discuss at length and in detail the results which have been obtained in this short period. The regional management itself is still engaged in the study of conditions, and an outline of what these conditions—operating and traffic—are, is all that will be attempted here. Even this cannot be done completely and definitely because, although figures for operating and traffic statistics are obtainable for the Pennsylvania Lines East, the corresponding figures for the Baltimore & Ohio Lines East are not available.

Coal, of course, is far and away the most important single commodity moved on all of these roads in the Allegheny region. The Pennsylvania Lines East in 1917 handled 50,205,000 tons of bituminous coal, 10,721,000 tons of anthra-

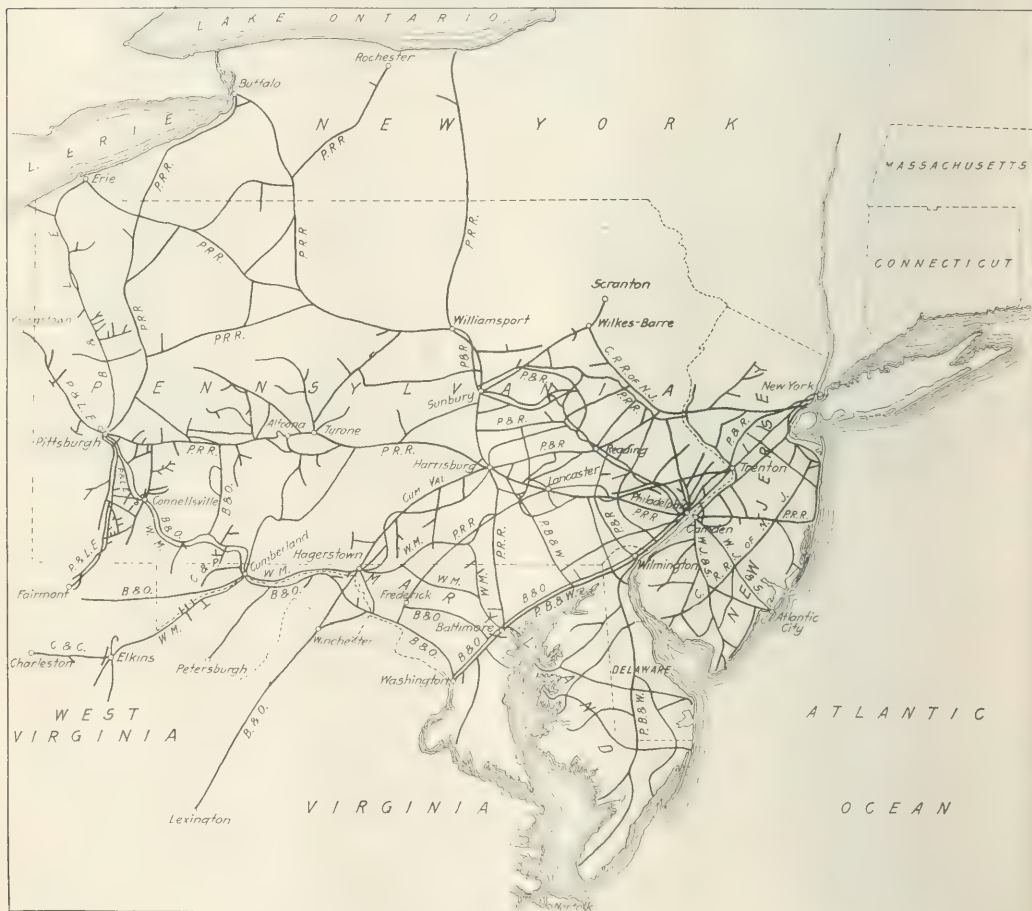
cite coal and 14,482,000 tons of coke. The Philadelphia & Reading moved 21,307,000 tons of bituminous coal and 12,977,000 tons of anthracite coal in 1916 (the last period for which figures are available). The Western Maryland moved 9,314,000 tons of bituminous coal and 515,000 tons of anthracite coal in 1917. The Pittsburgh & Lake Erie moved 11,437,000 tons of bituminous coal and 7,566,000 tons of coke in 1917. The figures for the Baltimore & Ohio cannot be given because the company's annual report lumps together both the Lines East and Lines West. It is safe to say that more than 50 per cent of the traffic carried by all of the roads is products of mines—coal, coke, ore, sand and stone. A very considerable part of the remainder of the traffic is made up of heavy manufactures, moving, of course, in carload lots. Rails, steel castings, naval stores, and bar and sheet metal bulk very large in the total traffic, more especially, in that of the Pennsylvania, Baltimore & Ohio and Pittsburgh & Lake Erie, but also in all of the roads in the Allegheny region.

Competitive Conditions

Prior to government control, competitive conditions in the Allegheny region were roughly as follows: The Pennsylvania Railroad dominated this entire section of the country.

To a considerable extent it dominated the Baltimore & Ohio, although no longer owning a large block of Baltimore & Ohio stock. It also controlled the Cumberland Valley up until a few years ago. The Baltimore & Ohio controlled, through holdings of a large block of Reading stock, the Philadelphia & Reading and its controlled line, the Central of New Jersey. The smaller roads, such as the Coal & Coke and Cumberland & Pennsylvania, did not, of course, play an important part in the competitive conditions over the region in general. The Western Maryland was a keen competitor with the Baltimore & Ohio, especially at Baltimore. The

from Washington, the Baltimore & Ohio was in competition with the Pennsylvania. It should be remembered, however, that competition within the region had for a number of years been regulated to a considerable extent through the policy, which the Pennsylvania was the first to adopt, of community of interests between railroads. It was very closely analogous to the policy which the government has undertaken to carry out in its formation of operating regions. It lacked the freedom of interchange of facilities, especially terminal facilities, which is available under the government's regional plan, but in the main the Pennsylvania's plan for elimination of



The Allegheny Region

Pittsburgh & Lake Erie was a competitor with the Pennsylvania lines running to the lakes and also by way of the Lake Shore with the Buffalo, Rochester & Pittsburgh and again competed with the Pennsylvania on through business to the seaboard because of its being a part of the New York Central System.

Besides the competition within the region itself on through business, the region competed with the trunk lines of the eastern region. Thus on passenger business, the Pennsylvania and New York Central each had their fast trains to the west from New York; on passenger business

cut-throat competition in its territory is comparable to the present situation.

Competition was not eliminated, however, any more than there was lack of competition between different divisions of the same road. Under private operation it was possible to carry this co-operative spirit to the extent of avoiding ruinous competition only.

Allegheny Coal Region

With coal playing such a large part in furnishing railroad traffic, it is not surprising that very early in the railroad

history of this region each of the larger companies dominated a certain coal region, serving many of the mines in that region exclusively. The principal coal regions are the one about Scranton and Wilkes-Barre, the one about Sunbury, the one about Tyrone and the one in West Virginia, north, east and west of Elkins. In the Allegheny region, therefore, we have a system of railroads which includes four great coal regions from which coal is moved both east to the seaboard at New York, Philadelphia or Baltimore, and west to the Pittsburgh district and beyond, or north to the lake district and beyond. This system has two principal east and west trunk lines, the Pennsylvania Railroad and the Baltimore & Ohio, with the Western Maryland as a potential east and west trunk line serving Baltimore. These trunk lines are the heaviest traffic lines in the United States. The Pennsylvania main line consists of a four-track line from Pittsburgh to Philadelphia and from Philadelphia to New York with two additional low grade freight tracks from Harrisburg to Philadelphia and to New York. The Baltimore & Ohio is a four-track line with some exceptions as far as Cumberland and there separates into two two-track lines, one running to Pittsburgh and one directly west. The Pittsburgh & Lake Erie serves as a huge switching yard for traffic both north and west-bound from the Pittsburgh district and for fuel inside of that district. A more detailed study of the network of lines going to make up the Allegheny region would show that even under separate private management each of these lines play a very important part in the furnishing of adequate transportation to the entire region.

Traffic Density

Furthermore, nearly every important line included in this Allegheny region, even under normal conditions, was being operated fairly close to capacity. This, of course, was not true of the Western Maryland, nor of some lines of the other roads, but in general it was the characteristic of the entire region. A freight traffic density of 4,000,000 tons per year, per mile of single track, was not at all uncommon. The average freight traffic density on the entire Pennsylvania in 1917, including, of course, those lines that are double tracked or four-tracked, was 6,575,000. Besides this freight density, there was a very heavy passenger density. Between Pittsburgh and Philadelphia, the Pennsylvania had passenger schedules calling for more than 40 through trains each 24 hours, besides a large number of locals making parts of this run and numerous commutation trains into Pittsburgh, Harrisburg and Philadelphia.

Not only was the network of tracks in this region being worked to within 10 or 15 per cent of their capacity, but there were a great number of terminals which were being worked to a point above their most economical capacity even before 1916.

Problems of the Regional Director

The situation presented to the regional director of the Allegheny region was quite different from that which faced any other regional director. There were the general problems such as changing the point of view of railroad men from that of competition above everything else to viewing any road as the right one to ship traffic over if it served the purpose of furnishing transportation facilities. There have been probably hundreds of amusing incidents illustrating the difficulty of making this change in attitude of mind. Probably there have been numerous instances where officers have come privately to the regional director and complained against some order which took traffic from the regional director's own road and gave it to a former competitor's road. There is, of course, also the situation as regards equipment, which even after all restraints of separate ownership were removed was not as easily shifted from one road to another—we are speaking now especially of locomotives—as might

have been expected. Repair facilities, for instance, stores, adequate turntables, etc., were not equally available on all roads.

All of the regional directors have probably found it necessary to move with care in making any sudden shifts of traffic from the accustomed route to some other. On the other hand, in the Allegheny region as in other regions there had been some hauling of freight around Robin Hood's barn in order to get it away from a competitor and in the Allegheny region, especially, there has been an exclusive use of terminals which influenced the movement of a considerable amount of traffic. In the Allegheny region a special committee is now in charge of the matter of long hauling of freight and as conditions are studied more thoroughly this ought to be a condition that will be almost entirely remedied. The use of terminals may take a somewhat longer time and be a somewhat more delicate matter to handle but it is entirely feasible to work out a satisfactory solution of most of the problems connected with it.

In the Allegheny region, as in no other region, pressure of traffic is so great that a single tie-up, a single yard becoming congested, may spread congestion with startling swiftness. The whole mechanism of transportation is so complicated that a local disturbance may develop into a serious tie-up of traffic over a very considerable portion of the entire region. The fact that the region has three important Atlantic ports—New York, Philadelphia and Baltimore—places a responsibility on the regional director which is of the greatest moment.

Causes of the 1917 Freight Congestion

It was the almost universal opinion of the higher officers of the Pennsylvania that it was not the volume of traffic or the shortage of cars which caused the congestion on that system in 1917, but it was the sudden swirling into new channels of traffic broken by the cross currents and dams of government priority orders which threw the old stream of traffic into indescribable confusion. The Pennsylvania management was helpless under such a situation. The only conceivable relief could have come from the Railroad's War Board in Washington, but this board was faced with a situation which appeared to be about hopeless. These men were not the directors of priority and as a matter of fact no single man or small group of men could have known the real relative merits of the clamor for priority for a hundred and one articles which were all urgently needed in government work.

It will take initiative, quick decision and absolutely fearless determination on the part of the regional director of the Allegheny region if he is to prevent the overloading of some particular part of his complicated piece of transportation machinery; and, at the danger of needless repetition, it should be said again that quickness of action will be absolutely essential.

The Present Situation

It is not generally understood to what extent the turmoil of traffic, especially in the Allegheny region, has subsided. Today, all of the mines in this region are fully supplied with coal cars. The industrial situation is likewise fast straightening itself out. It must be remembered that in 1917 not only was the government trying to move troops—munitions and supplies for these troops—and to continue to move orders not completed for the Allies, but also to move all the great mass of materials and supplies necessary for the building of cantonnments, the building of ships; in fact for the building of the tools for making the tools for making war as well as the tools of war. The worst of this confusion is now over. Ship yards are beginning to demand only the materials for making ships and not, in addition, the materials for building

ship yards and new industrial cities. The movement of troops into and out of cantonments continues, but the materials for the cantonments themselves no longer have to be afforded transportation facilities.

Another thing should be borne in mind: the government is restricting the output of many non-essential industrial plants. Take the manufacture of pleasure automobiles as an example. Even assuming that the government uses the full capacity of an automobile company's steel plants for the manufacture of steel products for use in the war, the fact that pleasure automobiles are not being manufactured will to a very considerable extent decrease the amount of general traffic connected with the automobile industry which the railroads will be called upon to handle. Materials for the engine and the finished engine are only a part of the traffic which the railroad handles in connection with the building of a pleasure car and its carriage to market. There is the leather, the wood, and accessories and there is also the car itself as a finished product which occupied an amount of railroad equipment, entirely disproportionate to that required to carry steel products for use in war, using an amount of shop capacity equivalent to a pleasure automobile.

A summary of the work of the railroads in the Allegheny region for the two-months' period ending June 30, 1918, were published in the *Railway Age* of August 16, 1918, page 299.

The Personal Equation

Not only has the regional director of the Allegheny region a tremendously complicated physical plant working under extraordinarily heavy pressure to keep running smoothly, but he also has a peculiarly complicated situation in regard to the organization and personnel of the roads under his jurisdiction. The Pennsylvania was one of the best organized railroads in some ways in the world. There was a spirit of loyalty on the part of its employees and officers which was an asset of so great a value as to be hardly measurable in dollars and cents. To build up such a spirit as this had been the work of a great number of years and of a steadfastly maintained policy of promoting from within the company's own ranks. Such a spirit as this could only be built up by a system approaching the military system. A man who was willing to work hard, had average ability and good character must be assured of a lifetime of steady work and slow but steady promotion if he is to be bound to and with his company as the Pennsylvania undertook to do.

The man of extraordinary ability must be assured of sufficiently great rewards for success within the organization to bind him to it.

To a less extent the Baltimore & Ohio had built up a similar spirit, the extent being less, not because the theory back of the Baltimore & Ohio organization was so different but because it had not been so steadfastly held to over such a long period of years.

An indefinite amount of tact is necessary in handling a situation such as is here presented. Human nature being what it is it was a temptation for a Pennsylvania officer to have somewhat the attitude of having a chip on his shoulder, or even if he did not have this attitude in the slightest, human nature again being what it is, the officer of some other road might imagine that he had this attitude. The utmost spirit of co-operation is necessary successfully to wield the Allegheny region into one great operating unit, but in developing such co-operation the ever-present danger of developing an unconscious spirit of opposition is like the presence of a quantity of high explosives.

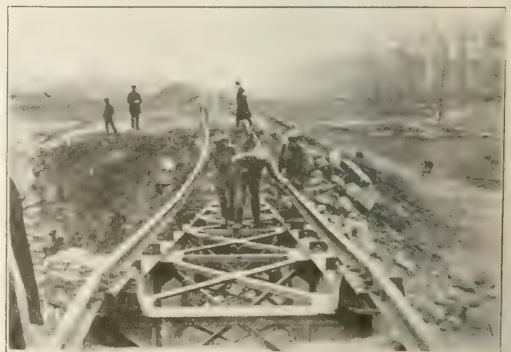
C. H. Markham, the regional director, was president of the Illinois Central from the time when J. W. Harrahan left it to 1917, when he was appointed by the director general as regional director of the Southern region with headquarters at New Orleans, La. When he took hold of the Illinois Central, the organization was in very bad shape. The scandal in regard to the Blue Island Car Repair Company had more or less honeycombed parts of the organization with distrust and suspicion and, furthermore, the personnel of the organization had never been won over to a unit of loyalty after Stuyvesant Fish left it. On the southern end of the road, moreover, the relations between the Illinois Central and the public served were not in many cases as good as they should have been. All of this and more—a serious stike—Mr. Markham faced and overcame. He left the Illinois Central a united loyal organization having to a marked degree the good will of the public it served. If he can come in contact with enough of the officers of this vast Allegheny region to permit of a general first hand impression being formed by a considerable and influential part of the personnel under his direction, of his directness and honest impartiality of outlook, he may be able to, even in a comparatively short time, escape the worst of the dangers that are breaking in such a situation as he is to handle. The magnitude of the task, however, should not be lost sight of.

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Photos by Press Illustrating Service, Inc.

Roumanian Oil Arriving at the German Front



Germans Rebuilding a Railway in France

Important Phases of the Fuel Conservation Problem*

Suggestions to Railway Men of All Departments Regarding the Economical Use of Coal

By H. C. Woodbridge

Supervisor, Fuel Conservation Section, United States Railroad Administration

SOME PEOPLE HAVE THOUGHT that many of our railroad men were not as patriotic as they should be, that they thought only of their grievances, real or imaginary, and of the wage increase. Who are these men? Are they not the fathers and brothers and uncles and cousins and friends of the great majority of the boys who are fighting and dying for us in France?

Suggestions for Saving Fuel

The following suggestions for saving railroad fuel have been compiled in the hope that they will be considered by all railroad men regardless of the fact that they are addressed particularly to different classes of employees.

To the Managers:—Provide necessary facilities and supervision insofar as possible.

Show your interest by commendation or criticism at staff meetings and when you are on the road.

Purchase power from large public utilities plants if possible, and avoid the use of uneconomical small power stations on your lines.

Provide the best sand obtainable for locomotive use. Slipping engines destroy fires, machinery and track and do not move business.

This movement must get impetus as well as approval from you.

To the Maintenance of Way Men:—Your slow orders and slow flags are an aid and comfort to the enemy.

Pick up coal and when you pick it up, place it where it will not be wasted.

If possible, water tanks and sidings should be placed where tonnage trains can be started easily.

Conserve the use of coal in bunk houses and in your shops.

To the Mine Operators:—Mine clean coal to the limit of your capacity.

Co-operate with inspectors and avoid the use of cars for the transportation of substances other than coal, because a large percentage of impurities in the coal will to a great extent cripple transportation and manufacturing. Millions of car days and a million tons of coal were wasted last year transporting foreign substances in the coal.

Load cars to their proper limit and thus further conserve the car supply and increase the percentage of freight moved in each train.

To the Superintendents, Train Despatchers, Yardmasters and Block Operators:—Have orders ready to hand on and thus avoid stopping trains.

Start trains at times when they can be moved over the division with least delay.

Set "pegs" for the extras to make; if these standard times are not made, investigate and remove the cause for delay.

Check weigh the car loads of supply coal at frequent intervals.

Maintain proper tonnage per train. On a long, hard pull a speed of 15 m. p. h. should be maintained.

See that your passenger trainmen do not waste steam in heating trains.

Use locomotives equipped with superheaters whenever possible.

Keep only the necessary power under steam.

Remember about one quarter of the locomotive fuel is burned at terminals doing no useful work.

Exert your influence toward conservation of fuel in station buildings and cabooses during coal weather. Cabooses have been known to burn three tons of coal each per month and much of this heat, as you know, was thoroughly distributed over the right of way.

Have trainmen card cars for defects so as to assist inspection and repairs at terminals and so safeguard against the use of such cars beyond a repair point.

Some slowing up of train schedules has been made. Are your stationmen eating up the good which it was expected would be derived by not expediting their work?

Co-operate with engine terminal forces and avoid delay at coal chutes because loaded cars have not been placed and at ash pits because cars for loading are not available.

Remember when you switch a cut of cars in front of a train which is ready to move you are wasting from 4 to 40 lb. of coal per minute.

See that your trainmen realize the appalling losses in fuel, labor and material which follow defects caused by air hose damaged by being pulled apart instead of separated by hand.

Stop air leaks on the road when possible and consistent to do so.

Avoid damage and loss of lading to cars in hump yards and in general switching. In an Eastern hump yard recently there were 40 car loads of coal picked up in one week and the cost of repairs on cars damaged in that yard was found to have jumped from \$50 to \$1,000 per week.

Get out suitable bulletins. Publish progress reports. Give credit where credit is due.

Here is a paragraph from a paper on Fuel Economy that I read before this Club in January, 1916:

"There is another fuel upon the conservation or best use of which our progress and perhaps the very existence of our country may depend. I appeal to you to promote development which will insure against waste of this, the most valuable fuel that ever was or ever will be mined. I refer to the elements which burn in the mind and heart of the progressive man. There has been a tremendous and cruel waste of this fuel in the super-exhaustion enforced on many such men by self-satisfied and narrow men in authority, who have strangled incentive and initiative in their associates until cultures of "What's the use" germs have developed everywhere.

"The manager or superintendent who fails to make the most of the corrective and creative power in his subordinates and associates—and these include the specialists and all-around experts in the employ of those concerns which serve the railroad trade, has failed to take advantage of his greatest opportunities.

"If you encourage initiative in others and aid in the development of their thoughts, you will strike at the heart of the disease, which at times cripples our fuel as well as other economy efforts."

To the Master Mechanics and Roundhouse Men:—Find out how much coal you are using in banking and building fires and how much you can reduce this amount. Try bank-

*Abstract of a paper read before the Railway Club of Pittsburgh.

ing the fires on the front of the grates only, using wet coal.

Avoid as much as possible the waste of coal which falls through grates when preparations are being made to fire up. Stop unnecessary blower line losses and other leaks.

Cover steam pipes in roundhouses and shops and on your locomotives with suitable lagging.

Stop leaks in your stationary boiler settings and arches. Use dampers and have the flue gases analyzed.

Stop air leaks into smokeboxes.

Provide sufficient air opening in ashpan—at least 14 per cent of grate area.

Don't overload tenders, and keep the unused coal shoveled ahead. It spoils on the back of tank, injures the sheets and is just that much useless load to drag around.

Correct improper steam distribution. A lame engine in this country is the Kaiser's delight.

Report poor coal, giving enough information so that the mine at which it was loaded can be located and properly dealt with.

Determine the proper size and character of nozzle tip for various classes of engines, and keep a record of nozzle sizes; make frequent checks to correct errors in draft appliances. Don't monkey with nozzle tips; correct defects which cause steam failures.

Use scrap wood for fuel when practicable.

Record condition of fires in incoming engines and advise the road foreman or instructors when improper firing is evident so that the inexperienced man will be instructed as soon as possible.

If consistent don't clean fires on incoming engines which will go out soon. Clean these fires when engine is taken out. The ashes will help keep the pops down and at the same time protect the flues while engine stands at your terminal.

On the Chicago & Northwestern a test made last winter when the temperature was below freezing showed that an engine having its stack covered after the fire had been knocked out and the grates covered with green coal would stand from 8 p. m. Saturday until 2 a. m. Monday morning and have 20 lb. of steam on boiler at 2 a. m. Monday morning.

Repair steam heat regulators and piping before cold weather sets in.

Keep boilers clean of soot clinkers in flues and mud and scale inside. Mr. Foque of the Soo Line, stated that in a bad water district of that road \$163,000 in fuel alone was saved in one year by properly cleaning locomotive boilers.

To the Engineers and Firemen:—Recommend changes in schedules which if made will result in better operation and consequent decrease in fuel expense.

Make your time if consistent with good operation to do so, but don't "beat it" so much that the train and station men

have time to visit at stations or so that you will have long delays at junction or meeting points.

You have been supervised to the limit on use of oil. Remember two scoops of coal right here in the coal region are worth a pint of valve oil. If you really need oil to save coal or machinery, *get it*.

Remember that carefully conducted tests have shown that you can put into the firebox 23 per cent more coal than is needed and not get one bit of good from the extra amount; in fact, with superheater locomotives, excess coal results in lower superheat and a great reduction in the efficiency of your engine.

Avoid unnecessary loss through pop valves.

To the Road Foremen of Engines:—Do the work for which you are best fitted and delegate office work and the investigation of non-essentials, post-mortems, etc., to others.

Get a counter and compare the number of scoops of coal used by various crews in similar service between given points and let the men know the results.

Instruct new men.

Have your instructors spend some time with fire cleaners and builders as well as with the roadmen.

Supervise systematically the preparation of fires before starting, as well as fires in incoming engines.

You know the thousand things to do. Hit the most important things first and hardest. Do your full duty more thoroughly than ever before.

Conclusion

There are nearly 2,000,000 of our men in France and 2,000,000 more will be there soon. What are our 2,000,000 railroad men going to do? The labor problem is the world's problem today.

Many of the young men most needed in our mines have gone to war. Save coal and you conserve labor. The result is of vital interest to every man, woman and child in America, to say nothing of the rest of the world.

Let us hold staff meetings and conferences, but not mutual admiration socials. Let's clean up and carry on.

When you go out from this meeting let there be a prayer on your lips and a new determination in your heart.

WOMEN IN SIGNAL BOXES.—At a meeting in London of railwaymen representing over 30 branches of the National Union and close upon 10,000 men, a resolution was carried unanimously protesting "against the attempt now being made by the South-Eastern & Chatham Railway to employ women in signal boxes." The meeting considered that, apart from other grounds, women are unsuited to the work, either by temperament or constitution.



The First of the Railroad Administration Standard Heavy Mikado Type Locomotives to Be Completed; Built by the American Locomotive Company

Doings of the United States Railroad Administration

Director General McAdoo Expects to Take Prompt Action on the Long Delayed Compensation Contracts

WASHINGTON, D. C.

THE DIRECTOR GENERAL is expected very soon to announce his decision concerning the standard form of contract covering railroads taken over by the Railroad Administration. As noted in last week's issue, he held a meeting with counsel of the Railway Executives' Advisory Committee and the National Association of Owners of Railroad Securities, Wednesday, August 14. On Monday of this week and in accordance with the suggestion of the director general at the conference, Samuel Untermyer and B. H. Innes Brown, counsel for the Security Owners, filed a brief covering suggested changes. The director general now has this under advisement. At the meeting Wednesday Mr. McAdoo indicated his anxiety for a speedy determination of the question at issue and promised to give the subject his immediate attention on receiving the brief. He also stated that his only wish was to procure a contract that would be absolutely just alike to the security holders of the railroads and to the government.

One point that is receiving attention more recently is the fact that some of the railroads may not care to sign any contract at all, preferring to rest simply on their rights under the federal control act of last December. Those who sign the contract waive the right to bring action for damages that may be sustained during the period of federal operation. (See paragraph (a) of Section 3, relating to acceptance.) Many people are convinced that Mr. McAdoo will not modify the clause of the contract containing this waiver.

Progress is also being made on the contract covering the short lines relinquished by the government, a committee of the American Association of Short Line Railroads, consisting of Ben B. Cain, vice-president and general manager of the Gulf, Texas & Western, and W. M. Blount, president of the Birmingham & Southeastern, conducting the negotiations for the short lines.

Inspection Trips Contemplated

The director general is going to become acquainted with the railroads under his jurisdiction first hand at the earliest opportunity. He has had a good opportunity to see the roads in the west through his recent two months' trip in that part of the country. He now contemplates going over the lines in the east similarly and will make inspection trips over some of the more important eastern systems beginning in the near future.

The Warranty in Purchasing Contracts

The situation as to the warranty or covenant relative to contingent fees which has been put in contracts covering purchases by the railroads seems by way of being cleared up in a few days one way or another. The attorney general last week expressed his opinion in correspondence with the various departments of the government that if the clause (noted in last week's *Railway Age*, page 295) covering the contingent fee operator was used, it should be construed strictly, that is, as prohibiting all contingent fees on contracts covering sales to the government. Among those who received a letter of this kind was the Department of Law of the Railroad Administration, which has passed it along to the Central Advisory Purchasing Committee for action. At the time this is written the committee has not given the matter its full consideration and has not decided just what steps it will take. Apparently, the attorney general's findings may mean that all agents who are now working on a commission or on a salary and a commission basis will have to be put on a

salary basis only in so far as dealings with the Railroad Administration are concerned.

It is, of course, possible that some means of exception may be made and that something may be done along the line of the action taken by the War Department which is best explained by quoting the statement which the War Department authorized for publication Monday. The statement follows:

"The President has agreed with the secretary of war that the covenant to be inserted in all war supply contracts against the operation of contract brokers and other illegitimate business agents shall not be used in such a way as to be harmful to long established business customs or to curtail industry.

"In accordance with this agreement the General Staff has ruled that exceptions to the covenant will be allowed only in classes of cases first authorized by the Superior Board of Contract Review after finding that the best interests of the government require such exceptions.

"The first ruling of the board covers manufacturers of cotton, woolen and worsted, and silk textile industries. The board has decided that there shall be added to the covenant a clause which shall exempt the manufacturer who handles his products through a selling agency or agencies which have handled such products prior to and since April 1, 1917.

"Manufacturers and dealers who have the required supplies in stock may make contracts with the supply bureaus. Exceptions to this rule will be allowed only in classes of cases first authorized by the Board of Contract Review of the supply bureau affected after finding that the best interests of the government require such exceptions. The rulings of these boards are subject to the authority of the Superior Board."

The Railway Business Association, through its committee on Government Purchasing Policies, has sent the following circular to its members under the title of "All Contingent Fees Condemned," dated August 14:

"Contingent sales commissions on government contracts, including railroad contracts, whether paid to established agencies or to others, are intended by the attorney general to be abandoned through the warranty covenant recommended by him to be inserted in all government contracts. To the Railway Business Association, whose request for interpretation was made on July 25 and again on August 14, Assistant Attorney-General Huston Thompson writes as follows:

The attitude of his department is that the clause is so comprehensive in its language that it does not permit of any exception in the matter of paying commissions to brokers for procuring government contracts.

"Pending efforts to convince the authorities that improper and excessive contingent fees can be eliminated while preserving legitimate sales agencies, some manufacturers of railway supplies are working out a salary basis or dealing with the agency as a jobber who buys stocks outright.

"Before determining the form of the warranty covenant the Department of Justice endeavored to frame language which would distinguish between legitimate agencies and others, but concluded that no such language could be found. The view seems to have prevailed that even established agencies, which in non-government dealings have won high repute, when seeking contracts with the government should not through a contingent-fee system put salesmen under temptation to engage in questionable exertions of influence. While the warranty does not rest upon statute, there are a number of Supreme Court decisions which condemn forms of contingent-fee business when the buyer is the government; and law or no law the government can decide what contracts

it will or will not enter into. The spirit in which our committee is discussing the subject is one of respectful request for opportunity to recommend modification if possible of a contract form which many of our members think will increase their selling cost and hence tend to raise rather than lower the prices which are quoted in bids."

Then follows Chairman Humphrey's letter to the attorney-general and to the director of finance and purchases, which was printed in the *Railway Age* of August 16, page 311.

Courtesy First

The Director General, with all the serious matters that are coming up for his attention, has found time to admonish the employees on the federally operated railroads that a "Public be damned" policy will under no circumstances be tolerated on the railroads under government control. Every employee of the railroad, he says, should take pride in serving the public courteously and efficiently and should cease absolutely from bringing up as an excuse on any occasion that "Uncle Sam is running the railroads now," or that, "These are McAdoo's orders." At the same time, he has taken the public into his confidence and has explained to them the reasons for complaints that have been made against war time passenger service and told them that everything possible is being done for their comfort and convenience, and further than that, he has declared in effect that traveling unnecessarily is unpatriotic. "Among the many patriotic duties of the American public at this time," he says, "is the duty to refrain from traveling unnecessarily."

The statement to the employees was dated Sunday and was followed by the statement to the public dated Tuesday. The employees are addressed in General Order No. 40 as follows:

"Complaints have reached me from time to time that employees are not treating the public with as much consideration and courtesy under government control of the railroads as under private control. I do not know how much courtesy was accorded the public under private control, and I have no basis, therefore, for accurate comparison. I hope, however, that the reports of discourtesy under government administration of the railroads are incorrect, or that they are at least confined to a relatively few cases. Whatever may be the merits of these complaints, they draw attention to a question which is of the utmost importance in the management of the railroads.

"For many years it was popularly believed that 'the public be damned' policy was the policy of the railroads under private control. Such a policy is indefensible either under private control or government control. It would be particularly indefensible under public control when railroad employees are the direct servants of the public. 'The public be damned' policy will in no circumstances be tolerated on the railroads under government control. Every employee of the railroad should take pride in serving the public courteously and efficiently. Courtesy costs nothing and when it is dispensed, it makes friends of the public and adds to the self-respect of the employee.

"My attention has also been called to the fact that employees have sometimes offered as an excuse for their own shortcomings, or as a justification for delayed trains or other difficulties the statement that 'Uncle Sam is running the railroads now' or 'These are McAdoo's orders,' etc. Nothing could be more reprehensible than statements of this character, and nothing could be more hurtful to the success of the Railroad Administration or to the welfare of railroad employees themselves. No doubt, those who have made them have done so thoughtlessly in most instances, but the harm is just as great if a thing of this sort is done thoughtlessly as if it is done deliberately.

"There are many people who for partisan or selfish pur-

poses wish government operation of the railroads to be a failure. Every employee who is discourteous to the public or makes excuses or statements of the kind I have described, is helping these partisan or selfish interests to discredit government control of railroads.

"Recently the wages of railroad employees were largely increased, involving an addition to railroad operating expenses of more than \$475,000,000 per annum. In order to meet this increase, the public has been called upon to pay largely increased passenger and freight rates. The people have accepted this new burden cheerfully and patriotically. The least that every employee can do in return is to serve the public courteously, faithfully and efficiently.

"A great responsibility and duty rest upon the railroad employees of the United States. Upon their loyalty, efficiency and patriotism depends in large part America's success and the overthrow of the Kaiser and all that he represents. Let us not fail to measure up to our duty, and to the just demand of the public that railroad service shall not only be efficient, but that it shall always be courteously administered."

To make sure that the matter should come to the attention of every employee, the director general instructed that a sufficient number of copies of General Order No. 40 should be sent out to provide for individual distribution. He desired that the copies of the order should be made with the delivery of the next pay checks, that a copy of the order should be posted on all bulletin boards, published in all railroad magazines and periodicals and given the widest possible publicity.

Statement to the Public

The statement to the public, issued on Tuesday, August 20, was as follows:

"Complaints have reached me from time to time of overcrowded trains and unsatisfactory conditions prevailing in some sections of the country in passenger train service. I feel certain that there are grounds for some of these complaints, but I am sure the public will be interested to know that the reasons are twofold:

"First, the great number of troops now being handled over the various railroads between the homes and the cantonments, between the different cantonments and then to the seaboard, is making extraordinary demands upon the passenger car and sleeping car equipment of the country. This has caused a scarcity of day coaches and sleeping cars which it is impossible to remedy immediately.

"Secondly, the increased demands upon track and terminal facilities for the transportation of the tremendous amounts of coal, food supplies, raw materials, and other things required for military and naval operations, as well as for the support of the civil population of the country, force the largest possible curtailment of passenger train service. The movements of troops and war materials are, of course, of paramount importance and must be given at all times the right of way.

"It was hoped that the increase in passenger rates recently made would have the wholesome effect of reducing unnecessary passenger traffic throughout the country. The smaller the number of passengers who travel, the greater the number of locomotives and cars and the larger the amount of track and terminal facilities that will be freed for essential troop and war material movements. Engineers, firemen and other skilled laborers will also be released for service on troop and necessary freight trains.

"Among the many patriotic duties of the American public at this time is the duty to refrain from traveling unnecessarily. Every man, woman and child who can avoid using passenger trains at this time should do so. I earnestly hope that they will do so. Not only will they liberate essential

transportation facilities which are necessary for war purposes, but they will save money which they can invest in Liberty Bonds and thereby help themselves as well as their country; and the fewer who travel, the more ample the passenger train service will be.

"I may add that consistently with the paramount demands of the war, every possible effort is being made by the Railroad Administration to supply the largest possible amount of comfortable and prompt passenger train service."

Fuel Conservation

The Fuel Conservation Section, in its campaign for fuel economy, has addressed itself to the mechanical department officers and to the men on the job through their division or lodge secretaries. On August 1 it issued five circulars, No. 8 to all motive power officials concerned with locomotive maintenance, No. 9 to the division secretaries of the Brotherhood of Locomotive Engineers, No. 10, to the lodge secretaries of the Brotherhood of Locomotive Firemen and Enginemen, No. 11 to the division secretaries of the Order of Railway Conductors, and No. 12 to the lodge secretaries of the Brotherhood of Railroad Trainmen.

Fuel Conservation Circular No. 8, addressed to motive power officers concerned with locomotive maintenance, draws attention to certain sources of fuel loss which can be remedied by proper locomotive maintenance, and reads as follows:

The inspection of locomotive front-ends on certain roads shows that there is a marked variation in the size of exhaust nozzles. In many instances exhaust nozzles have been decreased in size because of the presence of air leaks in the front-end, which of course partially destroys the vacuum and necessitates excess draft. Such leaks can be readily located when the engines are under steam or when they are located near an outside steam supply by using the blower to create a draft and holding a lighted torch to all seams and joints.

In superheater locomotives with outside steam pipes, leaks are frequently found under the covering of the steam pipe where it goes through the sheet. When so located, the leak does not show a burnt spot.

Any front-end leakage obviously increases the amount of gas and air which must be moved by the exhaust jet, and consequently necessitates a reduction in the size in the nozzle tip. This of course increases the cylinder back pressure and entails fuel losses; and in addition frequently leads to partial cylinder failures and to an increased cost of front-end maintenance.

Every motive power official and employee who is responsible for the maintenance of the locomotive should see to it that front-ends on locomotives are tested for air leaks at frequent intervals.

Circulars Nos. 9 and 10, addressed to the men in engine service, are practically the same, and read as follows:

Our government today is spending not millions, but billions of dollars for labor and supplies, for arms and ammunition, and for ships to move men and material.

We are in this war to win. We shall have to pay for winning, as we always pay for anything worth while. This is not the President's job; it is not Secretary Baker's job, nor Secretary Daniels' job, nor Director General McAdoo's job. *It is our job.*

With this point settled and everybody agreed, what remains for you and me to do? The answer is to work and to save. Why? Because nothing but labor and material will do the business. Money will not do it. It cannot be worn nor used for food; like the steam gage on the boiler, it is something to show pressure—but the steam gage never pulled a car. Human labor, human intelligence, and what they create, are the vital things. Food and clothing, rifles and machine guns, shells and ships, all spring from these.

We shall win the war by the material we produce and by the way we use it. We must get the most out of it, whether it be fuel, munitions or food. In the case of railroad fuel, we must make every ton move its maximum of men and material. You all know the ways in which this can be accomplished. This section is getting out a little handbook, containing suggestions of how to save railroad fuel. It will reach you within a few days. There is nothing new-fangled about it. You have all heard for years the suggestions it contains; but if every man would observe these suggestions in his daily work, we should save an enormous amount of coal.

We urge you to make a showing, but you must have the opportunity. Here it is—and as fine a chance as any man could wish for. This is the railroad bill for bituminous coal before and since the war:

Year	Period	Tons	Cost per ton	Value at mines
1915—Before the war	122,000,000	\$1.13	\$137,860,000
1917—First year of the war	155,000,000	2.13	330,150,000
1918—Second year of the war	166,000,000	2.50	415,000,000

These are the costs of the coal at the mines. During 1918 it will cost a dollar more per ton for company haul and handling; and for the 48,000,000 barrels of fuel oil which the railroads will use this year, they will pay \$69,000,000. *This will make the railroad fuel bill for this year \$650,000,000, excluding the cost of anthracite.*

Here are reasonable estimates of the savings which will result from even a moderate amount of extra effort and attention.

1 per cent saving represents.....	\$6,500,000
2 per cent saving represents.....	13,000,000
4 per cent saving represents.....	26,000,000

We present these facts to you in terms of dollars because the size of the job is most readily understood in such terms. Remember, however, that it is not dollars we are interested in, but coal. Coal sells for a fixed price per ton, but nobody can say today how much it is really worth. Coal enough in the next twelve months may well make the difference between winning or losing the war.

A coal shortage looms up ahead. It is estimated at about 75,000,000 tons. The shortage last year was 60,000,000 tons. There are only three ways in which to make this good.

First—By providing cleaner coal.

Second—By shutting off the so-called non-essential industries.

Third—By conserving by every possible means the coal which we must use.

The coal miners are going to do their share by giving us cleaner coal. They have been appealed to, and they are responding.

Scores of so-called non-essential industries have already curtailed their output; to go further in this direction will mean unemployment and disaster for your friends and neighbors. There is not much more to be had along this route.

The shortage must be made good chiefly by conservation of coal. The railroads use nearly one-third of all fuel produced in the country, and a large share of the responsibility consequently rests on us. The railroad Administration has given and will continue to give special attention to the improvement of the condition of power. The rest is up to us.

The miner will save his 2 per cent by giving us cleaner coal. The improved condition of power will contribute as much more. We railroad men who use the coal should contribute our 2 per cent. We may well do much more. Let us all pull together for a saving of 10,000,000, or perhaps 20,000,000 tons. We can make it if everyone puts his shoulder to the wheel.

If we win in this attempt, we shall have contributed to the successful outcome of the war; we shall have safeguarded ourselves, and our friends and neighbors from discomfort and unemployment; and we shall have added to our own skill and increased our own satisfaction and self-respect. *We shall have lined up solidly behind the first line "over there."*

Similarly, circulars Nos. 11 and 12, addressed to the men in train service, are alike and read as follows:

The United States railroads in 1918 will consume about 166,000,000 tons of bituminous coal alone. Railroad fuel, including oil, when delivered at the furnace door or on the locomotive tender, will cost about \$650,000,000. During 1915 the corresponding cost of railroad fuel was \$240,000,000—only a little more than one-third of the current cost. If the conservation of railroad fuel was important immediately before the war, how much more important is it today even when measured merely in terms of dollars.

This section was organized to conserve railroad fuel. By means of meetings throughout the country, through circulars, and through the operations of our supervisors, we are now urging motive power men, shopmen and roundhousemen, engineers and firemen, and transportation department officials to do everything in their power to save coal.

The coal miners and coal operators are also receiving their share of attention from both the Railroad Administration and the Fuel Administration. They are responding and there is already an improvement in the quality of coal mined which will effect savings of from \$12,000,000 to \$15,000,000.

It has not been generally realized that in many directions trainmen can do as much as engineers. They have hitherto been frequently overlooked in our campaigns for fuel economy. We wish to bring to your attention some of the things which you all can do for Uncle Sam, for the United States railroads, and for the crew on the first section "over there."

(a) Try to keep your train moving. Anticipate and prepare for station work if you are in freight service. Encourage the quicker handling of passengers, mail and express, if you are in passenger service. The effort required to make up delays takes fuel.

(b) Leaky train lines waste fuel. Keep them tight. Leaks can usually be found in the cross-over connection joints or in the air hose gaskets.

(c) Leaky steam-hose connections in passenger service and drip cocks too wide open waste fuel. Overheated coaches and sleeping cars also cause waste. Do whatever you can to check such loss.

(d) Frequent inspections of car trucks and prompt attention to hot journals will avoid unnecessary friction and train delays. Journal friction means coal; hot boxes are frequently too long neglected, resulting in extra and unnecessary stops. If you are operating on single track, bear in mind that when you make an unnecessary stop you not only give rise to fuel loss on your own train, but on many other trains on the line.

(e) Watch the brake shoes on your train; dragging shoes, whether due to stuck brakes or to train line leaks, result in serious fuel loss.

(f) Do not fail to get down early enough to go out on time. The influence of a good start frequently runs throughout the day.

These are a very few of the ways in which conductors and trainmen can do their share in saving fuel.

The shortage of fuel last year amounted to 60,000,000 tons. None of us will forget what that meant. The shortage this year is estimated at 75,000,000 tons. Whatever can be done to offset this shortage by improving the quality of coal and by cutting off the supply to the so-called non-essential industries has already been done. Many such industries have already curtailed their output to the point where further decrease threatens unemployment and hardship for your friends and neighbors. *There is no way left.*

When you buy a liberty bond you have only loaned the government a sum which Uncle Sam will repay you with interest. If, however, you save a ton of coal you give your Uncle something worth while; it costs you nothing but a little thought and a little extra effort, and he does not have to levy taxes to pay you back. Remember that every ton you save will be put to some very useful purpose. If it does not make munitions

or transport men and food, it can go to some "non-essential" industry and help to keep our friends employed.

Let us constantly remember that we are in this world's war. I see one of us saying to his spouse: "It will help us and spur us on if we consider that France, little Belgium, sunny Italy, Great Britain with her far-flung line, Canada, Australia, New Zealand, India and Africa, for four years have been paying the supreme price. They have fought and died for the privileges we had and neglected. While they and our own boys are fighting and dying can we not do our share by working and saving?"

Tank Car Mileage Doubled

The advantages of consolidation of control of the tank car lines in the hands of the United States Railroad Administration has been shown by a doubling in the tank car mileage between January and June this year. In the Mid-Continental oil field the tank car situation is in such good shape that there is almost a surplus of cars, and empty cars are on hand

Company cars increased their daily car mileage from 28.4 in January to 33.4 in April. The cars of the Texas Company similarly increased their daily mileage from 28.7 at the beginning of the year to 50 in May. Some companies are even reporting as high as 59 miles per car per day and one company has even reached 98.

Only \$244,000,000 Spent for Additions and Betterments

The Class I roads (those having gross earnings over \$1,-000,000 yearly), spent up to June 30, this year, only \$244,-401,179 for additions and betterments, nearly all of which is chargeable to capital account. This amount represents only about one-quarter of the total expenditures specifically authorized.

AUTHORIZATIONS AND EXPENDITURES FOR ALL CLASS ROADS IN CONNECTION WITH WORK CHARGEABLE TO CAPITAL ACCOUNT AS OF AUGUST 15, 1918.

CLASS OF WORK (1)	1918 Budget (2)	Additions to Budget (3)	Work specifically authorized on D. C. E. Forms 1, 2, 3 and 4, to Aug. 15, 1918, chargeable to		Expenditures from January 1, 1918 to June 30, 1918, charged to		Unaccounted balance, chargeable to	
			Operating expenses (4)	Capital account (5)	Operating expenses (6)	Capital account (7)	Operating expenses (8)	Capital account (9)
1. Widening Cuts and Fills, Filling Trestles, etc.	\$3,607,989	\$431,723	\$2,336,675	\$6,179,333	\$540,294	\$1,920,198	\$1,796,381	\$4,259,135
2. Ballasting	9,379,271	48,176	3,716,746	11,276,956	737,611	1,400,230	2,979,134	9,876,726
3. Rails and Other Track Material	31,365,483	174	41,513,660	28,510,674	5,276,532	7,041,450	36,237,128	20,969,224
4. Bridges, Trestles, and Culverts	36,185,921	701,597	20,341,497	32,156,700	230,159	1,239,164	1,071,880	13,040,723
5. Tunnel and Subway Improvements	2,185,242	47,071	732,973	2,434,235	176,636	126,000	556,937	3,008,231
6. Track Elevations or Depressions	4,112,556	.....	1,302,039	14,279,887	230,159	1,239,164	1,071,880	13,040,723
7. Elimination of Grade Crossings	7,438,957	195,295	1,090,337	11,116,791	211,406	1,735,112	878,931	9,881,679
8. Grade Crossings and Crossing Signals, etc.	631,082	14,918	156,483	1,214,017	56,295	533,532	100,188	6,804,485
9. Additional Main Tracks	44,574,883	1,085,427	6,760,655	46,522,416	872,545	13,263,897	5,888,110	33,258,519
10. Additional Yard Tracks, Sidings and Industry Tracks	57,199,114	5,246,654	7,870,475	94,584,606	1,312,851	21,810,800	6,552,624	72,773,806
11. Changes of Grade or Alignment	6,359,027	117,544	2,544,311	7,917,518	408,078	1,553,535	2,136,433	6,354,993
12. Signals and Interlocking Plants	10,962,462	156,357	2,186,544	11,056,819	390,463	3,091,068	1,796,081	7,965,571
13. Telegraph and Telephone Lines	5,129,149	213,147	630,655	4,564,792	272,459	1,297,446	358,196	3,267,346
14. Roadway Machinery and Tools	955,857	36,716	18,235	1,304,891	8,038	637,707	10,208	667,184
15. Section Houses and Other Roadway Buildings	1,606,847	57,304	162,762	2,075,506	48,211	1,346,635	11,071	728,871
16. Fences and Snowsheds	817,655	20,573	331,732	1,415,356	58,351	500,380	283,481	914,976
17. Freight and Passenger Stations, Office Buildings	20,138,359	867,198	2,986,574	26,239,012	620,298	9,439,200	2,366,276	16,799,812
18. Hotels and Restaurants	199,282	61,142	15,665	547,203	2,391	165,397	13,474	381,806
19. Fuel Stations and Appurtenances	6,090,558	325,297	886,102	5,737,817	210,137	1,742,682	675,965	3,995,135
20. Water Stations and Appurtenances	13,430,047	191,515	1,481,064	7,722,733	333,868	2,644,634	1,147,196	5,078,099
21. Shop Buildings, Engine-houses and Appurtenances	62,604,927	1,256,721	4,530,524	27,701,891	925,575	7,684,813	3,604,949	30,047,078
22. Shop Machinery and Tools	9,142,488	651,741	1,096,111	13,933,243	220,940	3,761,981	875,171	10,171,262
23. Elec. Power Plants, Substations, etc.	10,781,347	890,889	1,889,968	18,637,395	154,658	2,964,919	1,735,310	15,672,476
24. Wharves and Docks	3,286,167	75,233	817,288	3,236,930	211,091	387,887	660,197	1,939,043
25. Coal and Ore Wharves	7,034,937	103,401	657,187	5,195,544	270,332	1,777,880	386,885	3,417,664
26. Grain Elevators and Storage Ware- houses	5,914,102	62,095	413,250	2,349,565	64,147	1,430,640	340,103	909,925
27. Real Estate	3,309,141	.....	21,440	460,212	1,545	355,443	19,895	104,769
28. Assessments for Public Improve- ments	1,179,306	119,451	78,722	1,632,530	35,075	873,448	43,647	756,882
34. All Other Improvements	27,889,552	9,000	210,992	6,165,499	116,236	1,814,892	94,766	4,350,607
Total (excluding equipment)	433,751,488	12,986,561	106,835,086	404,760,071	18,429,765	102,172,314	88,405,321	302,587,757
EQUIPMENT								
35. Locomotives, Steam	196,926,868	.....	.....	108,167,345	.....	32,174,163	.....	75,931,890
36. Locomotives Ordered by Railroad Administration	.....	.....	.....	76,404,323	.....	6,000,000	.....	70,404,323
37. Freight-train Cars	212,856,464	496,066	.....	2,354,925	.....	82,861	.....	2,272,064
38. Freight-train Cars Ordered by Rail- road Administration	.....	.....	.....	121,203,743	.....	52,951,152	.....	68,252,591
39. Passenger-train Cars	.....	.....	.....	289,450,000	.....	.....	.....	289,450,000
40. Motor Cars and Trailers	12,927,109	26,044	.....	14,692,415	.....	6,607,537	.....	8,084,878
41. Electric Equipment	.....	20,200	.....	5,072,853	.....	1,075,610	.....	3,997,243
42. Miscellaneous equipment	.....	75,000	.....	587,298	.....	14,091	.....	563,207
43. Improvements to Existing Equip.	35,807,654	546,726	18,793,574	35,208,060	4,056,688	11,758,505	14,736,886	23,449,555
Total equipment	486,979,925	1,394,514	18,793,574	655,686,551	1,686,688	111,221,676	14,756,886	544,457,175
44. Construction of Extensions, Branches and Other Lines	20,370,489	230,894	4,136	36,951,956	.....	8,513,036	4,136	28,438,020
Total all work	941,041,902	14,668,969	125,652,796	1,097,398,578	22,486,453	221,914,736	103,166,343	875,483,852

at shipping points to take care of any demand for 48 hours ahead. There are on order with the car builders at the present time about 15,000 tank cars having a total value of between \$4,000,000 and \$5,000,000. The tank car situation is now so improved that it is very likely that a considerable portion of these cars will not be needed, thereby effecting a considerable saving in expense as well as in material which is otherwise needed for war purposes. The increase in mileage as between January and June is shown by the figures of a number of typical important tank car lines. Cars of the Union Tank Line in January averaged 23.4 miles per day. In June this figure had reached 37.5. The Gulf Refining

The table is a consolidated statement for all Class I roads showing all expenditures for capital account approved by the director of the division of capital expenditures to August 15, 1918, and all expenditures actually made upon such work to June 30. It shows also the expenditures chargeable to operating expenses in connection with such work, and includes equipment as well as additions, betterments and extensions.

Additions and betterments (excluding equipment) actually authorized to August 15 call for \$106,835,086 chargeable to operating expenses and \$404,760,070 chargeable to capital account. Of these amounts \$18,429,765 chargeable to

operating expenses and \$102,172,314 chargeable to capital account, or practically 25 per cent, had been spent to June 30.

Equipment actually authorized to August 15 calls for \$18,-793,574 chargeable to operating expenses and \$655,686,551 chargeable to capital account. Of these amounts \$4,056,688 chargeable to operating expenses and \$111,229,376 chargeable to capital account had been spent to June 30.

The budget estimates of the same companies submitted in response to the director general's request some months ago, called for a total for additions, betterments, equipment and extensions chargeable to capital account of \$941,041,902, whereas the work actually authorized and the equipment actually ordered up to August 15 aggregate \$1,097,398,578. The budgets called for only \$212,858,464 for freight cars, of which \$121,203,743 were ordered by the companies while the government itself has ordered for the companies \$289,-450,000, making the total for freight cars for 1918 delivery \$410,653,743, as against \$212,858,464 asked for by the companies under their budgets, or an increase over the budgets of \$197,795,279.

Progress on Standard Cars and Locomotives

The car builders working on the Railroad Administration's orders for standard cars have been authorized by the Central Advisory Purchasing Committee to purchase the paint (excepting wood preservatives) for these cars. Maximum prices covering six varieties of paint based on actual proposals submitted by representative paint manufacturers, have been fixed by the committee as follows:

Reinforced Red Lead Semi-paste Paint, (Spec. R-810), \$2.40 per gallon, f. o. b. factory.
Dark Red Oxide Semi-paste Paint (Spec. R-812), \$1.40 per gallon, f. o. b. factory.
Black Semi-paste Paint (Spec. R-811), \$1.65 per gallon, f. o. b. factory.
Stencil Black Paste Paint, \$0.10 1/2 per pound, f. o. b. factory.
Stencil White Paste Paint, \$0.11 1/4 per pound, f. o. b. factory.
Thinning Mixture (Spec. R-822-A), \$0.83 per gallon, f. o. b. factory.

A list of the paint manufacturers agreeing to furnish paint at these prices may be had on application to the committee.

The builders, however, are expected to purchase the paint at a price lower than the maximum figures named, if they can, taking into consideration sureness of supply, shortest haul and least congested routes. They are also advised that by spreading deliveries over an extended period they may also be able to obtain lower prices. Copies of all orders must be sent to the Inspection and Test Section and to the Procurement Section.

The above instructions to the carbuilders are of particular interest because they indicate in great measure the policy that is being followed out by the Procurement Section to allow the carbuilders to use their own organizations and established practices in the matter of purchasing and procuring material, thereby securing the advantages of the familiarity which these departments have with the purchasing of supplies.

Progress on the standard cars is considered favorable. The first completed standard cars are expected to be delivered the first week in September and to continue regularly after that. It is not expected that the order for cars recently placed for the American forces overseas will hinder the production of the cars for the Railroad Administration.

The standard locomotives were coming along until recently in even better shape than the cars. The Central Advisory Purchasing Committee and the Procurement Section, acting on the idea that motive power was even more necessary than new rolling stock, have been leaving nothing undone to secure material and to push construction as much as possible. The locomotive capacity of the country, however, is so far behind the great demands that have been made upon it that, as has been previously noted in the *Railway Age*, the priority necessarily accorded the 510 locomotives for the forces overseas will delay production of the standard locomotives. The American Locomotive Company recently finished its first standard locomotive on its orders for the Railroad Administration, a heavy Mikado built at the Dunkirk plant.

Southern Director Also Emphasizes Necessity for Courtesy

The Southern Regional Director has also taken up this matter of courtesy to the traveling public. In Circular No. 369 he says:

"In connection with our campaign to win public favor, I ran across something in the *Manufacturers' News*, written by Homer J. Buckley, which interested me and which I think enough of to ask you to give attention, and to bring to the attention of all of your minor officials who have occasion to correspond with the public. Mr. Buckley says, 'If you want to get a shock send for the files of your Claim and Adjustment Department and read over the carbon copies of the correspondence of that day and see how your customers are being treated. If you do not find a need for better letters, the kind that will hold the customer, then your house is an exception.'

"The same methods that ought to be adopted to hold the business of a commercial house are wise methods for us to follow to secure the confidence of railroad patrons, whom we are particularly anxious to please under this Federal administration. Carelessly written letters, either dictated by a superior or a subordinate officer, can materially hurt the cause to which we are giving so much attention.

"Let us all take stock in this matter now, and at intervals in the future."

Coal Loading Decreases

The weekly report on coal loading made by the Car Service Section to the director general last Saturday shows 260,572 cars loaded in the week ending August 10. This is considerably in excess of the amount for the same week last year, but a decrease from the 269,173 cars reported for the week ending August 3, this year. A summary of the report follows:

	1918	1917
Total cars, bituminous	224,572	193,114
Total cars, anthracite.....	40,942	43,050
Total cars, lignite.....	2,058	2,009
Grand total cars, all coal.....	269,173	239,007

A summary of the decreases and increases in coal loaded since January 1, 1918, up to and including the fourth week of July, 1918, as compared with the same periods of 1917 follows:

Month of	Increase
January.....	79,172 cars
February.....	71,768 "
March.....	46,613 "
April.....	75,408 "
May.....	84,998 "
June.....	88,840 "
First four weeks of July.....	113,188 cars

* Decrease.

Increase—1918 over 1917—359,125 cars.

Tourist Cars in Empty Troop Trains

The Troop Movement Section has sent out instructions that care should be taken not to make up returning empty tourist cars in trains too long to permit of speedy and safe operation. In the memorandum which he has sent to regional directors, the manager of the section says: "In the movement of empty Pullman tourist cars for service, it becomes necessary when sending them to a divisional camp, for a large movement, to send the cars in large numbers.

"It has been noticed that a number of the roads are inclined to make up trains consisting of 20 or more cars, which results in slow movement, due to the size of the train, and, in some cases, unusual breakage of drawheads.

"As it is necessary, in order to get the best use of available cars, to handle them as rapidly as possible, it is suggested that instructions be issued to the roads to confine the size of the trains to a maximum of 15 cars, which experience has proved is about as heavy as can be handled without undue accident, due to broken couplers, etc."

Federal Treasurers and Separate Bank Accounts

General Order No. 37 of July 19, (noted in the *Railway Age* of July 26, page 170) has been revised by General Order No. 37-A, issued August 1, to provide for additional payments to be made by the recently appointed federal treasurers. The additions are given in paragraph 4, which reads as follows, the additions being marked by italics:

(4) Federal treasurers shall draw on the new accounts thus to be opened and subject to their check only for

(a) The payment of materials and supplies purchased since December 31, 1917; and also of materials and supplies purchased prior to December 31, 1917;

(b) The payment of operating expenses (including approved claims for personal injuries and loss and damage), and also equipment and joint facility rents, traffic balances, overcharges and taxes (other than the war income tax and the excess profits tax) accrued since December 31, 1917; and also all items clearly applicable to the period prior to January 1, 1918, commonly called "Rap-overs," which are required to be set up on the federal books pursuant to Order No. 17.

(c) The payment of such addition and betterment costs as may be approved by the federal manager (or general manager appointed in lieu of the federal manager).

The order has also been changed so as to provide that the specimen check mentioned in paragraph 5 of the order should read "United States Railroad Administration, W. G. McAdoo, Director General of Railroads," instead of "United States Railroad Administration, W. G. McAdoo, Director General."

44,000 More Cars of Grain Loaded

The number of cars of grain handled in the five weeks ending August 3, as shown by the following table given out by the director general, August 15, totaled 131,942, as compared with 87,993 in the same five weeks of last year. The biggest increase is shown in the Central Western District, which handled in the period in question almost twice as many cars this year as it did last.

	District							
	Eastern		Allegheny		Pocahontas		Southern	
Week ending—	1917	1918	1917	1918	1917	1918	1917	1918
July 6.....	3,311	2,869	234	202	16	24	1,395	1,313
July 13.....	4,717	3,547	353	273	24	99	569	960
July 20.....	3,605	5,547	293	440	38	141	566	1,191
July 27.....	3,320	6,289	358	518	56	125	588	1,212
Aug. 3.....	4,117	8,538	560	900	97	168	416	666
Total.....	19,070	26,790	1,798	2,333	231	557	3,534	5,342

Week ending—	District							
	Northwest.		Cent. West.		Southwest.		Total	
	1917	1918	1917	1918	1917	1918	1917	1918
July 6.....	3,880	2,432	4,466	4,255	1,360	2,744	14,662	13,839
July 13.....	4,743	3,210	5,085	7,700	3,088	5,950	18,579	21,739
July 20.....	4,022	3,839	5,169	10,632	3,422	6,677	17,115	28,467
July 27.....	4,210	3,777	5,895	13,195	3,800	7,147	18,227	32,263
Aug. 3.....	3,292	4,716	7,383	14,097	3,545	6,549	19,410	35,634
Total.....	20,147	17,974	27,998	49,879	15,215	29,067	87,993	131,942

Standard Passenger Train Cars

The Committee on Standards for Locomotives and Cars, of which Frank McManamy is chairman, held a meeting Tuesday to go over specifications for standard baggage and express cars and coaches. It also examined plans covering these types of cars recently prepared by the builders and presented through the committee of the builders, of which J. M. Hansen of the Standard Steel Car Company is chairman. The specifications and drawings should be ready in a short time, after which negotiations will be begun for their purchase.

The baggage and express cars are the more urgently needed, not alone because of the demands upon this type of car for use in express service and on troop trains, but because of the policy of the Railroad Administration to eliminate in so far as possible the use of box cars for carrying express and baggage in regular passenger trains.

The need for additional coaches is not so urgent, but it has been found urgent enough to lead the committee to consider the possibility of acquiring more of them. It is not unlikely that two designs of coaches may be considered, one for

through trains and one for suburban service, although the last will probably be a later development.

Estimated Savings of \$25,000,000 in Northwestern Region

R. H. Aishton, Northwestern Regional Director, has submitted a report to the director general, in which he estimates that the total net savings to date in the Northwestern Region will figure out to \$25,229,352 annually, as follows:

Reduction in passenger train service.....	\$20,155,954
Freight train service—elimination of duplication..	1,338,726
Chicago—unification of terminals.....	940,766
Twin Cities—unification of terminals.....	465,654
Omaha—unification of terminals.....	212,970
Duluth-Superior—unification of terminals.....	126,376
St. Louis-East St. Louis—unification of terminals..	437,466
Kansas City—consolidation of live stock yards....	12,948
Ore operations—Lake Superior district.....	660,000
Joint switching.....	489,618
Miscellaneous economies.....	388,874
Total.....	\$25,229,352

Railroad Passes

As a temporary measure and until definite regulations for the issuance of passes can be provided, the following instructions as to the use of railroad passes will be observed, says a circular recently issued by the Railroad Administration:

"Until further notice passes previously issued by the individual railroads will continue to be honored over such lines.

"Annual and trip passes will be issued by the federal manager or by the general manager on roads where there is no federal manager, and will be limited to the lines over which the jurisdiction of such federal manager or general manager extends.

"Passes, annual or trip, will be issued by the federal manager or general manager on account of employees of other than the issuing line, upon request of the federal manager or general manager of such line, in the same manner that exchange passes have heretofore been handled.

"Current regulations of the Interstate Commerce Commission in the matter of issuance and record of passes must be observed."

Traffic Assistants Meet in Washington

A two days' meeting was held Tuesday and Wednesday of last week at the office of the Division of Traffic with the traffic assistants to regional directors. Those present were: J. G. Woodworth, Northwestern region; H. A. Scandrett, Central Western region; W. B. Biddle, Southwestern region; F. LaBau, Eastern region; C. R. Capps, Allegheny region; T. S. Davant, Pocahontas region, and A. R. Smith, Southern region. The purpose of the meeting was to permit these traffic men representing the Regional Directors to discuss matters of service and practices with a view to securing uniformity as far as possible throughout the whole United States and properly and effectually to serve the public; and, at the same time, to consider any economies and prevention of waste which could be accomplished through unified operation of carriers with due regard to service to the public.

Liberty Bonds as Security for Freight Bills

The Division of Public Service and Accounting in P. S. & A. circular No. 21, referring to paragraph two of General Order No. 25, which makes provision for the extension of credit for 48 hours after forwarding or delivery of freight, when the consignor or consignee files with the carrier a satisfactory bond, says that:

"For the convenience of the shipping public, it has been decided to accept Liberty Bonds in lieu of individual or corporate surety, as a basis for the extension of credit. These Liberty Bonds must be in coupon form, in amount required to meet the credit needs of the customer, and must be de-

posited as directed by the treasurer of the carrier. The treasurer's receipt will be given to the owner of the bonds, and arrangements will be made for their safe-keeping. Coupons will be detached and paid to the owners on the semi-annual interest dates."

Pensions

The Division of Public Service and Accounting is gathering detailed information concerning the pension systems and methods used by railroads for assisting their retired employees. In Circular No. 22 it has asked for a statement to be supplied not later than September 15 giving a concise and brief outline of the pension system or plan, if any, in effect December 31, 1917. If no regular system or plan was in effect and payments were made in the nature of pensions, the railroads, through their accounting officers, are asked to outline the method of calculating such payments and the method of selection of the pensioners. In addition to the foregoing, the circular also asks for full information as outlined in the following list of questions:

1. Was the system or plan continued after December 31, 1917, and is it in effect at the present time? If discontinued after December 31, 1917, advise when and why discontinued.
2. Are the payments to pensioners being made on account of the director general and treated as part of operating expenses?
3. Has the rate of payment for pensions been increased or decreased since December 31, 1917? If so, give particulars and authority therefor.
4. State the total amount of increases or decreases caused by changes in rates of pensions paid from January 1 to June 30, 1918.
5. Does the corporation or do the employees contribute to the pension fund, or to the payments that were made to pensioners subsequent to December 31? If so, to what extent and how were these contributions made and accounted for?
6. State the number of retired employees (not including officers) that were being paid pensions in the month of December, 1917.
7. State for each month separately for the period January 1 to June 30, 1918, the number of employees (not including officers) that were paid pensions and the aggregate monthly amount paid, and the amount thereof that was charged to operating expenses.
8. State the number of retired officers that were paid pensions in the month of December, 1917, and the aggregate amount of pensions paid.
9. State for each month separately for the period January 1 to June 30, 1918, the number of retired officers that were paid pensions and the aggregate monthly amount paid, and the amount thereof that was charged to operating expenses.
10. Submit a list of the names and designations of retired officers to whom pensions have been paid during the period from January 1 to June 30, 1918, and state the monthly amount of salary paid at the date of retirement and the monthly rate of the pension paid at June 30, 1918.
11. State for the month of December and separately for the months January to June, 1918, inclusive, the number of employees and officers, not included in any of the foregoing answers, that are carried on the regular payrolls, who perform little or no service or a different service than when regularly employed, and who receive full or partial rates of compensation formerly paid, but who, because of the absence of a pension plan, or because of the belief that pension plans might be discontinued, are not carried on the pension rolls.
12. State in reference to Question 11 separately, for each month, the total amounts paid, and show the accounts charged therewith and the amount distributed to each account, showing, in addition, the name of each person so appearing on the payroll for the month of June, 1918, and the amount payable to such person for that month.
13. What portion, if any, of the amount charged to operating expenses for pensions paid during the period January 1 to June 30 is chargeable to the corporation?

Rates on Cotton

The Division of Traffic has decided against putting into effect this year the proposal which it has had under consideration for some time, to establish carload and less than carload rates on cotton instead of the present any quantity rates. It will, however, encourage heavy loading by high density compression.

A proposal for next year now under consideration plans for carload rates with minimum of 100 standard bales per car.

Promotions in the Mechanical Department

The Mechanical Department of the Division of Operation has announced the following promotions: John F. Tatum has been appointed general supervisor of car repairs; F. P. Pfahler, who has hitherto borne the title of mechanical engineer, has been made chief mechanical engineer; John McManamy and George N. De Guire, assistant supervisors of

equipment, have been made, respectively, general supervisor of equipment, west, and general supervisor of equipment, east. The appointments were all effective August 3 and all the appointees will have headquarters at Washington.

Substitutes for Wool

The Car Service Section has taken steps to see that wool substitutes are handled promptly. In Supplement No. 1 to Circular C. S. 10, it says:

"The shortage of wool makes necessary the increased use of substitutes for wool, such as woolen rags and shoddy. As far as practicable, shipments of woolen rags and shoddy should be accepted and moved promptly on a parity with wool. The Freight Traffic Committee, North Atlantic Ports, is prepared to issue permits promptly on any such shipments destined to New York, Philadelphia and Baltimore."

Coal Car Supply Receiving Attention

The Car Service Section, noting the recent increases in coal car shortage evidenced in the United States Geological Survey figures, has taken steps to increase the supply of available coal cars. In Supplement 1 to Circular C. S.-13, issued last Saturday, it says:

"In accordance with the understanding expressed in Car Service Section Circular CS 13, and to avoid decline in coal loading, carriers will immediately amend their practices regarding car supply for stone, sand and gravel so as to increase cars available for coal loading as promptly and as greatly as possible. Necessary curtailment of open top car supply for stone, sand and gravel must be effected so as to least affect the movement of raw materials for blast furnace and foundry operations.

"Non-coal-producing railroads will be expected hereunder to more promptly return empty open-top cars to their coal producing connections."

Progress Reports on Additions and Betterments

In order that the Railroad Administration may be kept informed of the progress being made on additions and betterment work, the director of the division of capital expenditures, in D. C. E. Circular No. 9, has asked each carrier to furnish a monthly report on a special form (D. C. E. Form 10) for each project authorized where the estimated cost chargeable to capital account exceeds \$25,000. D. C. E. Form 10 contains 10 columns: (1) D. C. E. form number, (2) Serial number, (3) Total expenditure authorized, (4) Location of work, (5) General description of work, (6) Unit of measure, percentages to be used when no physical units are applicable, (7) Percentage of work completed during the month, (8) Percentage of work completed to date, (9) Probable date of completion, (10) Remarks, including anything of particular interest, especially explanations and reasons, why work is not progressing in a normal manner.

Official Bulletin Authorized Medium for Publicity

Walker D. Hines, assistant director general of the Railroad Administration, on August 16 issued a notice reading as follows:

"The Official Bulletin [issued daily at Washington by the Committee on Public Information] is authorized to publish all general orders and circulars by the director general of railroads, and authorized circulars of divisions and sections of the Railroad Administration at Washington, and is to be regarded as an official means of publication of the same."

The Pullman Car Lines

The operating department of the Pullman Company, now under federal control, will hereafter be known as the Pullman Car Lines, according to Circular No. 47 issued Saturday by

the Railroad Administration. L. S. Taylor, formerly controller of the Pullman Company, has been appointed federal manager of the Pullman Car Lines, effective August 17, with office in the Pullman Building, Chicago. He will have jurisdiction over all departments, reporting to the director of the division of operation.

Coal Car Movements

The report made to Director General McAdoo Saturday by the Car Service Section of the Railroad Administration on the quantity of coal of all kinds loaded by roads for the week ended July 27, 1918, shows 269,173 cars as compared with 270,434 the preceding week and 239,007 in the same period of 1917. A summary of the report follows:

	1918	1917
Total cars bituminous	224,572	193,144
Total cars anthracite	40,942	43,050
Total cars lignite	3,657	2,813
Grand total cars all coal	269,173	239,007

A summary of the decreases and increases in coal loaded since January 1, 1918, up to and including the fourth week of July, 1918, as compared with the same periods of 1917 follows:

	Decrease	Increase
Month of January	74,172 cars	
February		31,250 cars
March		40,613 cars
April		73,408 cars
May		84,968 cars
June		88,840 cars
First four weeks of July		113,188 cars
Increase, 1918 over 1917, 359,125 cars.		

Ticket Agents' School

The school for training women as ticket sellers, which has been held in the Southern Railway Building at Washington, has now started on its second session. The first session ended on August 10. Of its original enrollment of 47, 27 were placed at union stations or consolidated ticket offices, 10 withdrew because of sickness or other causes, seven were dropped and one remained unplaced. The enrollment in the second session consists of 40. The day students receive \$50 a month pay and the night students \$25 a month.

Hearings Before the Board of Wages

The Board of Wages and Working Conditions has finished its hearings in connection with the wages of telegraphers and telephoners, train dispatchers, agents located at stations, line repairers, lever men on interlockers, tower men or train directors, lock operators and staff men and is now holding executive sessions to formulate its recommendations for the director

general. Its recommendations concerning the maintenance of way and bridge and building employees and those concerning clerks, and also common laborers around stations and warehouses have been before the director general for his consideration for some days and an order covering the matter is expected shortly.

Additional Short Line Railroads Under Federal Control

The Athens Terminal Company, Athens, Ga., the Augusta Belt, Augusta, Ga., and the Atlantic & East Coast, Jacksonville, Fla., have been added to the list of roads taken over for operation by the Railroad Administration.

Weekly Cash Report

The following supplement No. 1 to "General Order No. 23" bears the date of August 13:

Effective with report for the week ending August 17, 1918, the following instructions shall govern the rendering of the Weekly Cash Report, Form T-5:

(1) Where federal treasurers have been appointed their reports shall include only transactions affecting the cash controlled by them, in accordance with the provisions of General Order No. 37. Reports as to transactions affecting other (corporate) cash will not be required.

(2) As and when federal treasurers are appointed they shall commence to render the reports to include only transactions affecting the cash controlled by them, in accordance with the provisions of General Order No. 37. Reports as to transactions affecting other (corporate) cash may then be discontinued.

(3) Otherwise the reports shall continue to be made up as at present.

(4) These instructions also, of course, apply to all acting federal treasurers, as well as to the treasurers whose nominations have been confirmed.

* * *

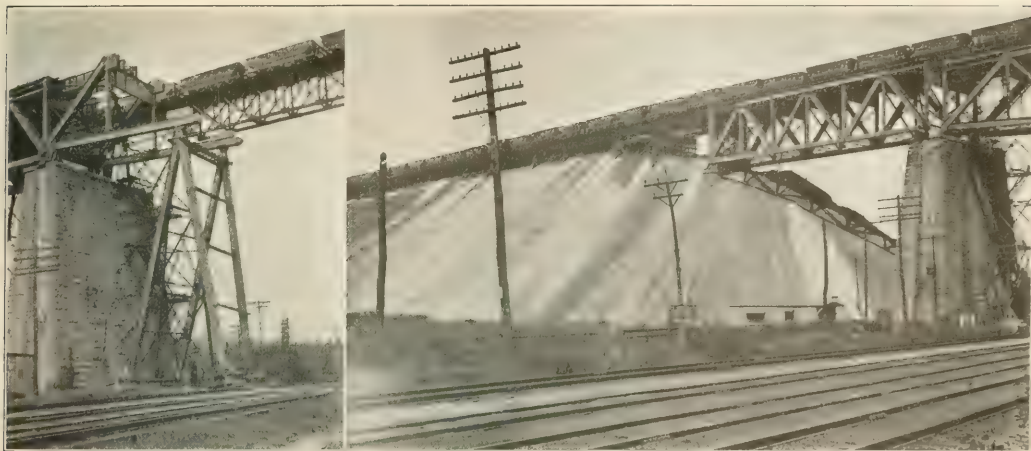
Sherman Whipple, of Boston, has been offered the position of attorney for the Shipping Board. John Barton Payne, who has been acting as attorney for both the Shipping Board and as general counsel and head of the Division of Law of the Railroad Administration, will devote his entire time to the latter.

* * *

The Association of Railway Telegraph Superintendents has been added to the approved list of railway associations.



A Small Munition Station, the Shells Camouflaged by Branches of Trees



Temporary A-Frame Tower Used to Erect Span 3

South End of the Large Lumber-cut Truss in Position

New Bridge on the B. & L. E. a Notable Structure

Continuous Trusses and Unique Erection Methods Lend
Special Interest to This Large Project

ON MONDAY JULY 22, a unit of three continuous spans of the Bessemer & Lake Erie bridge over the Allegheny river, near Blacks Run, Pa., was moved laterally 16 ft. 3 in. Nine days later a second unit of 983 ft. was moved in a similar manner. As the first unit was 1,140 ft. long and weighed 13,000,000 lb. it is the heaviest and longest bridge structure ever moved in this manner, while the continuity of both the vertical and horizontal trusses, continuous over four supports, introduced complications not ordinarily encountered in this class of work. These two noteworthy incidents mark important steps in the construction of the largest railroad bridge completed this year, and one which embodies a number of unusual features in design and construction practice.

This project consists of the renewal of a single track bridge built in 1896 which consisted of five deck truss spans varying from 207 ft. to 520 ft. in length with an over-all length of 1,476 ft. and flanked on the north end by a steel viaduct 1,736 ft. long. The track was on a grade of 0.48 per cent ascending southward with the elevation near the south end of the structure 160 ft. above water level in the river. This structure has been replaced by a new double track superstructure on the same site, utilizing the old substructure in a large measure and replacing the viaduct by an embankment. The grade of the track at the north end has also been raised to give a level crossing.

Many Notable Features

Among the unique features involved in this project were the use of two sets of continuous deck trusses, each extending over three spans, the erection of the new superstructure alongside the old one on extensions to the piers and its subsequent rolling laterally into place, the use of a design loading of Cooper's E-75, the introduction of special steel for both tension and compression members, the spacing of the double tracks at 14 ft. 11 in. to permit of the future use of gauntlet tracks in the event of the four-tracking of the line, and the construction of an embankment 120 to 140

ft. high for which a temporary steel viaduct was built to facilitate the placing of the filling material.

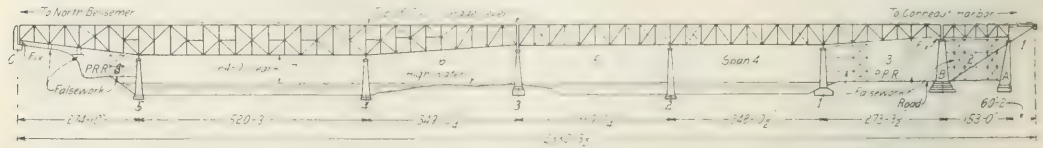
These special measures were evolved in the solution of the problems presented by the situation, the more important of which are mentioned below. The traffic on this line is heavy as indicated by the fact that the net ton miles handled per mile of line on the Bessemer & Lake Erie is exceeded by only one road in the country, the Pittsburgh & Lake Erie. During the navigation season on the Great Lakes above 52 trains, of which about 36 are three-engine through freights cross this bridge each 24 hours. Accordingly it was imperative to interfere as little as possible with the movement of the traffic during the bridge erection and trestle filling operations. The behavior of the river at some times of the year together with the great height of the structure were unfavorable to the use of falsework. The masonry piers, while in an excellent state of preservation and on secure foundations, are of such proportions as to offer limited resistance to traction or braking forces. Surveys for a relocation of the line across the river with a view to selecting a site for an entirely independent structure, demonstrated the economy of reconstruction on the existing site with the use of the old piers.

The loading imposed on the existing structure was so heavy as to require its replacement although it had been designed for Cooper's E-40 loading. Unlike the plan followed in some other cases where a high loading has been adopted in the design of a new structure, the unit stresses used on this structure were low, except as raised to allow for the use of high strength steel. Consequently the new structure is one of the heaviest capacity bridges in the country. This heavy loading is explained by the fact that the traffic is largely ore, which at present imposes a load of 5,000 lb. per lin. ft. of track. It was concluded that any future increases in train loading on the railroads of this country were very likely to be obtained in a maximum degree on a road with a traffic of this character.

One further condition which influenced the work is the

fact that the Bessemer & Lake Erie is charged with the disposal of large quantities of slag and other wastes from the steel mills, which have been used very largely in the past in the construction of large embankments in connection with grade revision work. Consequently it was but natural

south spans, 272 ft., 520 ft., and 349 ft. 9 in., respectively, from south to north, while the second group is composed of the next three spans, respectively, 349 ft. 9 in., 349 ft. 7 in., and 274 ft. in length. This plan was adopted primarily because it was deemed necessary to use the cantilever method

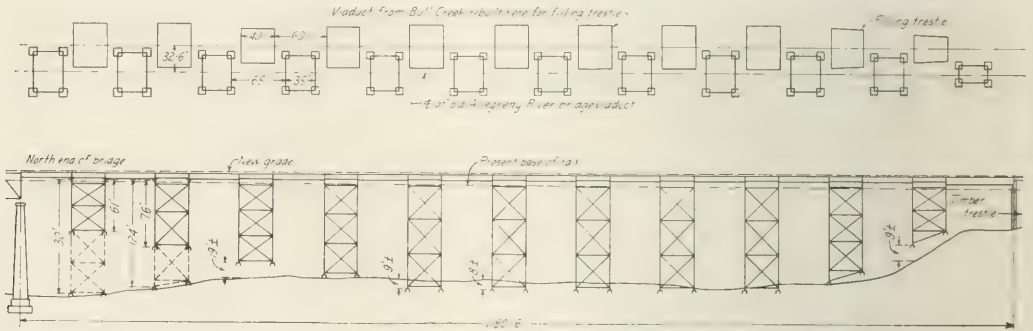


Elevation of the New Bridge

that this project should include the replacement of the approach viaduct on the north side by an embankment.

The arrangement and length of spans shown in the elevation of the new structure were determined essentially by the position of the old piers, except that the south spans were

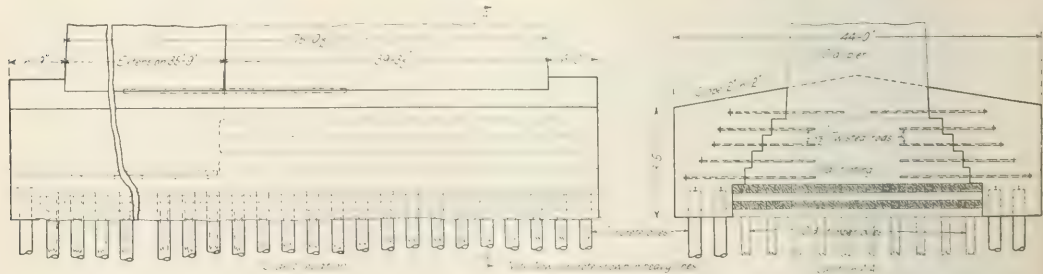
of erection and these continuous structures offered the most effective use of the extra material required in the trusses for the cantilever erection. A further consideration influencing this plan was the weakness of the piers above referred to. Under the adopted plan it was possible to



Elevation of the Temporary Filling Viaduct and Its Relation to the Old Structure

increased from 207 ft. to 274 ft. by throwing the south abutment further back into the bluff and that three new spans were introduced to replace the south end of the viaduct which was otherwise converted into an embankment. These spans are 272 ft., 150 ft. and 60 ft. long, respectively, from south

locate the fixed end of the south group of spans on the new south abutment and that of the north group on the new pier B. With these two supports designed to take all of the longitudinal, i. e., braking or traction stresses of the six spans, the five old piers intervening were relieved entirely of



Method of Enlarging the Footing of Pier 1 to Increase the Bearing and Provide for the Extension

to north. These changes entailed the construction of a new south abutment, two new piers, A and B, and a bank block or pocket abutment in the head of the new embankment.

Continuous Construction Adopted

By far the most interesting feature of the project is the use of the continuous spans. One group includes the three

these longitudinal forces since the superstructure was supported on them only through roller bearings.

To introduce a minimum of interference with the operation of the existing line it was concluded to build the new superstructure alongside the old, turn traffic over the new work and after the old spans had been removed, to slide the new structure into a central position on the piers. Ow-

ing to the great loads to be carried and the height of the structure it was concluded that this could best be done by extending the existing piers to the west and building the new piers and abutments wide enough so that the new superstructure should be erected entirely on the masonry.

The Substructure

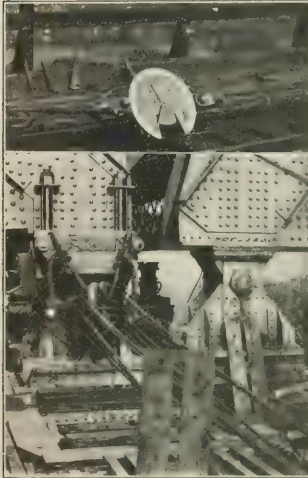
The length of the extension to the piers was practically equivalent to the original length and they were given the same face and end batters. Beaver Valley sandstone, the same as that used in the original work was obtained and the junction of the new and old work was handled in such a way as to conceal it entirely.

For the purpose of avoiding an excessive length in the additions to the piers the bearings of the west tracks when in the temporary position came very close to the west ends of the piers, and because the reactions were especially high during certain periods of the cantilever erection, it was essential to secure high strength in the pier copings. The stones in the upper five courses of the masonry were tied together with cramps and with additional tie rods between stretchers on opposite faces of the pier. Above these a concrete coping was

receives a greatly increased load in the new structure since it now carries one end of the 273-ft. span to the north, whereas there was formerly only a 65-ft. viaduct span on that side. Accordingly the pile bearing had to be increased greatly. The manner in which this is accomplished is shown in one of the drawings.

The new pier *B* is located close to the site of one of the old viaduct towers and rather elaborate under-pinning was necessary to support the tower during the progress of the foundation work for the pier. Pier *A* which is buried in the embankment for the most of its length is provided with a cut-stone face only above the embankment surface.

With the exception of the south abutment which was built by company forces, all the foundation and masonry work was done by the Arthur McMullen Company, New York. The contractor used two concrete plants, one north of the road for piers *A* and *B* and one south of the highway for all of the other piers. The concrete for piers *A* and *B* was transported by a tower and spouting except for the very top which was handled with a derrick and bucket. For the other piers a more elaborate method of transporting the concrete was necessary. The concrete was delivered to the forms in bottom

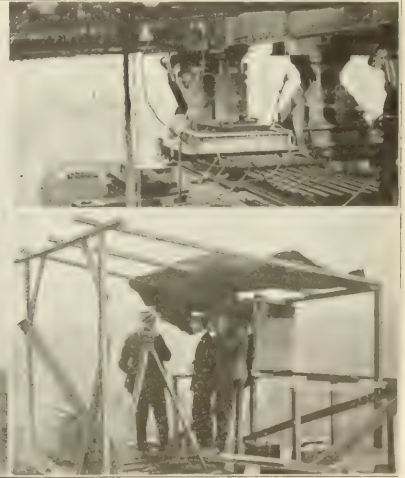


Dynamometer on One of the Hauling Lines

Hauling Tackle on Pier 1 Attached to North End of Span 3



Locomotive Cranes Were Used on the Hauling Lines from Two of the Piers



Arrangement of Jacks and Rollers on Pier 1 Before Spans Were Moved

Transit and Telephone Station for Observing Movement of the Spans

built which was very heavily reinforced. As a further precaution each pier was provided with a grillage of longitudinal I-beams to distribute the applied load and to serve as the track on which the spans were rolled into final position. Owing to the presence of the old spans during the construction of the masonry and the fact that the elevations of the new and old bridge seats varied widely, it was not possible to place these grillage beams on the old portions of the piers until the old steel had been removed and the old portions of the piers were rebuilt to the new level.

The treatment of the foundations differed somewhat in the several piers. Piers 1, 2 and 4 are on pile foundations, piers *A*, *B* and pier 3 on the island are on gravel foundation, and pier 5 and abutment *C* are on rock. The foundation work involved no special difficulty and was conducted by open excavation with United States steel sheet piling. For piers 2 and 4 the new work is supported on the old footing extensions and on new footings supported by the piles. Pier 1

dump buckets handled by stiff-leg derricks, these buckets being delivered to the derrick at each pier on flat cars hauled by a dinky locomotive as far as pier 4. For pier 5 it was necessary to ferry these buckets across the south channel of the river.

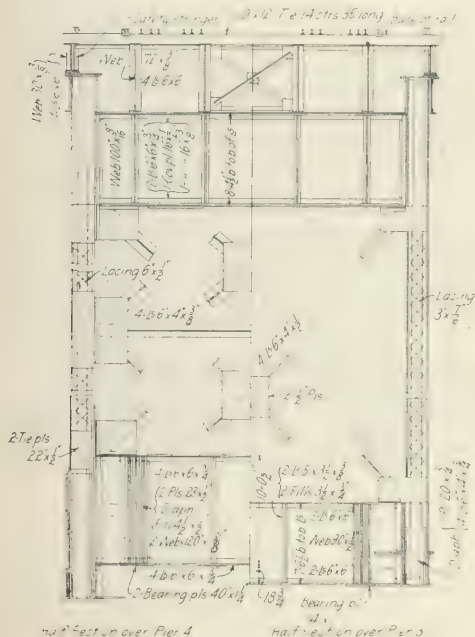
The Superstructure

The outline of the trusses in the elevation of the bridge shows that spans 2, 3, 4 and 5 have simple panels, span 7 has subdivided panels and spans 6 and 8 possess a combination of the two. Span 2 has riveted joints throughout, spans 3, 4 and 5 are essentially riveted spans with stiff top and bottom chords and diagonals except for the tension diagonals of the second panel from each end which are eye-bars. In spans 6, 7 and 8 a larger proportion of eye-bars are used, while the top chord ties connecting the spans at the piers are also eye-bars in each case.

Another unique feature of the truss framing is the detail of

Erection Method

The erection proceeded from both ends of the bridge, terminating in the center panel of span 7. Accordingly it was necessary to erect spans at both ends of the structure on falsework, that is, span 8 on the south and span 2 and also span 3 on the north, since span 2 did not enter into the cantilever erection scheme. Owing to the presence of a public highway and the tracks of the Conemaugh division of the Pennsylvania Railroad underneath span 3, it was necessary to substitute a steel A-frame tower for the usual



Cross Section of the Superstructure

form of falsework under the north half of this span, and proceed by cantilevering over the Pennsylvania Railroad tracks. This entailed the use of a temporary counterweight of steel rails at the north end of the span, which was also required when cantilevering the adjoining longer span to the south. The falsework under span 8 was of a special nature to fit the irregular ground contour and avoid the tracks of the Oil City line of the Pennsylvania.

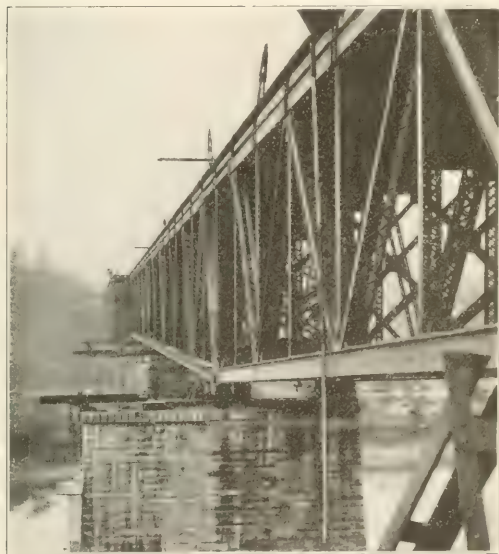
The erection was conducted by means of bridge derrick cars running on a track located centrally on the bridge and supported on the two inside track stringers, the outside stringers and safety stringers being omitted until the spans were brought to bearing on the piers. The roller bearings under the spans were secured against movement during the period of erection by means of plates bolted to their ends.

In projecting the 350-ft. spans from the adjoining spans to such an amount that the panel points over the piers were 40 in. to 43 in. lower than the position determined for them in the design. Consequently it was required to jack up the ends of each span as it was landed on the pier by this amount. For the purpose of erecting span 6, it was connected temporarily to span 5 by short eye-bars in the top chords and bearing blocks between the bottom chords over

pier 3. These eye-bars were made of such a length as to tip up span 6 by an amount that raised the south end 13 in. over pier 4. Accordingly it was necessary to jack this span up only 30 in. instead of 43 in. to take out the cantilever deflection. After span 6 was in place the connections at pier 3 were cut away with the oxy-acetylene flame making the two spans independent.

To close the middle panel in span 7 the projecting arms were pushed towards each other by rolling on the expansion bearings of piers 4 and 5, while the bearings on pier 3 and abutment C were lowered so as to raise the projecting cantilever arms above the final position. This shortened the panel length in the bottom chords and lengthened the panels of the top chords, producing a condition under which the closing members were readily introduced.

After the erection of the trusses had been completed, the



Views of Spans 3, 4, and 5 Just Before Being Moved

outside stringers of the floor system were added and the deck was completed, laying both the tracks in final position. One of the drawings shows the arrangement under which these tracks were used during the successive stages of the work. During the wrecking of the old spans the west track was used by the traffic while the east track was occupied by the wrecking equipment.

The old trusses were advertised for sale but, no purchaser being found, it was decided to scrap the material. Accordingly the trusses were supported by beams and cables from the new structure and the members were cut apart with the oxy-acetylene flame. After completing this work the tops of the old portions of the piers were brought to the same level as the tops of the new portions and the beam grillages were placed and spliced to the portions under the new steel. The track diagram also shows the shifts made in the track during the stages of moving the new spans into final position on the piers. The south group of continuous spans was moved first, this being the longest and heaviest section. This was followed in turn by the next group and finally by span 2. By making use of one or the other of the two tracks on the bridge in each unit it was possible always to provide

one through operating track throughout each of the successive stages of the work.

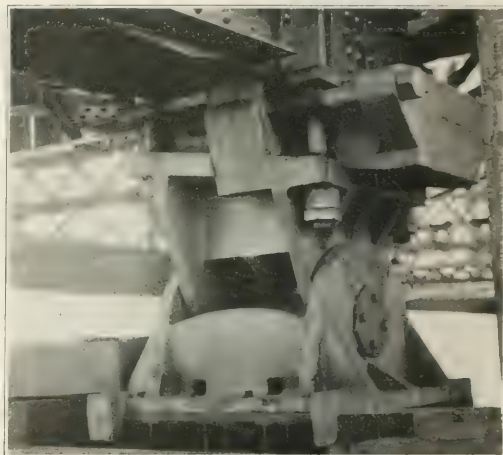
Shifting the Spans into Place

The operation of rolling was accomplished in a manner similar to that previously used in like situations but with considerable more refinement as required on account of the greater length and weight of the load and the continuity of the structure. One of the plans shows a typical arrangement of jacking and pulling rigs for the intermediate piers of both units, *i. e.* that carrying the heaviest load. Here two 2500-ton jacks built for use in closing the Hell Gate arch were installed under the jacking girders, at the ends of the continuous units 500-ton jacks were adequate, while under the ends of span 2, two 300-ton jacks sufficed.

These jacks were used both to raise the bridge for putting it on the rollers and later to lower it after the rollers were removed, and since the bridge was moved between these two operations, the jacks had to be moved with the bridge. This was accomplished as indicated in the sketch. Small hand jacks standing on the floor beams directly above the large jacks served to lift up the larger ones by means of cables and hold them clear of the rollers while the bridge was moving.

The moving tackle at each pier consisted of a $\frac{3}{4}$ -in. wire rope, rove through a set of blocks connecting the east bearing grillage with a pair of I-beams fastened to the end of the pier, the wire rope being carried by snatch blocks to a hoisting engine standing on the deck of the bridge. In the case of the intermediate piers the rope tackles were in

This was accomplished with the aid of two base lines, a moving base line established on the spans to be moved, between the east rail of the east track and the ends of the ties, and a second base line, which may be called the fixed base line, located 16 ft. 3 in. to the east of the moving baseline and established by points on the ends of the spans nearest those to be moved. One point on the fixed base line was marked by a target while the other was covered by a transit. Sight boards marked at intervals of half feet for a length of 16 ft. 3 in. were fixed to the deck of the spans to be moved in a horizontal position with the zero point coinciding with the fixed base line and the 16-ft. 3-in. mark



Wedge Arrangement on Bridge Shoe to Adjust End Elevations of the Continuous Trusses



A View of the New Bridge from the South

19 parts, this multiplication being obtained by a combination of two six-sheave blocks and two four-sheave blocks as shown.

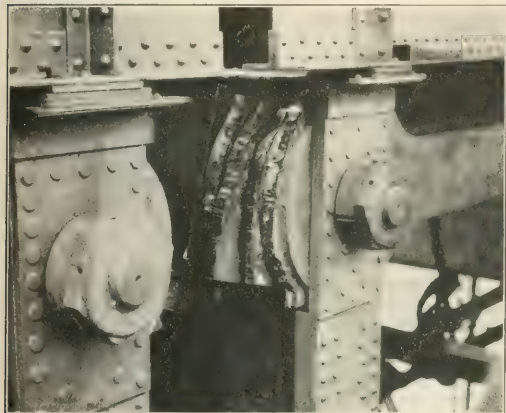
Unified action being vital, special attention was given to arrangements through which it could be secured. One essential was that the progress of the shift be practically the same at each pier, otherwise excessive stresses might be developed in the top and bottom lateral systems of the spans, since these also constituted systems of continuous trusses. Therefore, a convenient arrangement for observing the relative movement on each pier was paramount.

on the moving base line. Then with the transit set on the target, the sight boards could be read simultaneously as the bridge was moved. This is shown in one of the photographs. Another facility was telephone communication with both the jacking crews on the piers and with the engineers of each of the hoisting engines on the deck. These telephones were placed in a position close to the transit so that the foreman, standing close to the man observing the movement, could readily communicate with all of the jacking and engine crews. The shifting of three units was accomplished in each case without any unforeseen circumstances and the obstructions to traffic in no case exceeded five hours.

Incidental to the operation necessary for the shifting of the structure, special provision was made for the securing of data that would be of value in the working out of similar problems for other structures. Readings were taken of the hydraulic jack pressures so that the pier reactions of the two continuous spans could be determined and checked against the calculated values. Dynamometers were also introduced into the lead lines from the pulling tackle so that readings taken during the movement of the spans, after correction for the friction in the sheave blocks, would give a measure of the rolling resistance under the conditions obtained. One of these dynamometers is shown in a photograph. These were graduated to a maximum of 10,000 lb., two being used in parallel on the lines from the intermediate piers where the loads were greater than could be recorded on one instrument alone. The readings were taken simultaneously on all indicators at intervals of 5 sec. during the first two feet of the movement, after which they were removed to avoid interference with the winding of the cables on the drums. The data thus obtained are now being analyzed.

The Embankment

Not the least interesting of the various divisions of this project was the making of the enormous fill to take the place of the north approach viaduct. The necessity for minimum interference with the traffic, both in the construction of the fill and the erection of the piers made it desirable to conduct these operations from an independent track and



Junctions of Spans 5 and 6 Over Pier 3, Showing Ends of Short I-Bars Which Were Burned Away

this led to the use of a steel viaduct salvaged from Bull Creek in consequence of a change of line. This was erected parallel to and 32 ft. 6 in. west of the center line of the old viaduct, with the track coincident with the new grade line.

As the planes of the inside batters of the two viaducts intersected above the ground surface, it was necessary to space the towers of the temporary structure between those of the original viaduct. Therefore, since the old structure had girder spans of 35 ft. over the towers and 65 ft. clear and the Bull Creek viaduct had 40-ft. spans over the towers with 80 ft. clear spans, it was necessary to dispense with the 80 ft. girders and use 60 ft. spans collected from various sources for the clear spans of the temporary viaduct.

Since the contour of the valley originally occupied by the temporary viaduct was not the same as that of the new site, three towers near the center were too tall and three towers at the south end and two at the north end were too short for the new site. Accordingly the long columns had to be placed in excavations of which one was 12 ft. in depth and the short ones had to be set on towers made of pile bents, in one case 19 ft. high, or lengthened out with extensions of structural steel. One of the drawings shows how this was accomplished. Concrete foundations were provided for the temporary structures in all cases where the columns were not set up on the pile towers.

The fill is about 1,900 ft. long and to date has taken 33,500 carloads of graduated slag and other mill waste at an average of 30 cu. yd. per car. The material is delivered in ore cars returning from the mills to the lake ports which are set out at the station north of the bridge to be handled onto the filling trestle by work trains. The material is excellent for filling; it does not settle appreciably and is not subject to slipping, nor does it wash excessively. The only objection, that of dustiness experienced whenever any amount of flue waste was present with the slag, was overcome by wetting the material before delivering on the fill. This was made possible by the installation of a 50,000-gal.

tank supplied with water from the river, with a spout in a position so that the water could be run into the cars as they were hauled by. As a result the dust nuisance to the surrounding country was avoided, the fill was compacted, the dumping of the cars made easier and the working conditions for the men greatly improved.

The filling was conducted from the temporary trestle until the embankment had been completed to within 15 ft. of the top, when it was found that the lateral pressure of the new fill was crowding out the bents of the old viaduct, two outer columns near the south end being seriously buckled. Subsequent filling was in consequence done from the old trestle, principally after the progress in the erection of the bridge had permitted the transfer of the traffic to the new spans and the temporary viaduct. The fill will be the last part of the project to be completed and will occupy several months' time.

Work on this project was started in April, 1916, the erection was commenced about a year later, and was finished



East Side of Spans 3, 4 and 5 Before Being Shifted, Showing Position of the Sight Boards

early in August of this year. The structural steel was fabricated and erected by the American Bridge Company, and the engineers of this company prepared the design in collaboration with H. T. Porter, chief engineer of the Bessemer & Lake Erie, who exercised general supervision over the entire project. W. H. Slifer was resident engineer on the work for the railroad.

SPEEDY RAILROAD BUILDING IN FRANCE. A railway 150 miles in length behind the French front has been built in less than 100 days, and on August 15, according to press despatches, was opened for traffic. Its purpose is to improve the communications between the northern and southern parts of the northern railway system. The construction of the line involved the building of two important bridges and a tunnel some 375 yards in length. Premier Clemenceau and Albert Claveille, the Minister of Public Works, were present at the ceremony of putting the new road into operation. The premier congratulated the engineer in charge of the work and the man who had performed the task. "All France," exclaimed the Premier, "is working until the day when victory shall come—a day of which the dawn is breaking."

Orders of Regional Directors

Y. M. C. A.—The Southwestern regional director has asked for detailed information concerning the contributions made to the Y. M. C. A.

Aisle Carpets in Passenger Coaches.—The Southern regional director has extended to dining and cafe cars his previous instructions directing the discontinuance of the use of aisle carpets in passenger coaches.

Roads Relinquished from Federal Control.—The regional director of Southwestern railroads announces that the Louisiana Railway & Navigation Company has been relinquished from federal control.

Transfer of Bad Order Cars.—The Southern regional director has emphasized the necessity for sending in to the regional director detailed information concerning cars that are being sent from one road to another for repairs, in order to relieve the bad situation on various roads.

Box Cars in Passenger Trains.—Federal managers of the Southwestern region have been instructed that box cars should not be handled in passenger trains except where mixed train service is operated and when necessary in troop trains for buffer purposes and for the handling of supplies and other material.

Discontinuance of Sale of Liquors.—General Order No. 39, prohibiting the sale of liquors and intoxicants in dining cars, restaurants and railroad stations under federal control is applicable to all steamers, vessels, wharves or other places under control of the United States Railroad Administration in connection with its operations on the water.

Mexican Labor Agent.—In a circular dated August 17, the regional director of Central Western railroads announces the appointment of Avery Turner as representative of the Railroad Administration at El Paso, Tex., in charge of the distribution between railroads of the Mexican labor supply available at that and other ports of entry to this country.

Damage to Freight Cars in Yards.—The Central Western director has emphasized the necessity for proper inspection of hand brakes and other safety appliances to overcome the fact that much damage to cars in yards has been due to hand brakes not being properly maintained, thus making it impossible for the car riders to control the cars they are handling.

Lumber from the South.—The railroads in the Central western region have been asked to anticipate, so far as possible, their requirements for cross ties and lumber from southern territory for the coming winter and to move from the south during the next two or three months as much of this traffic as possible, as by so doing they will aid materially in preventing congestion at Ohio River gateways.

Standard Form for Stationery.—The question has arisen, says the Southern Regional Director, whether, in providing stationery, a particular line shall be designated "Railroad" or "Railway," according to the word used in the corporate title. Decision has been reached that the word "Railroad" shall be uniformly used; for example, "Southern Railroad," although the name of the corporation is "Southern Railway Company."

Attempts at Train Wrecking.—The Military Intelligence Branch of the War Department requests that all employees along the lines of the carriers shall be instructed in case they notice any preparation for or intentional attempts at train wrecking or derailment, to at once notify Colonel M. Churchill, General Staff, Chief, Military Intelligence Branch, Executive Division, 1330 F street Northwest, Washington, D. C.

Fire Prevention.—The regional director of Central Western railroads calls attention to the fire damage to station buildings and grain elevators caused by placing boarding

cars of construction and repair trains on tracks close to buildings; by dumping hot coals out of stoves without regard for the proximity of buildings, and by reason of the netting in locomotives not being maintained in proper condition. The circular asks that instructions be issued for the purpose of reducing these hazards to a minimum.

The Destruction of Records.—The Eastern regional director has drawn attention to the fact that the Division of Public Service and Accounting has ruled that where it is desired to destroy any records which have accumulated during the administration of the director general, it will be proper for the federal manager to appoint some one or two persons to supervise the work as required by the rules of the Interstate Commerce Commission. Where the records to be destroyed accumulated previous to January 1, 1918, the persons to have supervision should be appointed by the corporation.

Compensation for Sub-Foremen.—The Eastern regional director has issued the following: The following letter from C. R. Gray, director, Division of Operation, dated Washington, August 15, 1918, is quoted for your information and guidance:

Supplement No. 4 to General Order No. 27 provides that sub-foremen in the mechanical department, such as gang leaders and leading workmen, shall be paid 5 cents per hour more than the craft which they are supervising.

Our attention has been called to the fact that this creates inequalities between certain railroads on account of some of these sub-foremen having been heretofore paid on a monthly basis.

In order to preserve uniformity you may authorize Federal and general managers to place all of these men on an hourly basis.

Stereopticon Slides for Army in France.—The Eastern regional director states that the National War Work Council of the Young Men's Christian Association advises that it is experiencing considerable difficulty in securing a sufficient quantity of stereopticon slides for the entertainment of the American Army in France, and asks whether it can borrow the slides heretofore used by the railroad companies for advertising purposes.

There is no objection by the Railroad Administration to such use of the slides in question. In the event that the railroads possess such stereopticon slides they are asked to communicate with the corporation owning them and ascertain if they are willing that the slides be loaned to the Y. M. C. A.

Rates on Military Impedimenta.—The regional director of Central Western railroads announces that hereafter third-class freight rates, subject to land grant deductions where applicable, will be applied on military impedimenta, including equipage, subsistence stores, medical stores, emergency ammunition and other property of the United States army, navy or marine corps, other than live stock, accompanying troops, loaded in miscellaneous quantities in mixed carloads, and covered by Government bills-of-lading (without requiring listing or specific packing but simply described as military impedimenta) minimum weight 24,000 lb. These rates, however, will not cover personal baggage or other property of officers or the men which will be handled only under the terms and conditions of current passenger and freight tariffs.

Semi-Monthly Report.—The following form shows the style of report which federal managers have been asked to submit on the fifteenth and last day of each month to the Southwestern regional director.

Improvements.—List any large improvements in progress, involving an expenditure of \$25,000 or more, in progress of construction and per cent complete with probable date will be ready for service.

Shop Conditions.—State if locomotive and car shops are being worked to capacity, and if not, how many additional engines, passenger and freight cars, can be handled for other Federal managers' territories.

State hours worked compared with same period of last year, at principal shops.

Equipment.—State generally, condition of locomotives, passenger train cars, freight train cars, and per cent of each class in shop. Also if any maintenance is being deferred account having to keep in service, account heavy traffic, equipment due for shopping. If any surplus of equipment, engines or cars, state what it consists of, and how long it can be spared to use on other territories where needed.

General Comments.—On any other matters of general interest.

Railway Express Cars.—The Southern regional director has instructed railroads in his territory to see that the lettering of cars for the American Railway Express Company is taken care of as soon as possible. In Circular No. 372 he quotes article IV of the agreement between the director general of railroads and the express company reading as follows: "The director general shall furnish adequate and suitable space in cars properly equipped, heated, lighted, and lettered American Railway Express Company for the use of express companies on such passenger, mail and express trains, etc."

War Tax on Bills Covering Feeding of Live Stock.—In order No. 40, dated August 16, the regional director of Northwestern railroads announces the findings of the Internal Revenue Bureau of the Treasury Department in a controversy which arose regarding the application of a war tax on bills covering feeding in transit and yardage of live stock at destination. In general the bureau found that if the amount of the feed bill is collected by the carrier, or on its behalf, from the consignee or consignor it is a charge incurred in connection with transportation and is taxable unless the charge is absorbed in the through rate collected by the carrier. If, however, the transportation has been actually completed by delivery of the property to the consignee and the cancellation of the bill-of-lading, the tax should not apply to charges for feeding services rendered subsequently thereto, even though the stock yards where such feeding services are performed is owned and operated by the carrier who transported the live stock.

Fuel Transportation.—In Circular No. 17, dated August 13, the regional director of Northwestern railroads emphasizes the necessity of maintaining a full car supply at coal mines. To this end he states that it is imperative that loaded cars suffer no delay in transit or at destination and that coal cars be moved daily. It is suggested that the practice of certain lines operating "mine clean-up" trains of empties daily might be profitably adopted, thereby insuring the regular and current movement of empty cars to the mines. This equipment should be accumulated in train lots and given preferable service if necessary to insure prompt movement to the mines. Transportation departments should permit no slowing up in the movement of coal or mine empties regardless of increased traffic occasioned by the unusually heavy fall business and grain movement.

In Circular No. 118, dated August 16, the regional director of Central Western railroads called attention to carelessness in the unloading of coal cars which in a large number of cases results in equipment leaving the point of unloading containing a ton or more of coal per car. Operating officers and commercial consumers are asked to work for the elimination of this wasteful practice.

Equipment Used for Troop Trains.—The Southern regional director has issued instructions looking towards the remedying of complaints that have been made that some of the equipment used for service on troop trains is of considerable age and that the construction is too weak for handling in such trains, which average 13 cars. A survey should be made of the equipment used for the transportation of troops, to determine definitely if any of the cars are in such condition as to render them unfit for service in heavy troop trains, and if it is found that cars being used for troop movements are not in condition to be handled in long trains, they should be withdrawn from troop movement service and used in other line service until they are: (a) Overhauled and strengthened, or (b) Assigned to such service as they are adapted for.

Proper Instruction of Employees Engaged in Train Operation.—The Eastern regional director has sent out the following instructions:

Investigation of a recent head-end collision on one of the Eastern railroads, which resulted in the death of several persons and the injury of others, developed that the accident was caused by an error on the part of the operator in re-copying a train order transmitted to him over the telephone despatching circuit. The position as operator was his first employment in that capacity, he had been in the railroad service only about three months, stated that he received only one day's instruction prior to taking the position and had not been furnished with a book of rules relating to his duties.

Will you please bring the facts in this case to the attention of all supervisory officers responsible for the employment of operators and others engaged in train operation, and at the same time caution them as to the necessity of exercising the utmost care in the employment of men for such positions to satisfy themselves fully as to the fitness and ability of the applicants to fulfill the duties and responsibilities involved, to see that they are thoroughly instructed in the rules and regulations governing their duties, supplied with book of rules and other proper written and oral instructions, and are properly examined and passed by the responsible supervising officer as to their understanding of the rules and regulations governing the positions to which they are to be assigned.

Draft Classification of Skilled Railway Men.—Provost Marshal General Crowder has sent a message to all draft officials requesting reconsideration of the classification of railway men in Class I. Reconsideration is especially asked in the case of applicants employed as machinists, blacksmiths, boiler-makers, tin and copper-smiths, pipefitters and helpers and apprentices of all of the foregoing, hostlers, enginehouse men, train dispatchers and directors, telegraphers, telephoners, and block operators, locomotive firemen, and helpers, conductors, yard foremen, brakemen, track foremen, telegraph clerks, yard masters and assistants, locomotive engineers and motormen.

Application should be made by the individual and filed with the district board, or the local board for transmission to the district board, asking reconsideration of classification on the ground that the applicant is engaged in a necessary industrial enterprise as a skilled laborer especially fitted for the work in which he is engaged, or as a highly specialized technical or mechanical expert, as the case may be. In case an individual does not wish to make application or it is impracticable for him to do so, application may be made by the federal manager, general manager or other representatives of the Railroad Administration. Applications should be supported by affidavits made by representatives of the Railroad Administration preferably not below the rank of division superintendent.

The affidavits of the railroad officers should state specifically that a discontinuance, serious interruption or materially reduced operation of the railroad would result in substantial material loss and detriment to the effective maintenance of the military establishment and to the adequate and effective operation of military forces—that the railroad contributes materially to all these things and is therefore a necessary industrial enterprise. The applications should include a brief description of the duties of the applicants, indicating why they are essential to the continuous operation of the road. It should also be pointed out that the available supply of persons competent in the same capacity is such that the applicant cannot be replaced without direct material and substantial loss to railroad operation.

Improving Freight Operations.—The Northwestern regional director is giving consideration to greater efficiency in yard operation and fuel transportation. In circular No. 16, he has asked the railroads in his territory to consider the following matters:

Complaints from shippers respecting delays to cars indicate the necessity for careful consideration of the following:

1. That the operation of yards be so arranged as to provide as nearly as possible continuous movement of traffic.
2. Where for any reason continuous movement is impossible, cars should be moved in the order of arrival.
3. Most aggravating complaints arise from delay to individual cars for which no reasonable or satisfactory explanation can be offered. This is particularly true at a season of the year when yards are free from congestion.
4. It is the duty of operating organizations to know that the work is so arranged in all yards as to avoid unusual delays. Reports made by inspectors show that on many lines there has not been provided a system that insures unflinching attention to all loaded cars that for any reason fall out of the regular current of movement, including no bills, cars improperly billed, cars held for disposition or reconsignment, company material, and cars in bad order, including the repair of loaded cars in preference.
5. A careful study should be made of the organization and facilities at all important yards and terminals to insure a proper and efficient method.
 - (a) as to proper organization of force,
 - (b) assignment of individual responsibility of duties,
 - (c) supervision of office and yard operations.
 - (d) working facilities of yards and power,
 - (e) yard office facilities.
6. It is suggested that with the curtailed activities of traffic department some of the various employees, formerly acting as traveling agents, might, with profit, be put in charge of yard office organizations at some of the larger terminals or assigned to special duties in connection therewith.
7. With efficiently organized force should follow a very careful study to determine a possibility of further extension of solid train load movement to avoid switching enroute. This plan is now in effect from the larger terminals to the seaboard, and the average miles per car per day made by these solid trains handling full tonnage, is the best indication of the importance of extending this practice wherever possible. Where there is not sufficient tonnage available, loads for common points should be assembled together to facilitate train lot consolidations at other points.
8. Delays in yards and congestions are frequently caused by failure of agents to observe embargoes. No valid excuse exists for this if clear instructions are in the hands of every agent as to embargoes in effect. Prompt report should be made to this office of any accumulation of cars occasioned by loading prior to issuance of embargoes with details as to car numbers and full billing reference.

The larger part of the transportation troubles of the railroads arise from improper conditions in the terminals, and if you will provide a proper organization and direct them on the lines outlined above with such further directions as your experience no doubt will dictate, it will bring surprising results.

May I not ask that all officers responsible for terminal and yard operation on your line be especially directed and instructed to give these matters their very closest attention and may I further ask that you have experienced men especially detailed to check up the operation of these yards to the end that the Railroad Administration may get the most efficient operation possible out of their operation, and that you advise me of action you have taken.

In circular No. 17, confirming telegraphic advices, he has emphasized the necessity for prompt movement of empty and loaded coal cars, as follows:

- To insure full car supply at coal mines, it is imperative that:
1. Loaded cars must not be delayed in transit or at destination;
 2. Coal empties must be moved daily;
 3. It is suggested the practice of certain lines operating mine empty cleanup trains daily might be profitably adopted, thereby insuring regular and current movement of empties to mines.
 4. Accumulate in train lots and give preferential service, if necessary, to insure current movement to mines.
 5. Impress transportation department forcibly there must be no slowing up in movement of coal or mine empties regardless of increased traffic occasioned by usual heavy fall business and grain movement.

Handling Passing Reports.—A Reconsigning and Diversion Bureau, in charge of J. B. Crawford, Room 402, No. 58 East Washington Street, Chicago, Ill., has been established for the purpose of providing facilities for the transmission of information to shippers and receivers and, ultimately, for the handling of reconsignments and diversions of fruits and vegetables moving from the West to Eastern destinations. Agencies of the bureau will be established at Buffalo, Boston, Cleveland, Cincinnati, Detroit, Indianapolis, Pittsburgh and New York.

Telegraphic passing reports of cars destined to the following points will be communicated to shippers and receivers as outlined below:

Destination	Passing at	Shipments routed
Detroit, Mich.	Chicago.	All Lines
Buffalo, N. Y.	Chicago.	All Lines
Cleveland, Ohio	Chicago.	All Lines
Cincinnati, Ohio	Chicago.	All Lines
Indianapolis, Ind.	Chicago.	All Lines
Pittsburgh, Pa.	Chicago.	All Lines
Boston, Mass.	Chicago-Buffal.	Via Buffalo
Boston, Mass.	Chicago-Hornell	Erie-D&H-B&M
New York	Chicago-Hornell	Erie RR.

Reports will be transmitted to other points as conditions warrant.

Consolidated mail reports, showing departure of all cars from Chicago, will be sent agents of the bureau at the above points in order to provide record on cars diverted after departure from Chicago.

The bureau for the present will confine this service for the transmission of information on cars moving eastbound through Chicago. The handling of diversions or reconsignments will be taken over in the near future, as soon as arrangements can be perfected.



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General News Department

The National Safety Council will hold its annual meeting at the Hotel Statler, St. Louis, Mo., from September 16 to 20 inclusive.

The Grand Trunk freight house at Ottawa, Ont., was destroyed by fire on August 15, together with 28 loaded freight cars; estimated loss, \$90,000. The fire was started by an explosion in a freight car.

Employees of the Long Island Railroad have raised money to present a Red Cross ambulance to the government, and are now contributing a fund for a second ambulance—about \$4,900 in all. No employee or officer gives more than one dollar.

The sailing-day plan for freight shipments has recently been introduced at over 100 stations in the Northwestern region. It is expected that it will be inaugurated in the Chicago switching district for the roads in the Northwestern region, about September 1.

The issuance of passes by railroads operated by the government will be continued as usual, pending further orders, and passes to be issued by the federal manager, or where there is no federal manager, by the general manager; but annual passes for officers connected directly with the director general and his staff, or the regional or district directors and their staffs, will be issued by the office of the director general.

Women continue to replace men in new occupations in railway work from week to week. The Department of Labor recently drew attention to the fact that women have been successfully employed in railroad tank painting, and noted that one of the many unusual calls received at the various local offices of the Federal Employment Service recently was one from an eastern railroad for six baggage porters, which was promptly met.

The Shopmen of the Louisville & Nashville have been "organized," and, according to a Louisville paper, about 97 per cent of the several thousand men in the different shops of the road have joined unions representing their several crafts. The men will work under what is called the Southeast agreement, and papers were signed on August 15 by the superintendent of machinery, representing the road, and by leaders of the several crafts. The federated shop crafts include the machinists, the blacksmiths, the boiler-makers, the sheet metal workers, the electrical workers, and the carmen.

The Chicago City Council, through its committee on local industries, threatens to sue the Illinois Central to recover for the city the value of lands which, it alleges, the railroad is occupying without authority. The land in question consists of street ends occupied by tracks and warehouses north of Randolph street. The law, according to the chairman of the committee, provides that when shore owners make land they must keep existing streets open to the lake. The Illinois Central, however, has not kept Lake and South Water streets open to the lake but has closed them at Beaubien court. The committee estimates the value of the land involved at about \$10,000,000. Officers of the Illinois Central say that the property in question has been occupied by the railway for 66 years.

Priority Certificates cannot be bought, and it is useless to employ agents to obtain certificates or to use their influence in getting favorable decisions from the War Industries Board. This is the gist of a statement which has been issued by E. B. Parker, Priorities Commissioner. He says that his attention has been called to the fact that certain individuals are offering their services and soliciting employment to present priority applications and procure the issuance of priority certificates. The rules and regulations of the Priorities Division are clear, and will be furnished to

anyone applying therefor. The employment of agents burdens the applicant with a wholly unnecessary expense, and an attempt on the part of agents to exert personal influence may have a tendency to prejudice the applicant's cause.

The proposed new passenger station of the New York Central at 149th street, New York City (Mott Haven junction), planned more than two years ago but never begun, is the subject of a communication from the Public Service Commission of the State to the Railroad Administration looking to a hastening of the work. The recent changes in the routes of subway trains in New York have caused congestion of passenger traffic at a number of places and the Commission is seeking ways of meeting this difficulty. It was expected that the station would be begun in 1916. It would provide facilities for turning back New York Central and New Haven suburban trains at 149th street, as passengers could be discharged there and be taken to the business district by both the east side and the west side subways, thus eliminating congestion at the Grand Central station. The New York Central has made some preliminary expenditures for this station, several thousand dollars having been spent in the construction of passageways from the subway station to what eventually will be the concourse of the new railroad station.

Bonus to Santa Fe Soldiers Promoted

Every officer or employee of the Atchison, Topeka & Santa Fe who wins a commission while in foreign military or naval service will receive \$200 from the Santa Fe Foreign Service Fund to defray the cost of his equipment as an officer. Sometimes a man declines a commission owing to the expense involved in its acceptance. The Santa Fe people hope by removing this factor to spur every man in the ranks to greater efforts to get his bars. This fund is being collected by the Santa Fe Magazine and now aggregates over \$3,500.

Five Cents More for Coal Delivered to Engine Tenders

Under an order of the Fuel Administration, effective August 17, there may be added to the government mine price of coal delivered directly from mine tipples to locomotive tenders the sum of five cents a net ton, or such other sum as may be agreed upon between the operator and the railroad receiving the coal. In case of failure to agree the operator shall furnish such coal at the government mine price, plus such additional sum as may be fixed by the Bureau of Prices of the Fuel Administration.

Meeting to Discuss Fuel Economy in Stationary Plants

A meeting has been called by Eugene McAuliffe, manager Fuel Conservation Section, Division of Operation, United States Railroad Administration, of one delegate from each railroad operating 500 or more miles of line for the purpose of discussing fuel conservation in stationary plants. The meeting is to be held at the Dearborn Hotel, Chicago, at 9:30 a. m., on Monday, September 9. The delegates are to be selected with regard to their direct responsibility for fuel consumption on other than locomotives. The mechanical engineering staff of the United States Fuel Administration, Department of Conservation, headed by David Moffet Myers, will attend the meeting, and deliver a series of short, concise addresses on the proper maintenance and operation of stationary plants. There is a great opportunity of saving fuel along these lines. In 1918 the railroads consumed in this manner approximately 16 million tons of coal costing about \$56,000,000. The meeting will last only one day and is held a day before the Traveling Engineers' Association convenes in order that the men attending may have an opportunity to attend that convention.

Conservation of Freight Cars

The number of freight cars saved on the Southern Pacific (Pacific System) by economy in loading during the six months ending June 30, 1918, was 48,951. During the six months the tonnage loaded totaled 9,783,635 tons of commercial freight compared with 9,537,062 tons for a corresponding period in 1917, an increase of 246,573 tons. Total cars loaded, 368,609, compared with 406,852 cars for a like period in 1917; an increased volume of 246,573 tons was accommodated with a reduction of 38,243 cars. The heaviest average car loading was accomplished on the Shasta Division with a percentage of load to capacity of 83.5.

Frauds in Priority of Lumber Shipments

In the United States District Court at Newark, N. J., eight lumber dealers have been indicted for violation of the Interstate Commerce law in avoiding freight embargoes by shipping lumber to an officer of the army without having authority from anybody connected with the government to do so. The offenses occurred in the latter part of 1917, and the early part of 1918. The investigations were made by the district attorney for New Jersey, the Investigation Bureau of the Department of Justice, and special agents of the Interstate Commerce Commission. The indictments charge the companies and their officers with procuring illegal discrimination by which they were able to sell lumber while others could not sell, and also were able to get a higher price from the government. The defendants are the Metropolitan Lumber Company, and Jacob Jacobson; the Southern Lumber Company, and David Jacobson, all of Newark, N. J.; Heidritter Lumber Company, and Frank R. Wallace, of Elizabeth, N. J.; Franklin Lumber Company of Newark; Coastwise Lumber & Supply Company of Jersey City; Boynton Lumber Company of Seawaren, N. J.; Ira R. Crouse of Perth Amboy, N. J., and Perrine & Buckelew, Inc., of Jamesburg, N. J.

Following the investigation of these cases, the director general of railroads issued his order No. 38, noticed in the *Railway Age*, August 2, page 221, regulating the marking of freight for the government.

Railway Earnings in 1917 and 1916

The following table showing railway earnings in the calendar year ended December 31, 1917, as compared with 1916, is one compiled by the Bureau of Railway Economics and includes those roads with annual operating revenues above \$1,000,000. The figures as given are not final, as one road is missing, but the total mileage represented is 233,445.

The figures show that the total operating revenues in 1917 were \$4,011,380,041, an increase over 1916 of about \$419,030,349. Operating expenses, however, showed an increase of \$471,866,542, leaving a net operating revenue of \$1,184,243,291, a decrease of \$52,836,193.

RAILWAY INCOME ACCOUNT, 1917 AND 1916

Account	1917	1916	Increase 1917 over 1916
Operating revenues	\$4,011,380,041	\$3,592,349,697	\$419,030,349
Operating expenses	2,827,136,750	2,355,270,208	471,866,542
Net operating revenue	\$1,184,243,291	\$1,237,079,484	\$52,836,193
Tax accruals	213,882,232	156,869,925	57,012,307
Uncollectible revenue	698,723	821,750	d 123,027
Misc. operating income	9,983,157	2,889,286	7,093,871
Total operating income	\$979,545,493	\$1,082,277,095	d \$102,731,602
Net rentals—balance*	Dr. 36,258,338	Dr. 42,033,737	5,775,399
Net operating income**	\$943,287,155	\$1,040,243,358	d \$98,956,203
Non-operating income	216,154,708	203,663,497	12,491,216
Gross income	\$1,159,441,863	\$1,243,906,855	d \$84,464,987
Deductions:			
Interest on funded debt	\$404,313,381	\$406,430,990	d \$2,117,609
Interest on unfunded debt	13,632,435	13,822,324	d 190,089
All other deductions	153,416,412	180,031,859	d 26,615,447
Total deductions	\$571,362,228	\$600,285,373	d \$28,923,145
Net income	\$588,079,635	\$643,621,477	d \$55,541,842
Disposition of net income:			
Dividend appropriations	\$222,378,713	\$175,107,298	d \$47,271,415
Appropriations for investment in physical property	45,419,690	61,704,005	d 16,284,315
Other appropriations	25,582,319	47,892,604	d 22,310,285
Total appropriations	\$293,380,722	\$284,703,907	\$8,676,815
Balance to profit and loss	294,698,913	358,917,570	d 64,218,657

* Hire of equipment and joint facility rents.

** Corresponds to "standard return" of the railway control act.

d Decrease.

Traffic News

The Railroad Administration has put in effect new rates on manganese ore much lower than the prevailing rates carried in current tariffs.

Preferred handling of threshing machine repair parts has been established by express companies at the request of the Food Administration. Delays in transit have caused losses of grain due to remaining too long in the field.

The Cape Cod Canal is to be deepened from 17 feet to 23 feet, dredging having been ordered by the government to accomplish this deepening at the three points where the depth is at present insufficient. With the greater depth it will be possible to move through the canal the coal—about ten million tons annually—now carried to New England by water around Cape Cod. James H. Hustis, district director of railroads for New England, announces that Captain A. L. Crowley has been appointed general agent for the canal, with office at 148 State street, Boston. Three tugs have been engaged to tow sailing vessels through the canal.

The rules of the Interstate Commerce Commission relative to the publication and filing of tariffs, as shown in its circular 18-A, continues in force notwithstanding orders of the Railroad Administration, except as may be expressly called for in such orders. Instructions to this effect have been issued by Edward Chambers, director of traffic, Railroad Administration, in circular No. 4, instances having arisen where the I. C. C. rules were not properly complied with. A suspended schedule must not be cancelled nor any change made in a rate or provision that is held in effect by virtue of a suspension order, except by special permission of the Interstate Commerce Commission.

Travelers' Aid Society

The Travelers' Aid Society assisted during 1917 about 750,000 persons, and expects this year to make a record of 2,000,000. There are now 175 organizations doing such work throughout the United States, and reports received from only 75 of these for the first six months of 1918 show a total of 342,124 persons assisted. The society has in the past devoted its efforts largely to furnishing moral protection to travelers, especially women and girls who are unaccompanied, but since the beginning of the war the society has found it necessary to broaden its activities to include munitions centres and war camps.

Coal Production

During the week ended August 10 the production of bituminous coal not only decreased 278,000 net tons, or 2.2 per cent, but recorded the fourth successive week of decreased production, says the weekly bulletin of the United States Geological Survey. The decrease in production during this period was equivalent to 1,000,000 net tons or 7.6 per cent below the record week of July 13, when production reached 13,286,000 net tons, and makes necessary an output of 14,500,000 net tons during the balance of the summer months to make up the deficit for the coal year to date.

The output during the week of August 10, including lignite and coal made into coke, is estimated at 12,274,000 net tons, as against 12,552,000 net tons during the week of August 3 and 10,636,000 net tons during the current week of 1917. The average production per working day during the week of August 10 is estimated at 2,046,000 net tons as compared with 2,092,000 net tons during the week preceding and 1,773,000 net tons during the week of August 10, 1917. The daily average during the current week fell 54,000 net tons or 2.6 per cent behind the daily summer requirements established by the United States Fuel Administration.

Anthracite production during the week of August 10 is estimated at 2,051,933 net tons, a decrease compared with the week preceding of 6.4 per cent. Shipments during the

same week totaled 36,870 carloads, decreasing 7 per cent. Total production during the coal year to date is estimated at 37,709,447 net tons, an increase over the same period of last year of 2.1 per cent.

The percentage of full time output lost on account of car shortage during the week ending August 3 was 7.5, representing the fourth successive increase in that number of weeks.

Anthracite Coal Shipments

Anthracite coal shipments in July amounted to 7,084,775 gross tons, against 6,867,669 tons in June, and 6,724,252 tons in July of last year. The July shipments were the largest ever made in that month, and have been exceeded only twice—in March of this year, and in October, 1917. The shipments for the first four months of the present coal year (April to July, inclusive) amounted to 27,208,073 tons, against 26,283,113 tons for the same period of 1917, an increase of 924,960 tons. The July returns show a substantial increase in the output of domestic sizes, which in the earlier months of the year had shown a relative decline. The figures by railroads for July are as follows:

	July	
	1918	1917
Philadelphia & Reading.....	1,420,624	1,256,316
Lehigh Valley.....	1,319,731	1,254,647
Central of New Jersey.....	641,547	603,704
Delaware, Lackawanna & Western.....	1,034,561	1,052,944
Delaware & Hudson.....	820,530	758,695
Pennsylvania.....	504,630	510,941
Erie.....	824,242	768,245
New York, Ontario & Western.....	167,656	168,915
Lehigh & New England.....	351,254	349,845
Totals.....	7,084,775	6,724,252

The National Industrial Traffic League

The National Industrial Traffic League, G. M. Freer, Cincinnati, president, will hold its summer meeting at the Hotel Lafayette, Buffalo, N. Y., on Thursday and Friday, August 29 and 30. The report of the executive committee contains seven principal subjects: Shippers' Representation on Freight Traffic Committees; Instructions of the Car Service Section on Double Loading; Establishment of Bureaus to Take the Place of Off-Line Offices; Keeping Records of l. c. l. shipments at Junctions; the New Rules for Payment of Freight Charges; the Recent Advance in Freight Rates; the Policy of the Post Office Department in Adjusting Damage Claims.

Other subjects on the docket are the following: Demurrage Rule 6, Section D, Proposed Modification; Demurrage Rule 4, and the Sending of Freight Arrival Notices by First-Class Mail; Proposed Restoration of the Average Agreement Rule; New Requirements on Bills of Lading; Express Companies' Rates, Proposed Change in Packing Rules, and other matters connected with express traffic; Sale of Unclaimed Freight Without Notification to the Shipper; Carriers' Refusal to Pay Concealed Loss and Damage Claims, and other matters connected with freight claims; Report of Classification Committee; Report on sidetrack agreements.

The Port of New York

William R. Willcox, chairman of the New York-New Jersey Port and Harbor Development Commission, commenting on erroneous statements concerning the congestion of freight at New York harbor last winter, says that the capacity of the port for the handling of freight, whether inbound or outbound, equals several times the demands made upon the port, even the present extraordinary war demands. Mr. Willcox calls attention to the fact that the port of New York has a waterfront of 770 miles, of which a length of 320 miles has been developed.

This commission, which, for the current year, has an appropriation of \$200,000, one-half from New Jersey and one-half from New York, is conducting extensive investigations preliminary to the making of a comprehensive report on the capacity and needs of the port. The commission is co-operating with the United States Shipping Board, which is investigating

all the ports of the country, and also with the Fuel and the Railroad Administrations. The investigations of the commission are made under the direction of B. F. Cresson, Jr., consulting engineer, whose office is at 14 John street, New York City. Men will be sent into the field to make minute studies of the railroad service, the steamship and lighterage services, and also the business of trucking in the streets.

A force of 25 observers is already at work investigating railroad freight stations, a twenty-four-hour inspection being made at each point. These same men will probably be employed to investigate the operations of drays. Other investigators will examine the records of the railroads, and surveyors are to locate an exterior belt line for a railroad in New Jersey. Studies will be made of the 400 warehouses in the Metropolitan district, and all necessary data will be gathered in regard to markets and food distribution. The barge canal and all other facilities and institutions connected with New York City's commerce will be reported on in detail.

Metamorphosis of Traffic Associations

The Western Passenger Association, the Trans-Continental Passenger Association and the Southwestern Passenger Association, with their auxiliary bureaus, have been abolished, and their activities are to be assumed by the Western Passenger Traffic Committee, with the following organizations: (a) Western Passenger Bureau, with Eben E. MacLeod, formerly chairman of the Western Passenger Association, as manager, and J. E. Hannegan, formerly chairman of the Southwestern Passenger Association, as assistant manager, with headquarters in the Transportation building, Chicago; (b) Bureau of Service of National Parks and Monuments, the establishment of which was announced in the *Railway Age* August 9. The passenger bureau will consist of a tariff division, a clergy permit division and a military division. Mr. Hannegan, who is in charge of the tariff division, is now in conference with the rate clerks of the Western roads, to work out permanent tariffs to take the place of the temporary tariffs which were prepared early in the summer.

Hearings on Proposed Consolidated Classification

Hearings on the proposed consolidated freight classification No. 1 were held at Boston, Mass., on August 1 and 2, before Examiner Disque of the Interstate Commerce Commission, and a hearing was opened at New York on August 5. In the enforced absence of Examiner Disque who was incapacitated through illness, J. C. Colquitt, classification agent of the Interstate Commerce Commission, assumed charge of the proceedings. The New York hearing was concluded at the end of the week and a hearing was opened at Chicago on August 12 before Examiner Disque.

At Chicago considerable attention was given to proposed Rule 10 which authorizes mixed carloads at the carload rate applicable to the highest classed or rated article. A number of witnesses explained how the rule would work a hardship on their particular industries. Members of the special committee which prepared the proposed classification were asked whether if, as a result of the application of the proposed rule, it could be shown that an undue hardship had been worked, the carriers would be willing to establish a specific mixture. They replied they would do so provided that the hardship resulting was an undue hardship. H. C. Barlow of the Chicago Association of Commerce, spoke in favor of Rule 10. He stated that terminals were never so congested as at present and that one thing that would materially relieve the congestion was a mixed carload rule which would permit the shipper to use his own terminal. The rule, he added, would avoid expense to the carrier in handling much of what is now shipped as l. c. l. freight. Official Classification territory has had a mixed carloading rule for years, and commerce has thrived as a result of it. Rule 10, he thought, was the best rule which could be framed, and he urged that it be given a fair trial.

The remainder of the hearing was devoted to a consideration of complaints regarding the classification of specific commodities. The fourth hearing on the classification was opened at Omaha, on August 19.

Commission and Court News

Interstate Commerce Commission

The Chamber of Commerce of Cedar Rapids, Ia., has filed complaints with the Interstate Commerce Commission against the new rate on coal from Illinois mines to Cedar Rapids.

The commission has set September 20 as the date for a hearing at Portland, Ore., on the rates on fruit, etc., from Washington, Oregon and Idaho. On September 23 hearings will be held in the same place relative to diversion and reconsignment rules.

The National Council of Farmers' Co-Operative Associations, of which Clifford Thorne is general counsel, has filed a complaint with the Commission against the rates on corn, oats, rye and barley resulting from the Director General's recent 25 per cent increase in freight rates.

Heated Car Service Regulations

Opinion by the Commission:

Under their present tariff rules, railroads are liable for loss or damage due to frost, freezing, or overheating, not the direct result of actionable negligence of the shipper, when, at the request of the shipper, and for a charge in addition to the rate, the carriers furnish protection to perishable commodities against heat or cold. A proposed amendment intended to relieve the roads of liability for loss or damage to protected shipments between points in the United States and points in Canada is found to have been unlawful as to traffic from points in the United States to destinations in Canada. The determination of the propriety of the proposed new tariff rule applicable to shipments from points in Canada to destinations in the United States is left with the Canadian commission. (50 I. C. C. 620.)

Personnel of Commissions

W. J. Patterson has been appointed assistant chief of the Bureau of Safety, Interstate Commerce Commission, with office at Washington, D. C. Mr. Patterson has been an inspector of safety appliances under the commission for the past four years.

Court News

Safety Appliance Act—Moving Defective Cars

The Circuit Court of Appeals, Sixth Circuit, holds that the federal safety appliance act does not permit a railroad company to move without penalty from one point to another a defective car not known to be defective, and which is not so moved for the purpose of repair, although in fact it is hauled to the nearest available point for repair.—C. & O. v. U. S., 249 Fed. 805. Decided April 5, 1918.

Hours of Service Act—Two Offices Virtually One

A tower office used continuously by three telegraph operators was burnt down, and thereafter an office at an adjoining station was used for some time, three operators being provided. The railroad company then placed a box car about the site of the old tower in the yards some distance from the station. The station then was operated only in the day; the agent-operator being on duty more than 12 hours, while the operator in the box car was on duty more than 12 hours at night. The Circuit Court of Appeals, Sixth Circuit, holds that the railroad company could not escape the provisions of the hours of service statute on the theory that the box car and station were separate offices, particularly as the station had been used as night and day office for more than a year previously, and the business conducted through the station and box car was unitary in character.—Grand Rapids & Indiana, 249 Fed. 646. Decided March 5, 1918.

Decisions Under Federal Employers' Liability Act

The Utah Supreme Court holds that a plaintiff employed in a roundhouse, injured while engaged in repairing a passenger engine which before the injury had been used exclusively in interstate commerce, was being repaired so as to be again used for the same purposes, and was so used after repair, was engaged in interstate commerce.—Kuchenmeister v. Los Angeles & Salt Lake, (Utah), 172 Pac. 725. Decided April 20, 1918.

The Kentucky Court of Appeals holds that if old ties were being thrown over an interstate railroad's embankment or fill to strengthen and make it safer for use in transportation, the company's servant, when injured in such work, was engaged in interstate transportation, or in work so closely related as to be practically a part of it.—Ohio Valley v. Brumfield's Adm. (Ky.), 203 L. W. 541. Decided May 28, 1918.

The West Virginia Supreme Court of Appeals holds that an electrical engineer, employed by a railroad to instruct its motormen how to operate motors in interstate business was while so employed engaged in interstate commerce within the meaning of the act. The duties of such employee requiring him to ride passenger and freight trains, and at times to board them while in motion, and whose time, pay and service began and ended at a certain point on the railroad, remained such employee within the meaning of the act so long as he was engaged in the discharge of his duties as such and while attempting to board a freight train to get back to his initial point in order to complete his day's service.—Dumpley v. Norfolk & Western, (W. Va.), 95 S. E. 863. Decided March 19, 1918. Rehearing denied May 9, 1918.

Cartage and Demurrage Tariffs

In proceedings against the Michigan Central for failure to observe published tariffs by giving discriminatory privileges in regard to transportation in failing to exact demurrage charges, the railroad contended both that the specified free time had not elapsed and that the time provisions of the demurrage tariff were generally inapplicable in the circumstances. The case grew out of the great congestion of traffic in and about Detroit during the summer of 1912. Certain carloads of building material were delayed after arrival because, according to the indictment, the consignee was not ready to use the material and had no yards to store it. A concession was made to the consignee in not being charged one dollar a day for each car, according to the published demurrage tariff. The railroad's theory was that the delays were caused by the traffic congestion, which was beyond its control, and that the cancelling of the charges was not a concession. In affirming a conviction as to certain of the cars the Circuit Court of Appeals, Sixth Circuit, found from the record that failure to make delivery of the contents of the cars within the free time was due to the fault of the consignee and not of the railroad. It was immaterial that the cars had been placed on the delivery track in an order different from that of their shipment, in which order the consignee wanted their contents, any claim of the consignee on this account being separate from that of liability for demurrage. A provision of a demurrage tariff that no demurrage charges shall be assessed for detention of cars through railroad errors or omissions was held to refer to such errors and omissions after placement of the cars on delivery tracks and notice thereof. Under a provision of a demurrage tariff for extra free time in case of bunching, as the direct result of the act or neglect of the carrier, bunching as the result of the consignee's previous fault in not accepting will not avail. Though a demurrage tariff contemplates a notice of arrival of cars and a notice of placement, any notice of placement agreed on by the parties is sufficient to start the running of time, irrespective of sufficient preliminary notice of arrival. The trial court imposed the full penalty of \$24,000 for the failure to charge about \$60 demurrage on 12 out of 30 cars covered by the indictment. It was held that the trial court, in deciding on the penalty, could consider discrimination disclosed for which there could be no conviction until the Interstate Commerce Commission passed on the matter, or even if it did not violate the letter of any demurrage or other tariff. W. Evans, D. J., dissented on the last point.—Michigan Central v. United States, 246 Fed. 353.

ANNUAL REPORT

St. Louis-Southwestern Railway Co.—Twenty-seventh Annual Report "Cotton Belt Route"

OFFICE OF CHAIRMAN AND BOARD OF DIRECTORS

New York, May 15, 1918.

To the Stockholders of the St. Louis-Southwestern Railway Company:

The twenty-seventh annual report of our company, for the calendar year ended December 31, 1917, is herewith presented.

Report of Mr. J. M. Herbert, President, which follows, shows operating revenues, expenses, and operating results, as well as the financial and physical condition of the property.

INVESTMENT IN ROAD AND EQUIPMENT

Liberal expenditures have been made for additions and betterments to road and equipment, as reflected in Exhibit "I" on page 33.

During the year \$1,204,044.79 was charged to "Road and Equipment—Road," and "Road and Equipment—General Expenditures," of which \$936,534.12 was appropriated from income and \$17,313.81 from surplus, account "Donations" made by individuals and companies. Expenditures amounting to \$256,716.22 were made and charged to "Road and Equipment—Equipment." The total expenditures for road and equipment for the year aggregated \$1,460,761.01.

FEDERAL CONTROL

Under the Act of Congress, approved March 21, 1918, enacted pursuant to the proclamation issued by the President of the United States December 27, 1917, taking over the control and operation of the railroads of the country under authority vested in him by the Act of Congress of August 29, 1916, the possession and control of the properties of this company were, effective at noon December 28, 1917, vested in the United States Railroad Administration, Honorable W. G. McAdoo, Director General of Railroads. The Act contemplates that the President of the United States, or his authorized agents, shall make a contract with each company covering the operation of its property during Government control, and the payment of its guaranteed compensation; and further provides that, where, by reason of exceptional circumstances, the net operating income during three-year period upon which the compensation is to be based is plainly inequitable as a fair measure of just compensation, the President may make such an agreement for compensation as, under the circumstances, he may find just. Attention is being given to the preparation of this contract. Some exceptional circumstances, affecting the operations of this company during the three-year period, will be presented to the Government for consideration.

CAPITAL STOCK

As indicated in Exhibit "N" on page 38, there has been no change made in the Capital Stock of the Company during the year.

FUNDED DEBT

Pursuant to authority delegated by the Board of Directors, a Sinking Fund was established to provide for the acquisition of First Consolidated Mortgage Bonds of the Company, for the purpose of aiding in their retirement, as of date April 1, 1917, and paid for and canceled on that date, \$690,000.00 par value unamortized Five Per Cent. Equipment Trust Gold Notes, Series "E," with interest to date of payment.

As set out in detail in Exhibits "O" and "P" on pages 39 and 40, funded debt outstanding in the hands of the public was reduced during the year in the sum of \$1,200,000.00, as follows:

First Consolidated Mortgage Bonds Acquired:		
Bonds acquired under Sinking Fund Plan, 650 Bonds @ \$1,000.00 each		\$670,000.00
Equipment Trust Obligations Matured and Paid:		
Equipment Trust—Pennsylvania Company for Insurances on Lives and Granting Annuities—Trustee	\$34,000.00	
Special Equipment Trust—The Philadelphia Trust, Safe Deposit and Insurance Company—Trustee	66,000.00	
Series "A"—U. S. Mortgage and Trust Co. of New York—Trustee	46,000.00	
Series "D"—U. S. Trust Company of New York—Trustee	34,000.00	
Series "E"—Guaranty Trust Co. of New York—Trustee		
Paid at maturity	\$118,000.00	
Called and paid prior to maturity 690,000.00	808,000.00	

Series "E"—Guaranty Trust Co. of New York—Trustee	\$1,200,000.00	
Total	\$1,700,000.00	

NEW YORK & MEMPHIS RAILWAY BRIDGE AND TERMINAL COMPANY		
Capital Stock	\$1,700,000.00	

The property of the above company is owned jointly by The Chicago, Rock Island and Pacific Railway Company, the Missouri Pacific Railroad Company, and St. Louis-Southwestern Railway Company; crossing the Mississippi River between Bridge Junction, Arkansas, and Memphis, Tennessee. To provide funds for the construction of the bridge and approaches, the Bridge and Terminal Company issued its First Mortgage Bonds in amount \$6,000,000.00, and Capital Stock, \$10,200.00. On account of market conditions, it was considered unwise to dispose of the bonds of the plant, the bridge and Terminal Company issued its Six Per Cent. Three Year, Gold Notes, in the amount of \$5,000,000.00, maturing January 1, 1918, which notes were secured by the \$6,000,000.00 Bridge and Terminal Company's First Mortgage Bonds. In addition to the amount received on account of sale of \$5,000,000.00 notes, the three proprietary companies advanced \$170,000.00 each to the Bridge and Terminal Company construction account, necessary for its completion. Prior to maturity of these notes, namely, January 1, 1918, an agreement was made between the proprietary companies and the Bridge and Terminal Company, providing for refinancing the Bridge and Terminal Company by increasing its capital stock. This

company accordingly purchased its pro rata, or one third, of the increased capital stock, in the sum of \$836,600.00 par value, and \$1,250,000.00, par value, of the Bridge and Terminal Company's First Mortgage Bonds. To accomplish its part of the refinancing of the Bridge and Terminal Company, it was necessary for your company to borrow \$1,227,000.00, of which amount \$562,000.00 has been liquidated at the date of this report; the balance, \$665,000.00, is the only loan of your company now outstanding. The three proprietary companies own all outstanding stocks and bonds of the Bridge and Terminal Company. Further reference is made in Exhibit "K" on pages 35 and 36 of this report.

LIBERTY LOAN BONDS

This company subscribed for \$1,000,000.00 United States Government Liberty Loan Bonds of the Second Issue. In the allotment by the Government, the subscription was reduced to \$880,000.00. At the close of the year, as shown by Exhibit "L" on page 36 of this report, these bonds were pledged as collateral, securing cash loans necessary in the Arkansas & Memphis Railway Bridge and Terminal Company transactions; a portion of which have since been paid and the bonds thus released are now carried in our treasury as free assets.

FREE ASSETS

In Exhibit "S" on page 43 will be found summary of property investments and advances unfunded, cash loans to controlled and affiliated lines, and unpledged securities (not necessary for control) held in company's treasury as of December 31, 1917, which indicates a prosperous financial condition of the Company.

Announcement is made, with profound sorrow, of the death, on April 30, 1918, of Mr. S. C. Johnson, General Auditor of the Company. Mr. Johnson had, for thirty-six years, faithfully and efficiently served the Company and its predecessors in an official capacity in Accounting Department. It affords pleasure to the Board of Directors to express to officers and employees thanks for their co-operation and efficient service rendered during the year.

By order of the Board of Directors,
EDWIN GOULD,
Chairman.

"COTTON BELT ROUTE"—ST. LOUIS-SOUTHWESTERN RAILWAY CO.
OFFICE OF THE PRESIDENT.

St. Louis, Mo., May 1, 1918.

MR. EDWIN GOULD,
Chairman of the Board of Directors, New York, N. Y.

DEAR SIR:—
Herewith is submitted report, for the year ended December 31, 1917, of the operations and affairs of the Company, its financial and physical condition, as of the close of the year.

The average main trunk mileage operated was 1,753.5 miles as compared with 1,753.8 miles for the previous year. In Exhibit I on page 64 of the appendix hereto will be found the detail of the miles of track operated in the several divisions.

The financial results from operation, for the years 1917 and 1916, will be found in the condensed statements immediately following:

FINANCIAL RESULTS FROM OPERATION—SYSTEM.				
INCOME STATEMENT FOR CALENDAR YEAR.				
	YEAR ENDED		+ Increase, - Decrease	
ITEM.	Dec. 31, 1917.	Dec. 31, 1916.		
AVERAGE MILES OPERATED.	1,753.5	1,753.8	—	0.3
OPERATING INCOME:				
Railway Operating Revenues.....	\$17,309,656.93	\$13,850,130.43	+\$3,459,526.50	
Railway Operating Expenses.....	10,896,859.93	9,318,305.55	+ 1,578,554.38	
Net Revenue from Railway Operations	\$ 6,412,797.00	\$ 4,531,824.88	+\$1,880,972.12	
Railway Tax Account.....	\$ 1,075,096.36	\$ 615,813.76	+\$ 459,282.60	
Uncollectible Railway Revenues	1,329.83	2,377.36	— 1,047.53	
Total	\$ 1,076,426.19	\$ 618,191.12	+\$ 458,235.07	
Railway Operating Income.....	\$ 5,336,370.81	\$ 3,913,633.76	+\$1,422,737.05	
NON-OPERATING INCOME.....	1,826,129.38	1,826,285.56	— 207,843.79	
GROSS INCOME.....	\$ 7,159,500.16	\$ 5,438,939.32	+\$1,720,570.84	
DEDUCTIONS FROM GROSS INCOME	3,286,044.84	3,266,764.33	— 69,280.51	
NET INCOME.....	\$ 3,873,455.32	\$ 2,172,175.00	+\$1,631,280.32	
DISPOSITION OF NET INCOME:				
Income Applied to Sinking Fund	\$ 412,860.07		— \$ 412,860.07	
Income Appropriated for Investment in Phys. Property	971,390.20	132,579.61	+ 838,810.59	
Total	\$ 1,384,250.27	\$ 132,579.61	+\$1,251,670.66	
INCOME BALANCE TRANSFERRED TO PROFIT AND LOSS.....	\$ 2,489,205.05	\$ 2,039,595.36	+\$ 449,609.69	

PROFIT AND LOSS STATEMENT.

ITEM.	YEAR ENDED		+ Increase. -- Decrease.
	Dec. 31, 1917.	Dec. 31, 1916.	
CREDITS:			
Credit Balance (at beginning of fiscal period).....	\$ 6,074,555.58	\$ 4,212,863.27	+ \$1,861,692.31
Credit Balance Transferred from			
Income.....	2,489,208.05	2,089,585.36	+ 399,622.69
Unrefundable Overcharges.....	1,839.56	1,083.74	+ 755.82
Donations.....	17,313.81	11,701.74	+ 5,612.07
Miscellaneous Credits:			
Adjustments Required to Bring to Par First Cons. Mtg. Bonds Renquired at Less than Par.....	261,858.27		+ 261,858.27
Miscellaneous.....	66,166.40	60,482.08	+ 5,684.32
Total.....	\$ 8,910,941.67	\$ 6,375,716.19	+ 2,535,225.48

ITEM	YEAR ENDED		Increase Decrease
	Dec. 31, 1917.	Dec. 31, 1916.	
DEBITS			
Surplus Appropriated for Invest- ment in Phys. Plant and Equip.	\$ 17,313.81	\$ 11,701.74	\$ 5,612.07
Funded Debt Discount Exting- uished through Surplus		16,178.62	16,178.62
Loss on Retired Road and Equipment—Road	26,356.32	28,656.12	2,299.80
Loss on Retired Road and Equipment—Equipment	389,888.77	195,528.17	194,360.60
Delayed Income Debits:			
Repair Claims and Ex- posed Assets Rate 4 cts.	1,099.65	6,260.41	5,164.36
Tap Line Reparation Claims.	78.00	1,352.11	3,674.44
Miscellaneous		16,677.76	16,677.76
Miscellaneous Debits:			
Adjustment of Return Clay Ballast Store	161,815.70		161,815.70
Adjustment of Memphis R. R. Term. Co.—Capital Stock and Advances "Written Off" in Part	70,296.10		70,296.10
Miscellaneous	18,383.53	22,405.35	4,019.82
Balmo. Credit, Carried to Gen- eral Balance Sheet	\$ 225,711.39	\$ 627,558.58	\$ 2,151,155.81
Total	\$ 8,910,941.67	\$ 6,375,716.19	+\$2,535,225.48

OPERATING REVENUES.

The total operating revenues for the year amounted to \$17,309,656.93 as compared with \$13,850,130.43 for the previous year; an increase of \$3,459,526.50, or 24.98%. Exhibit "A" on page 26 furnishes in detail the increases and decreases in the several classes of revenue.

On page 45 will be found statistical information disclosing the gratifying increases in passenger and freight traffic handled, and the revenues accruing therefrom, as compared with the previous year.

It is pertinent to direct attention to decrease of 7.51% in the tonnage of cotton handled during the year as compared with previous year. The decrease in the tonnage of this commodity, which constitutes an important factor in the traffic of the Company, was due, in a measure, to embargoes on shipments of cotton to New England points, and for export, which were in effect during the year 1917, and also to the fact that the crop produced was somewhat smaller than the previous year. The data in the report, quite a large volume of cotton, thus held back, has been moved, which will favorably affect the results for the year 1918. Efforts of the Company to induce farmers to diversify their crops, with view of producing food and feed, have been effective. As a result, there has been a decrease in the tonnage of grain and feed handled by the Company, which, for the year, shows an increase of 38,722 tons, or 57.34% over the previous year. Conspicuous increases are also shown in the tonnage of oats and corn. Growing out of the prosperity of agriculturists, manufacturers, and merchants along the line, and the activity of the Traffic Department in the solicitation of classes of freight not heretofore handled by this company, a considerable volume, a material increase is shown in many commodities.

OPERATING EXPENSES.

The total operating expenses for the year amounted to \$10,896,859.93 as against \$9,318,305.65 for the previous year; an increase of \$1,578,554.38, or 16.94%. The increase in the operating expenses was due, to some extent, of course, to the increase in the volume of traffic handled; also, in a great measure, to the general increases paid for labor and material. Exhibit "A" on page 26 furnishes the amounts and percentages of increase in the several general operating expense accounts.

In the exhibit mentioned in the foregoing paragraph will be found the ratios of operating expenses to operating revenues, and ratios of the several general operating expense accounts to the total operating expenses. The ratio of total operating expenses to total operating revenues for the year was 62.95% compared with 67.28% for the previous year; or a decrease of 4.33%.

CAR AND TRAIN LOADING.

The average load in tons per loaded freight car mile and per loaded freight train mile for the past nine years was as follows:

Average load in tons per loaded car mile, including Company material:

Year ended June 30	St. L. S-W. Ry. Co.	St. L. S-W. Ry. Co. of Texas.	System.
1910	18.58	16.89	18.14
1911	18.78	17.30	18.32
1912	18.02	16.44	17.54
1913	18.36	16.44	17.78
1914	18.22	16.19	17.62
1915	17.95	16.57	17.55
1916	18.18	17.40	17.95

Year ended
December 31

1916	18.52	17.30	18.17
1917	20.89	19.34	20.46

Average load in tons per train mile, including Company material.

Year ended June 30	St. L. S. W. Ry. Co.	St. L. S. W. Ry. Co. of Texas.	System
1910	434.16	196.27	326.11
1911	423.70	200.04	320.16
1912	447.25	211.19	340.58
1913	461.11	214.50	349.49
1914	485.14	199.37	377.65
1915	457.53	208.21	345.21
1916	489.88	252.71	386.40

Year ended December 31	1970	1971	1972	1973
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December 31,			
1916	485.57	250.67	390.40
1917	616.62	286.10	474.06

DATE RECEIVED _____ RATE SITUATION _____

In the Twenty-fifth annual report, for the year ended June 30, 1907, mention was made of the efforts being put forth by this company and others

interested carriers to secure certain advances in both state and interstate freight rates and passenger fares. Following will be found information to the results of these efforts, or the status of the cases still unsettled, as

MISSOURI PASSENGER. Growing out of efforts put forth by the carrier in Missouri to secure increased revenue from the handling of Missouri st.

passenger traffic, effective January 1, 1918, the carriers were authorized by the Public Service Commission to advance the Missouri state passenger fare from two (2c) cents per mile to two and one-half (2½c) cents per mile, for one way passage; and from two (2c) cents per mile to two and four-tenths (2.4c) cents per mile, for round trip passage; at the same time the carriers were required to place on sale individual five hundred (500) mile tickets good for one way, and one hundred mile tickets, interchangeable with the Missouri line, and good between all points in the State of Missouri, both at one and one-quarter (2¼c) cents per mile.

ARKANSAS—PASSENGER. The three (3c) cent maximum passenger fare, covering Arkansas state traffic, under a temporary injunction, to which reference was made in the annual report for year ended June 30, 1914, has been made permanent by the Supreme Court of the United States. The parties to the suit, to have the three (3c) cent maximum fare made permanent, presented testimony in the case in the United States District Court, for the Eastern District of Arkansas, and the State of Arkansas will present testimony in support of the same. The Supreme Court has not yet definitely arranged at this time. As the collection of a three (3c) cent maximum fare covering state passenger traffic is necessary to afford a reasonable return over operating expenses, and as a large proportion of the passenger traffic is interstate, it is believed that the three (3c) cent fare is essential that the three (3c) cent fare be made permanent. Furthermore, as the Arkansas interstate passenger fare is, generally speaking, predicated on the interstate fare, a decision favorable to the carriers of material importance.

LOUISIANA—FREIGHT. In the case generally known as the "Interstate Commerce Commission, I. & S. Docket No. 1000," involving interstate freight rates to and from points in Louisiana, and Louisiana state freight rates alleged to be discriminatory against interstate traffic, argument has been made before the Interstate Commerce Commission, but, to date, the Commission has withheld the issuance of its order in the premises.

TEXAS—FREIGHT. In the re-hearing by the Interstate Commerce Commission in the so-called "Shreveport Case," which was held during the year 1902, the Interstate Commerce Commission rendered an opinion and order, and had taken any part in the former hearing of the case, the Interstate Commerce Commission recently rendered an opinion re-affirming its former findings, and an order, which is in substance as follows: "That the Interstate Commerce Commission over state rates, in connection with which interstate rates were involved. The opinion carried with it an order, which is in substance as follows: 'That the Interstate Commerce Commission commodity rates, and increases in others.' It is impossible at this date to state the effect of the order in question on the freight revenues of this com-

This company, with other Texas carriers involved in the case, prepared a large volume of data and presented much testimony, indicating that the present rates were inadequate to defray the expense of handling the traffic and provide a reasonable return on the investment in the properties.

MISSOURI AND ARKANSAS. LEGAL. The decision of the Interstate Commerce Commission, rendered in the Spring of 1917, in the case brought by the Missouri and Arkansas Cattle Raisers' Association against the railroads between Memphis and Arkansas to be reasonable as a whole, and ordered the removal of the discrimination caused by the unduly low state rates in Arkansas, was immediately arrested for further consideration. This case has been added into what is known as the "Memphis-Southwestern Investigation" and involves interstate rates to and from points in Arkansas, Oklahoma, and Southeast Missouri, and also state rates in Arkansas and Oklahoma. The company which is the subject of this investigation is the Missouri and Arkansas Cattle Raisers' Association, and the testimony indicating the necessity for an increase in the rates involved in the case to meet the increasing cost of feed and other necessities of the cattle raisers, and

Throughout the major portion of the territory traversed by these lines, the agricultural conditions for the past year were generally most satisfactory. Good production of such important crops as wheat, corn, and clover, and an extensive devastation of grass. The fall and winter months, for the most part, were excellent.

In the Twenty-sixth annual report for the year ended December 31, 1916, statement was made that the "Tentative Valuation" of these lines, which work was undertaken by the Interstate Commerce Commission, late in the year 1914, would probably be available in the latter part of 1917. However, up to the date of this report, the Interstate Commerce Commission has not presented the results of its valuation of these lines.

To date the amounts expended by this company on account of the Federal Valuation work are as follows:

Year ended June 30, 1945	\$14,817.81
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Year ended June 30, 1916.....	30,839.66
Six months ended December 31, 1916.....	19,478.17
Year ended December 31, 1917.....	26,435.61

[illegible]

INVESTMENTS IN ROAD AND EQUIPMENT

Statement of expenditures for additions and betterments during the year will be found in Exhibit "II" under the heading, "Investment in Road and Equipment."

EQUIPMENT

The program providing for the rehabilitation of freight equipment to extend over a period of three years, to which reference was made in previous annual report, has been carried on. During the year 2,003 freight train cars were dismantled, and rebuilt.

In the previous annual report, statement was made that contract had been let for the building of 125 steel underframe 80,000 pounds capacity box cars, to fill vacancies caused by the destruction of a similar number of 60,000 pounds capacity wooden box cars, covered by Equipment Trust Agreements. This equipment was received during the month of January, 1918, and is now in use.

During the year, 42 freight-train cars of 60,000 pounds capacity were built at Company Shops to replace trust equipment destroyed by wrecks, fire or otherwise.

FEDERAL TAXES.

The state, county and municipal taxes have been increasing from year to year and the Company's "Railway Tax Accruals" for the years ended December 31, 1916, and 1917, were materially increased by the Income Tax Law of 1916, approved September 8, 1916. The War Revenue Act of 1917, approved October 3, 1917, placed an additional heavy tax on the Company in the year ended December 31, 1917. By the Act last mentioned, the taxes were increased for the past year by the additional four per cent. on the net income in the sum of \$153,419.55, and by the Excess Profits Tax in the sum of \$182,485.34.

VALLEY TERMINAL RAILWAY.

Mention was made in annual report for year ended December 31, 1916, of the organization of the Valley Terminal Railway, for the purpose of constructing a complete freight terminal at Valley Junction, in St. Clair County, Illinois, adjoining East St. Louis, Ill. The completion of this terminal has been unavoidably delayed owing to difficulty in obtaining necessary materials, and litigation; but, at the time of this report, the work is nearing completion, and the terminal is expected to be ready for operation at an early date. A lease is now being drawn providing for the leasing and operation of the terminal by this company.

EXHIBIT S.

SUMMARY OF PROPERTY INVESTMENTS AND ADVANCES UNFUNDED, CASH LOANS CONTROLLED AND AFFILIATED LINES, AND UNPLEDGED SECURITIES (NOT NECESSARY FOR CONTROL) HELD IN COMPANY'S TREASURY, AS OF DECEMBER 31, 1917—SYSTEM.

ACCOUNTS.	DETAILED AMOUNT.	TOTAL AMOUNT.
INVESTMENT IN ROAD AND EQUIPMENT		
—ROAD, UNFUNDED—		
St. L. S-W. Ry. Co. of Texas, expenditures, Jan. 1 to June 30, 1917.....	\$ 482,643.43	\$ 482,643.43
SINKING FUNDS		
St. L. S-W. First Consolidated Mortgage Bonds—Par Value.....	\$ 670,000.00	
Cash Deposit.....	4,718.34	674,718.34

[Adv.]

INVESTMENTS IN AFFILIATED COMPANIES—

STOCKS—UNFUNDED

Arkansas & Memphis Ry. Bridge and Terminal Co.—Preferred Capital Stock—Par Value.....	\$ 550,000.00	\$ 550,000.00
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BONDS—UNFUNDED

Paragould S.E. Ry. Co., First and Ref. Mfg. Bonds—Par Value.....	\$ 300,000.00	
Southern Ill. & Mo. Bridge Co., First Mfg. Bonds—Par Value.....	500,000.00	
Arkansas & Memphis Ry. Bridge and Terminal Co., First Mfg. Bonds—Par Value.....	1,250,000.00	2,300,000.00

ADVANCE ON ACCOUNT

Southern Ill. & Mo. Bridge Co.—Construction Advances.....	\$ 40,000.29	
Gray's Point Terminal Ry. Co.—Construction Advances.....	75,329.76	
Paragould Southeastern Ry. Co.—Construction Advances.....	7,118.94	
The Pine Bluff Ark. River Ry.—Construction Advances.....	32,107.91	
Memphis R. R. Terminal Co.—Construction Advances.....	50,000.00	
Dallas Terminal Ry. and U. D. Co.—Construction Advances.....	5,454.00	
Stephenville N. & S. Texas Ry. Co.—Construction Advances.....	67,370.22	277,477.21

LOANS—COVERED BY BILLS RECEIVABLE—

Valley Terminal Railway.....	\$ 460,870.80	460,870.80
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UNADJUSTED DEBITS—

PROPERTY ADVANCES—IN SUSPENSE

Illmo, Mo., Terminals—Really Advances in Suspense.....	\$ 25,821.77	25,821.77
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SECURITIES ISSUED OR ASSUMED—UNFUNDED

St. L. S-W. Ry. Co., Common Stock—Par Value.....	\$ 145,000.00	
St. L. S-W. Ry. Co., Preferred Stock—Par Value.....	106,350.00	
St. L. S-W. Ry. Co., First Term. & U. Mtg. Bonds—Par Value.....	4,114,000.00	4,364,250.00
Total.....		\$9,196,781.55

Equipment and Supplies

Locomotives

THE INDIAN STATE RAILWAYS are inquiring for several Consolidated locomotives.

THE RAINEY WOOD & COKE COMPANY is inquiring for one six-wheel switching locomotive.

Iron and Steel

THE DULUTH, MISSABE & NORTHERN has ordered 318 tons of steel for a coal handling bridge from the Illinois Steel Company.

THE CHICAGO & NORTHWESTERN has ordered 185 tons of steel for a turntable at Cedar Rapids, Ia., from the American Bridge Company.

THE TRANS-AUSTRALIAN RAILWAY.—The Commonwealth Railways Commissioner has recently issued an interesting folder, descriptive of the east to west Trans-Australian Railway from Kalgoorlie in Western Australia to Port Augusta in South Australia. It is furnished with two excellent maps of the railway, one showing its immediate connections, and the other how it joins up the capitals of all the Australian States. Time-tables of the through services are given, with an illustrated description of the route and of the rolling-stock provided on the new line. The engineering features of the line were fully described in the *Railway Age* of February 1, 1918.

Supply Trade News

Sylvanus L. Schoonmaker, chairman of the board of directors of the American Locomotive Company, died on August 17 at his summer home at Locust Valley, L. I.

The sale of the property of the Orenstein-Arthur Koppel Company at Koppel, Pa., scheduled to have been held on August 15 by the alien property custodian of the United States, has been postponed until September 12.

Arthur Aigeltinger has been elected president of the American Malleables Company, with headquarters at Lancaster, N. Y., to succeed A. S. Blagden, resigned to accept the position of vice-president and general manager of the Air Reduction Company, of New York City.

The Chicago Pneumatic Tool Company has started work on the construction of an addition to the Cleveland plant, which is planned to double the present output. It is expected that work will be completed on the building about November 1. The necessary equipment has been ordered.

Richard H. Wheeler has been appointed traffic manager of the nitro plant of the Hercules Powder Company, Nitro, W. Va., effective July 15, 1918. G. D. Moffett, general agent of the Chesapeake & Ohio at Charlestown, W. Va., has been appointed assistant traffic manager of the same plant, effective August 15.

Press G. Kennett, western railroad sales manager of the Flint Varnish & Color Works, with headquarters at Chicago, has resigned to become manager of the railroad department of the C. R. Cook Paint & Varnish Company, Kansas City,

Mo. Mr. Kennett was connected with the Flint Varnish & Color Works for eight years and previous to that had 17 years of railroad experience in the stores and purchasing departments of several lines in the Southwest.

Henry Stroh, who for the past ten years was connected with the Elliot Frog & Switch Company, prior to which time he was associated with the Republic Iron & Steel Company, both of East St. Louis, has entered the service of the Walter A. Zelnicker Supply Company, St. Louis, Mo., in the sales department, and Merle G. Peterson, who was formerly associated with the Niles-Bement-Pond Company and the Pratt & Whitney Company, has recently entered the company's Chicago sales department.

R. L. Mason, who is the Pittsburgh representative of the C. F. Massey Company, manufacturers of reinforced concrete railway culvert pipe and of Klein & Logan Company, manufacturers of railway tools and for years widely known in Pittsburgh in connection with railroad work, has just finished a ten-day special training in Columbia University, New York City and will sail shortly for France, where he will be connected in an administrative capacity with the Y. M. C. A. During his absence his business will be taken care of by **W. I. Creese**.

W. J. Schlacks, vice-president and director of McCord & Co., at Chicago, has incorporated the Locomotive Lubricator Company and has purchased the McCord locomotive lubricator. The new company will manufacture and promote the sale of the Schlacks system of locomotive forced feed lubrication. **O. H. Neal** and **C. W. Rudolph**, sales engineers, who have been associated with Mr. Schlacks in McCord & Co., have joined the new company, now located in the Tower building, Chicago. Mr. Schlacks' photograph and biographical sketch were published in the *Railway Age* on November 23, 1917.

T. H. Patenall, Canadian representative of the Union Switch & Signal Company, at Montreal, Que., died in that city on August 6. Mr. Patenall was one of the best known signal engineers in America, having been prominent in the manufacturing branch of the business for over 30 years. He was born in England and had had extensive experience in that country before coming to the United States in 1888. He was engaged in that year with Henry Johnson in the Johnson Railroad Signal Company at Rahway, N. J., and continued with that concern when it was absorbed by the National Switch & Signal Company. The National was later bought by the Union and thus Patenall came to be with the latter company. His most notable work was in connection with the redesigning of the controlled manual signal apparatus to fit it to meet the demands of American practice as developed on the New York, New Haven & Hartford and the New York Central, and the modification and refinement of the Webb & Thompson staff instrument.

Trade Publications

TRACK CONSTRUCTION CATALOGUE.—The St. Louis Frog & Switch Company, St. Louis, Mo., has issued a new general catalogue, designated as No. 2, containing a complete account of its line of track materials and supplies. Forty pages are also devoted to the tabulation of useful track data, including tables of mathematical properties of turn-outs, crossings, curves, etc. Following this are full page illustrations of the various types and sizes of switches, frogs, crossings and frog and switch parts, switch stands for steam railways, electrical railways and industrial track use. Manganese track construction is also covered in detail. On account of its completeness the book constitutes a valuable reference on track construction.

EXTENSION OF SAO PAULO-RIO GRANDE RAILWAY. By decree No. 13067, of June 12, 1918, the president of Brazil has approved the plans for the second extension of the Peixe River of the São Paulo-Rio Grande Railway. This extension comprises a distance of about 23 kilometers (14 miles). The approved estimate of the cost of construction is 1,109,266 milreis (about \$277,314).—*Commerce Reports*.

Railway Construction

ILLINOIS CENTRAL.—This company has awarded contracts for the construction of ten water softening plants at different points on its lines. A contract for a plant at Dubuque, Iowa, which will have a capacity of 30,000 gal. per hr., was awarded to the William Graver Tank Works, Chicago. Plants at Carbondale and at Freeport, Ill., which will have capacities of 50,000 gal. per hr., will be built by the International Filter Company, Chicago. At Charles City, Iowa, a 6,000-gal.-per-hr. capacity plant will be constructed by the L. M. Booth Company, Chicago. This company will also construct plants of the same capacity at Osage, Iowa, and Mona. At Independence, Iowa, a 15,000-gal.-per-hr. plant will be built by the Permutit Company, Chicago. The Railroad Water & Coal Handling Company, Chicago, will build a 30,000-gal.-per-hr. capacity plant at Cherokee, Iowa; a 6,000-gal.-per-hr. capacity plant at Merrill, Iowa, and one of the same capacity at Marcus, Iowa.

The Illinois Central has also awarded a contract for the construction of mechanical facilities at Benton, Ill., to C. B. Johnson & Son, Chicago. The work will be done on a cost plus percentage basis, and includes the construction of two new cinder pits, a locomotive crane, a frame enginehouse, a boiler house and additional water facilities.

The road has also awarded a contract to C. B. Johnson & Son, Chicago, for the construction of a five-stall roundhouse, a boiler room, a sand house, locker room, oil room, and cinder pit, and the installation of a Robertson cinder conveyor, at DuQuoin, Ill. The work will be done on a cost plus percentage basis.

The Illinois Central has also awarded a contract to T. S. Leake & Co., Chicago, for the construction of mechanical facilities at Hawthorne, Ill., including an eight-stall roundhouse, a power plant, a locker room and toilet facilities—all fireproof and of concrete and brick construction, a clam-shell cinder pit, an 85-ft. turntable, sewers, water works and necessary trackage. The contract was let on a cost-plus-percentage basis and the estimated outlay for the work is approximately \$150,000.

NORFOLK & WESTERN.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the complete design and construction of a 1200-ton capacity, 6-track, automatic-electric, reinforced concrete locomotive coaling plant at West Roanoke, Va. The structure will be equipped with a concrete "Rand S" gravity sand plant, using Beamer patent steam sand dryers, and duplicate hoisting and distributing coal equipment. A unique feature in the design will be installation over the top of the bin of electrically-operated shaking screens for screening Pocahontas mine run coal over 2 in. perforations, the coal smaller than 2 in. to be used in mechanical stoker locomotives on freight trains. The lump coal will be used on passenger locomotives. The construction of the plant will commence immediately, and the cost will be approximately \$165,000.

BRAZIL BURNS FLOUR FOR FUEL.—A despatch from Buenos Aires to the New York Commercial is authority for the report that after corn and other cereals had been burned at Buenos Aires for fuel because of the coal and wood shortage, the electric company and other manufacturers started to burn tons of flour. Coal is \$70 a ton, gold, and a corresponding quantity of wood costs \$40. At that, both are practically unobtainable. Strikes financed by German agents and the lack of repair parts is paralyzing the lone railway which connects the city with the northern timber lands.

ENGLAND TO EGYPT VIA AIR.—Two royal air force officers, with two mechanics, recently completed a flight from England to Egypt, a distance of 2,000 miles, in a type of airplane that has seen considerable service on the front. The official report in announcing this feat, says: "One or two halts were made for petrol, but the flight was merely a bit of routine work."

Railway Officers

Railroad Administration

J. J. Tatum, manager of the car repair section under the United States Railroad Administration, has been appointed general supervisor of car repairs; **F. P. Pfahler**, mechanical engineer of the locomotive section, has been appointed chief mechanical engineer; **John McManamy** has been appointed general superintendent of equipment, west, and **George N. DeGuire** has been appointed general supervisor of equipment, east; all with headquarters at Washington, D. C.

Federal and General Managers

E. D. Bronner, federal manager of the Michigan Central, with office at Detroit, Mich., has had his authority extended over the Grand Rapids & Indiana, effective August 15.

The authority of **P. E. Crowley**, federal manager of the New York Central and the Lake Erie & Pittsburgh, with office at New York, has been extended over the Cherry Tree & Dixonville.

The authority of **E. M. Costin**, federal manager of the Cleveland, Cincinnati, Chicago & St. Louis, with office at Cincinnati, Ohio, has been extended over the Muncie Belt Railway and the Indianapolis Union.

C. M. Kittle is no longer federal manager of any part of the Louisiana Railway & Navigation Company's property, the government having made a contract with that company providing for immediate relinquishment of its lines, to be operated by the corporation.

L. Kramer, federal manager of the Missouri, Kansas & Texas, the St. Louis-San Francisco, the Oklahoma Belt, and the West Tulsa Belt, has had his jurisdiction extended to include the Kansas City, Clinton & Springfield, with headquarters at St. Louis, Mo., effective August 10.

Louis S. Taylor, controller of the Pullman Company, with headquarters at Chicago, has been appointed federal manager of that part of the property of the Pullman Company now under federal control, which will hereafter be known as the Pullman Car Lines, effective August 19. Mr. Taylor was born in Chicago, Ill., in July, 1872, and in September, 1889, he entered the service of the Pullman Palace Car Company, now the Pullman Company, as a messenger boy in the financial department. Later he became consecutively clerk, paymaster and cashier. In December, 1907, he was appointed treasurer of the manufacturing department. Two years later he was elected treasurer of the entire company and in February, 1917, he was elected controller, which position he held until his appointment as federal manager. Mr. Taylor, besides having charge of the operation of the Pullman car lines, will also have charge of the car repair shops located at various points throughout the United States.



Louis S. Taylor.

The authority of **F. H. Alfred**, federal manager of the Pere Marquette and the car ferry lines on Lake Michigan, with office at Detroit, Mich., has been extended over the Detroit, Bay City & Western, the Ann Arbor Railroad, the Detroit & Mackinac, the Port Huron & Detroit, and the Port Huron Southern.

The authority of **G. L. Peck**, federal manager of the Pennsylvania Railroad, western lines, the Pittsburgh, Cincinnati, Chicago & St. Louis, the Cincinnati, Lebanon & Northern, the Lorain, Ashland & Southern, the Pittsburgh, Chartiers & Youghiogheny, the Calumet Western, the Englewood Connecting Railway and the South Chicago & Southern, with headquarters at Pittsburgh, Pa., has been extended over the Ohio River & Western Railway.

Operating

O. F. Johnson, assistant to general manager of the Minneapolis & St. Louis, has been appointed inspector of transportation, with headquarters at Minneapolis, Minn., and his former position has been abolished.

W. E. McGarry, supervisor of car service of the Southwestern region, has resigned to become assistant to the general manager of the Terminal Railroad Association of St. Louis, with headquarters at St. Louis, Mo.

H. E. Hutchens has been appointed terminal manager at Birmingham, Ala., with authority over the terminals of all lines within the switching limits of Birmingham, and **J. P. Walker** has been appointed terminal manager at Charleston, S. C., with authority over the terminals of all lines within the switching limits of Charleston.

D. E. Rossiter, trainmaster on the Racine and Southwestern division of the Chicago, Milwaukee & St. Paul, at Savanna, Ill., has been appointed superintendent of the La Crosse division, with headquarters at Milwaukee, Wis., succeeding **P. C. Eldredge**, resigned. **E. W. Lollis**, trainmaster on the Kansas City division, at Ottumwa Junction, Iowa, has been transferred to Savanna to succeed Mr. Rossiter. **R. D. Miller** has been appointed trainmaster of the Kansas City division to succeed Mr. Lollis, effective August 15.

W. F. Giles, superintendent of the Brookfield division of the Chicago, Burlington & Quincy, has had his jurisdiction extended over the Quincy, Omaha & Kansas City. **H. W. Hamm**, superintendent of the Centerville division of the Chicago, Burlington & Quincy, has had his jurisdiction extended over the Iowa & St. Louis, extending from Sedan, Iowa, to Elmer, Mo. The position of general superintendent of the Quincy, Omaha & Kansas City and the Iowa & St. Louis has been discontinued, effective August 16.

F. P. Abercrombie, acting division superintendent of the Pennsylvania Railroad, has been appointed superintendent of the Juniata division of the Pennsylvania Railroad, with headquarters at Bedford, Pa. The Huntingdon & Broad Top Mountain Railroad and the Bedford division of the Pennsylvania Railroad have been consolidated and are now operated as the Juniata division. **A. B. Cuthbert**, acting division superintendent of the Pennsylvania Railroad, has been appointed superintendent of the Cresson division, with office at Cresson, Pa. The Cresson and the Bellwood divisions of the Pennsylvania Railroad have been consolidated and are now operated as the Cresson division.

A. J. Dawson, whose promotion to superintendent on the St. Louis system of the Pennsylvania Lines West of Pittsburgh, with headquarters at Decatur, Ill., was announced in the *Railway Age* on July 26, was born in Jefferson county, Ohio, on August 1, 1868. Mr. Dawson began railway service as a telegraph messenger on the Cleveland and Pittsburgh division of the Pennsylvania Lines West on September 1, 1883. On January 22, 1885, he was promoted to telegraph operator on the same division. Subsequently he became train dispatcher and assistant trainmaster. On July 9, 1900, he was appointed chief clerk to the superintendent of the Erie and Ashtabula division, and on October 19, 1903, he was promoted to trainmaster on the Cleveland and Pittsburgh division, with headquarters at Cleveland, Ohio, which position he held until his promotion to superintendent, as mentioned above.

Financial, Legal and Accounting

H. T. Wickham now has the title of general solicitor instead of general counsel of the Chesapeake & Ohio; and **Henry Taylor, Jr.**, now has the title of general attorney instead of general solicitor; both with offices at Richmond, Va.

C. H. Westbrook, auditor of disbursements, of the Chicago & North Western, with office at Chicago, Ill., has been appointed assistant federal auditor of that road, and **B. A. McManus**, assistant auditor of passenger accounts, with office at Chicago, has been promoted to auditor of disbursements.

H. D. Heuer, assistant secretary of the Terminal Railroad Association of St. Louis, has been appointed general auditor, and **F. M. McDonnell** has been appointed assistant general auditor of the Terminal Railroad Association of St. Louis, the St. Louis Merchants Bridge Terminal, the Wiggins Ferry, the St. Louis Transfer, the St. Louis Connecting Railway and the Interstate Car Transfer, effective August 1.

L. J. Hensley, general auditor of the Kansas City Southern, with headquarters at Kansas City, Mo., has been appointed also auditor of the Texarkana & Ft. Smith, with the same headquarters, succeeding **E. L. Parker**, assigned to other duties. **H. Visscher**, local treasurer of the Kansas City Southern, at Kansas City, has been appointed also acting federal treasurer of the Texarkana & Ft. Smith, with the same headquarters, succeeding **J. M. Salter**, assigned to other duties, effective August 20.

Traffic

Henry Edwards Pierpont, freight traffic manager of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed traffic manager, succeeding **R. M. Calkins**,

resigned. Mr. Pierpont entered the service of the Chicago, Milwaukee & St. Paul in 1883 as a telegraph operator, and occupied various positions in the station and auditing departments, including the position of freight agent at Kansas City, Mo., until 1893, when he became division freight and passenger agent at La Crosse, Wis. He remained in that position until January 1, 1896, when he was made assistant general freight agent, with office at Chicago. Ten years later he was promoted to general freight agent at Chicago and on January 15, 1913, he was again promoted to freight traffic manager with the same headquarters, which position he held until his recent appointment as traffic manager as mentioned above. The position of freight traffic manager has been abolished.

H. E. Pierpont

F. P. Eyman, freight traffic manager, and **Henry W. Beyers**, assistant freight traffic manager, of the Chicago & North Western, have been appointed assistant traffic managers with headquarters at Chicago; **C. A. Cairns**, passenger traffic manager, has been appointed general passenger agent and **John L. Ferguson**, general passenger and ticket agent, has been appointed assistant general passenger agent; **M. R. Leahy**, assistant general passenger agent, has been appointed assistant general agent; all with headquarters at Chicago.

J. G. Morrison, assistant to the vice-president of the Chicago Great Western, with office at Chicago, has been appointed assistant general freight agent, with the same headquarters. **C. R. Berry**, assistant to the vice-president, with headquarters at St. Joseph, Mo., has been appointed general agent at the same city. **F. P. Crawford**, division freight and passenger agent at Chicago, has been appointed division agent of the Eastern division, with the same headquarters. **W. C. Hine**, division freight agent at Ft. Dodge, Iowa, has been appointed division agent of the Western division with the same headquarters. **D. W. Quick**, division freight agent at Red Wing, Minn., has been appointed division agent of the Northern division with the same head-

quarters. **Lloyd Joden**, division freight agent at Des Moines, Iowa, has been appointed division agent of the Southern division with the same headquarters. **C. L. Smith** has been appointed general agent in the freight department at St. Paul, Minn. Freight service agents have been appointed as follows: **T. J. Cleary**, formerly commercial agent, Waterloo, Iowa; **D. Northup**, formerly commercial agent, Omaha, Neb.; **J. H. Lyman**, St. Joseph, Mo.; **J. F. Kelly**, Des Moines, Iowa, and **L. N. St. John**, Kansas City, Mo.; effective August 15.

The following assistant general freight agents of the Seaboard Air Line have been appointed division freight agents: **H. M. Boykin**, with office at Richmond, Va.; **C. C. Graves**, at Charleston, S. C.; **S. P. Stringfellow**, at Atlanta, Ga.; **R. W. Daniel**, at Birmingham, Ala.; **C. E. Muller**, at Savannah, Ga.; and **J. G. Cantrell**, Jacksonville, Fla.; **E. E. Hunter**, division freight agent has been appointed division freight and passenger agent, with office at Wilmington, N. C. The following service freight agents have been appointed: **F. H. Smith** and **C. E. Finch**, with office at Norfolk, Va.; **C. E. Thomas, Jr.**, at Richmond, Va.; **G. C. Poole**, **Andrew Syme** and **W. E. Whitmore**, at Raleigh, N. C.; **V. C. Tompkins**, at Hamlet; **J. H. Flythe**, at Greenwood, S. C.; **J. V. McCullough**, at Charleston, S. C.; **O. G. Donny**, at Columbia; **B. H. Hartley**, at Atlanta, Ga.; **R. M. Langston**, at Howells (Atlanta); **C. E. Felton** and **J. A. Henderson**, at Savannah; **F. G. Roberts**, at Cordele; **F. C. Cheney**, at Birmingham, Ala.; **E. P. Mills**, at Jacksonville, Fla.; **W. T. Vandenburg**, at West Jacksonville; **W. R. Canova**, at Lake City; **W. A. Fulwiler** and **T. P. Toland**, Tampa. The following service freight and passenger agents have been appointed: **E. W. Long**, at Charlotte, N. C.; **D. P. Hartley**, at Charleston, S. C.; **M. A. Calhoun**, at Columbus, Ga.; **J. Z. Hoke**, at Athens; **R. W. Morris**, at Birmingham, Ala.; **M. O'Connor**, at Montgomery; **C. A. Carpenter**, at Orlando, Fla., and **A. D. Williamson**, at Bradentown.

Engineering and Rolling Stock

F. L. Thompson, assistant chief engineer of the Illinois Central has been appointed chief engineer, office at Chicago.

W. R. Roof, assistant engineer of bridges of the Chicago Great Western, with headquarters at Chicago, has been promoted to bridge engineer.

Earl Stimson, engineer maintenance of way of the Baltimore & Ohio, eastern lines, with headquarters at Baltimore, Md., has been appointed general superintendent maintenance

of way and structures of all lines under the jurisdiction of A. W. Thompson, federal manager. Mr. Stimson was born at Cincinnati, O., on September 2, 1874. He was educated at Cincinnati University and at Cornell University, graduating from the latter institution in 1895. He entered railway service in June of that year as a rodman in the maintenance of way department of the Baltimore & Ohio Southwestern, with headquarters at Cincinnati. In 1896 he was promoted to assistant engineer, being transferred to Chilli-



Earl Stimson

cothe, O., in 1898. In 1899 he was promoted to resident engineer of construction, with headquarters at Osgood, Ind., where he remained until 1901, when he was advanced to the position of assistant division engineer at Chilli-cothe. His promotion to division engineer took place in April, 1902, when he was placed in charge of the engineering work of the Springfield division at Flora, Ill. He was transferred to Washington, Ind., in May of that year where he remained until 1905, when he was made engineer mainte-

nance of way of the Baltimore & Ohio Southwestern. A further promotion to the position of chief engineer maintenance of way of the Baltimore & Ohio was given him in April, 1910. The title of this position was changed to engineer maintenance of way in 1912, and it is this position which he held at the time of his present promotion.

S. G. Kennedy, shop foreman of the Atlantic Coast Line, with office at Sanford, Fla., has been appointed general foreman at Lakeland, (Fla.) shops, vice **G. F. Richards**, resigned.

T. E. Bliss, assistant engineer on the St. Louis-San Francisco, at Memphis, Tenn., has been appointed district engineer of the Frisco lines east of the Mississippi river, and the Birmingham Belt, with headquarters at Birmingham, Ala.

J. B. Myers, district engineer maintenance of way on the Baltimore & Ohio, eastern lines, with headquarters at Baltimore, Md., has been made engineer maintenance of way, eastern lines, with the same headquarters, succeeding **Earl Stimson**, promoted, as noted elsewhere.

F. T. Darrow, engineer maintenance of way of the Chicago, Burlington & Quincy lines west of the Missouri river, with headquarters at Lincoln, Neb., has been appointed assistant chief engineer of the lines west of the Missouri river. The position of engineer maintenance of way has been abolished.

C. L. Persons, assistant engineer on the Chicago, Burlington & Quincy, assigned to special work on the chief engineer's staff at Chicago, has been appointed assistant chief engineer of the lines east of the Missouri river with headquarters at Chicago. Mr. Persons has been connected with the Burlington in an engineering capacity for the past 14 years, having entered the services of that company in 1904. He was first engaged in topographical work in connection with grade reduction on the line between Rock Island, Ill., and Galesburg, following which he was engaged in construction and maintenance work for about two years. From 1908 to 1916 he was locating engineer on the Lines East with headquarters at Chicago, following which he was appointed assistant engineer and assigned to special work on the chief engineer's staff, which position he held until his appointment as assistant chief engineer as noted above.

Special

V. A. Riton, general superintendent of the Eastern General division of the Norfolk & Western, at Roanoke, Va., has been appointed acting superintendent of the relief and pension department, succeeding **J. C. Snively**, granted leave of absence on account of sickness.

Railway Officers in Government Service

A. F. Duffy has been appointed assistant manager of the Safety Section, Division of Operation, of the United States Railroad Administration, with office at Washington, D. C., succeeding **W. P. Borland**, who is now chief of the Bureau of Safety, Interstate Commerce Commission.

Corporate

Executive, Financial, Legal and Accounting

F. S. Peabody, second vice-president of the Chicago & Illinois Midland, has been elected vice-president with headquarters at Chicago, and **H. M. Hallock**, general manager, has been elected vice-president with headquarters at Taylorville, Ill. The position of second vice-president and of general manager has been abolished.

Operating

J. W. Bell has been appointed general superintendent of the Chicago & Illinois Midland, with headquarters at Taylorville, Ill.

T. L. Terrant, formerly assistant superintendent of the Baltimore & Ohio, has been appointed superintendent of the River Terminal Railway, with office at Cleveland, Ohio.

Traffic

George C. Martin, general freight and passenger agent of

the Toronto, Hamilton & Buffalo, has been promoted to general traffic manager; and **Rowland F. Hill**, assistant general freight and passenger agent, has been promoted to general freight and passenger agent; both with offices at Hamilton, Ont.

W. R. MacInnes, freight traffic manager of the Canadian Pacific, with office at Montreal, Que., has been promoted to vice-president in charge of traffic, succeeding **George M. Bosworth**, who has been appointed chairman of the Canadian Pacific Ocean Services Limited, and will devote his time to the shipping interests of the company.

Engineering and Rolling Stock

G. W. Harris, whose transfer to the staff of the president of the Atchison, Topeka & Santa Fe was announced in the *Railway Age* on August 2, has been appointed chief engineer to look after the interests of the corporation with headquarters at Chicago.

W. W. K. Sparrow, valuation engineer and member of the valuation committee of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed chief engineer in charge of the corporate interests of the Chicago, Milwaukee & St. Paul, effective September 1. Mr. Sparrow was born in Ireland on December 30, 1879, and was educated at Ros-sall, England. In 1896 he passed the examination prescribed by the Institute of Civil Engineers at London and during the same year he entered the service of the Belfast & Northern Counties Railway (Ireland), remaining with that company until 1898, when he went to South Africa to engage in railroad location,



W. W. K. Sparrow

construction and maintenance work on the Cape Government Railways and the Chartered Company of Rhodesia. From February, 1909, to July, 1912, he was in the employ of Wad-dell & Harrington, consulting engineers at Kansas City, Mo., as detailer, checker and designer. From the latter date until September, 1913, he was associated with H. von Unwerth, consulting engineer at Kansas City, Mo. From September, 1913, to April 1, 1916, he was assistant chief engineer of the Missouri State Public Service Commission, and on March 20, 1916, he was appointed valuation engineer and member of the valuation committee of the Chicago, Burlington & Quincy.

Railway Officers in Military Service

R. W. Kennedy, assistant valuation engineer of the Atchison, Topeka & Santa Fe, at Topeka, Kan., has entered the United States army.

Lieutenant Paul W. Leisner, formerly chief draftsman in the bridge department of the Chicago & North Western, at Chicago, has been severely wounded in France.

J. M. Grant, engineer maintenance of way of the Chicago, Peoria & St. Louis, with headquarters at Springfield, Ill., has been commissioned a captain in the Engineer Officers' Reserve Corps.

Obituary

Stephen E. Clark, district passenger agent of the Hocking Valley, with office at Toledo, Ohio, died on August 11.

Edward C. Bates, a prominent civil engineer of Boston, who was engaged in the construction of the Union Pacific and a number of other railroads, died on July 23 at his summer home in Ipswich, Mass.

EDITORIAL

Railway Age

EDITORIAL

An operating officer tried hard to increase the capacity of his division; he gradually perfected his organization and slowly increased its efficiency and capacity. He was far from satisfied, for he realized that there was still much to be desired, even though he was ahead of most of the other divisions. One

Have a Mark to Shoot At!

day he had an inspiration. He had been at a rifle range and had become interested in a spirited competition. He went back to the office and drew up a schedule of records of achievements toward which his subordinates might strive. He made them fairly high, but not beyond attainment under favorable conditions. Then he quietly encouraged his men to try to break these records. Some of the men immediately got into the spirit of the game and made rapid progress. Others appeared to be indifferent, but sympathetic investigation showed that they were anxious to do better, but were in need of coaching and training in their duties. Others said: "What's the use. We will never be noticed and will not get any credit." A quiet and thorough educational campaign did much for the second class; a recognition of the good work of the leaders stirred up the indifferent and the laggards. Some men did not respond and gradually eliminated themselves from the organization. The division carried off all the honors for good records; the men were enthusiastic; the operating officer was promoted to greater responsibilities. This is a crude and simple tale, and yet it roughly marks the trail that will lead to success in any department.

The Property Protection Section of the Railroad Administration has formed the Chicago Railroad Police Commission to protect from theft and destruction property in the Chicago terminals belonging to the railroads or in their possession. The need for organization and effective work on the part of the police officers of the railways in Chicago is strikingly illustrated by some statistics which recently have been compiled. They show that during the month of July the Chicago railway police made 648 arrests. Of these, 148 were for felonies and 474 for misdemeanors. The number of convictions resulting was 443; and fines and costs were assessed amounting to \$4,085.31. The stolen property recovered was valued at \$12,000 and the total amount of property stolen from the railways in the Chicago district in the year 1917 is estimated at \$2,000,000. Since the Chicago Railroad Police Commission was organized it has broken up eight large gangs which were engaged in systematic robbery of railroad property. The situation disclosed is nothing less than appalling. The railroad police should receive the utmost co-operation from the courts in their efforts to break up the constant robbery of railroads and of railway patrons. Unfortunately, they do not receive such co-operation in Chicago, for the courts there are so congested with business that there are great delays in trying persons arrested for crimes on railway premises and many of them escape. Some of these cases are tried in the Illinois state courts and some in the federal courts. It seems desirable as a means of clearing the terminals in Chicago of criminals that a federal judge should

be designated whose sole function it should be to try cases arising from crimes committed there. The number of cases arising at present would be sufficient to keep one judge busy, and if, later on, he ceased to be busy it would be merely because the proceedings in his court had proved effective.

"You cannot win a battle with listless soldiers, or Hessians. You cannot get maximum production with listless work-

"Tons of Enthusiasm"

men, or outsiders. Wages, hours of labor, sanitation, and the rest of it, are important, but they are only batting and fielding averages. We must have enthusiasm and morale, tons of them." Thus writes Henry F. Hollis, member of the Committee on Education and Labor of the United States Senate, in the July number of The Annals of the American Academy of Political and Social Science. How can this ideal state be attained? By getting each man in the organization to realize that he is a real factor in the situation. Have him feel that his individual performance is being watched closely. Commend him for good work; educate and train him to do better if his performance is below par. Let him feel that you are interested in his success. Many railroad officers and industrial managers are entirely too sparing of words of approval or praise. We do not mean that these should be distributed carelessly or that any attempt should be made to "jolly the men." Rather should they be bestowed in the spirit that a French general distributes the *croix de guerre*—a distinction that men will freely and cheerfully risk their lives to attain. The United States Railroad is a tremendously big machine. Much attention is being given to equipment, facilities, methods and practices. What it needs even more than these things is "tons of enthusiasm." We have suggested how it may be obtained; it is necessary, however, that it should begin at the top and work downward, thoroughly saturating the entire organization. There is no other way in which it can be developed.

The sub-committee of the Senate Military Affairs Committee which has been investigating the airplane situation has made its report. While admitting that much

How About the Standard Cars and Locomotives?

good work has been accomplished, it stated that "it must nevertheless be admitted that our airplane program has, up to the present, presented many aspects of failure." After outlining the mistakes which have been made, it gave the following reasons as its opinion for the disappointing results:

"That the airplane program was largely placed in the control of the great automobile and other manufacturers who were ignorant of its practical problems.

"These manufacturers undertook the impossible task of creating a motor which could be adapted to all classes of flying craft. It is not too much to say that our airplane program has been largely subordinated to the Liberty Motor.

"We failed at the beginning of the war to adopt the common sense course of reproducing the most approved types of European machines in as great numbers as possible. This should have been carried on coincident with the production

of the Liberty Motor. This sound policy has very recently, but after a lamentable lapse of time, been adopted."

The Increase of Railway Expenses

IN AN EDITORIAL in its issue of August 9, entitled "The Causes of Increases in Operating Expenses," the *Railway Age* estimated upon the basis of statistics then available, that the increase in the operating expenses of the railways in the first six months of 1918 would be approximately \$520,000,000, or at the rate of \$1,040,000,000 a year. The statistics of the Interstate Commerce Commission regarding earnings and expenses during the six months ended with June 30 are now available. Large as our estimate was, the statistics of the Commission indicate that the increase in expenses during the year will be still larger. The increase in the expenses of the large roads during these six months, as shown by the Commission's figures, was \$462,000,000. It would appear, however, that this includes only \$133,000,000 for advances in wages made since January 1, and that, therefore, about \$329,000,000 of the increase in expenses was due to causes other than advances in wages. At this rate, the increase in expenses during the year from causes other than advances in wages would be about \$660,000,000. The director general, in a statement issued by him last week, estimated the advances in wages which have been made "recently"—which doubtless means since he came into power—at \$475,000,000 per annum. This, added to the other probable increases of operating expenses, would make a total increase during the year for the Class I roads alone of approximately \$1,135,000,000.

On the whole, it would appear now that an estimate that the increase in operating expenses in 1918 will be \$1,200,000,000 for all roads would be conservative, even though there were no further advances in wages or in the costs of materials and fuel. The expenses being incurred in the maintenance of the "overhead" organization of the Railroad Administration are not as yet being included in the operating expenses of the railways, and when they are included they will add somewhat more. Already the increase in expenses is running at a rate which exceeds the maximum compensation which the Railroad Control Law would permit to be paid to the railway companies for the use of their properties. The need for the large advances in freight and passenger rates which have been made by the director general is being clearly demonstrated. In fact, it is becoming questionable whether the advances in rates which have been made will prove sufficient to offset the advances in expenses.

Commission Warranty in Contracts with Railways

IT HAS NOT YET BEEN determined whether the Railroad Administration will continue to insist upon inserting in contracts with it the warranty regarding the non-payment of commissions which was quoted in an editorial in the *Railway Age* of August 2, entitled "An Indefensible Contract Warranty." We still believe that when officers of the Administration are brought to a full appreciation of the effect its insertion in contracts for the purchase of railway equipment and supplies would have on many legitimate businesses they will agree to modify it in important respects. The warranty as originally drawn would prohibit any manufacturer from paying commissions to any person or concern for selling goods to the government, which includes the railways while they are being operated by the government. As has been pointed out before, railway supply concerns have sometimes sold their goods through salesmen employed on a salary basis, sometimes through salesmen employed

on a partly salary and partly commission basis, and sometimes through persons or concerns representing them entirely on the commission basis. In most cases their arrangements with those representing them on a commission basis have been as permanent and as public as their employment of those who have been representing them on a salary basis.

The Railroad Administration cannot gain anything for the government by stopping the sale of railway supplies on the regular commission bases which have prevailed in the past, for the prices the supply companies have charged the railways practically always have been the same whether the goods were sold by men working on salary or by men working on commission. It may be said, however, that it is necessary to prohibit sales upon commission because in some cases persons selling goods to government departments on a commission basis have secured large commissions and added them to the prices of the goods, thereby making the prices excessive. But to destroy all business done on a commission basis merely to stop the abuse of the commission method would be like burning a barn to rid it of rats that infested it. The proper way to stop an abuse is to adopt some means directly adapted to stopping it, and it alone. The use of illegitimate methods of doing business is no greater an abuse than the destruction of legitimate methods of doing business in an effort to stop the use of illegitimate methods. The right way to get out of the difficulty presented seems plain enough. This is simply to prohibit the payment of commissions except to agents or agencies regularly and publicly employed by the concern selling the goods, and to provide that the prices paid for goods sold by a concern on a commission basis shall not be greater than those paid to it for goods sold by its regular salaried salesmen.

The Death Knell of Piecework

BY GUARANTEEING a minimum wage of 58 to 68 cents an hour to car and locomotive workers, respectively, without providing a proportionate increase in the piecework rates, the Railroad Administration practically sounded a death knell to the piecework system in railway shops. The difference between what the men can now earn by working on a piecework basis and what they are guaranteed on a day work basis is too small to pay for the extra effort it will take to make piecework profitable. It will be well briefly to analyze just what this means. It is, of course, understood that wages were increased for the purpose of holding the shopmen the railways now have and of attracting additional help, in order that the output of repaired cars and locomotives may be increased. The condition of cars and locomotives today is such that a full complement of men is required. In fact, it is impossible to obtain enough men to put the equipment in proper shape. Freight cars were never in such poor condition. Increased production only will solve the problem. By eliminating piecework from a shop the output per man will be decreased. It is a generally accepted fact that the output of the same shop will be about 33 per cent greater when the men are working on a piecework basis than on a day-work basis. This means that for the same output more men will be required; shop facilities will have to be increased and additional machine tools purchased in order to accommodate the increased number of men. The cost of the work will be greatly increased. It would seem, therefore, that a part of the increase in production which was sought for by the increase in wages will be neutralized by the automatic elimination of piecework. Would it not have been wiser, and is it yet too late, to raise the piecework rates to correspond to the increase granted the day worker in order that an incentive may still be provided for the workman to increase his output?

Increased Movement of Essential Traffic

THE STATISTICS of the Railroad Administration indicate that the railways handled no more freight in the first six months of 1918 than in the corresponding months of 1917. There was some increase in freight earnings, but this was due to higher freight rates.

It does not, however, follow, because the railways handled no more freight of all kinds, that they did not render more useful service to the public than they did last year. It is conceivable that they might handle more freight of all kinds and yet handle less of the kinds that it is essential to have transported in order to provide the consuming public with necessities and enable the government effectively to carry on the war. The thing which it is most important for the railways to do now is not to handle more traffic of all kinds, but to handle more of the kinds which it is most essential in the present crisis to have moved.

The records demonstrate that the railways have been doing this. Statistics compiled by the Railroad Administration show that in the month of January there was a decline of 79,172 in the number of cars of coal loaded. There has been an increase in the number of cars loaded in every month since then, varying from 31,000 to over 113,000, and up to and including the week ending August 19 the increase in the number of cars loaded as compared with last year was 417,-861. This is equivalent to an increase of about 23,000,000 in the number of tons loaded.

Next to coal to keep American factories going and American homes warm there is nothing it is more essential should be transported in increased quantities than foodstuffs. The farmers of America must during the war supply not only the tables of the homes of America, but also the armies of the United States abroad, and, to a large extent, the civilian populations and armies of our allies. Statistics compiled by the Railroad Administration show that from July 6 to August 17 the number of cars of grain loaded in the United States was 197,428 as compared with 134,604 in 1917, an increase of 62,824.

In addition to being called on to transport a larger amount of essential freight, the railways have had to handle a vast military passenger traffic. The increase in passenger earnings during the first six months of the year was much larger relatively than the increase in freight earnings, and this was chiefly due to a large increase in the amount of both civilian and military passenger traffic. From January 1 to June 30, 1918, the railways handled 3,169,587 soldiers. Of these 1,895,476 were transported in 4,323 special trains. The average number of passengers per train was 439 and the average distance each train ran was 934 miles. The total number of troops handled between May 1 and December 31, 1917, was 2,218,432, and the total number of troops handled from May 1, 1917, to August 22, 1918, 5,377,468.

The railways under government control have not been able to show any such record-breaking increases in the amount of freight handled as they showed during the first six months they were operated under the direction of the Railroads' War Board. Many anticipated that by the mere expedient of adopting government control they could be made to handle a vastly increased business. That they have failed to do this is not a reflection upon the Railroad Administration, but upon the knowledge and judgment of those who anticipated a different outcome. Every day which passes makes it clearer that the railways under the Railroads' War Board were operating close to their maximum capacity with the facilities they had, and that the only way they can be made to handle much more traffic is to enlarge their facilities.

It would be dangerous for the Railroad Administration and the public to assume that the satisfactory transportation conditions which have existed for some months will last much

longer. There always has been, and probably will be this year, a large increase in freight business in the fall and winter. Furthermore, weather conditions at that time always become adverse to satisfactory operation. It is not to be expected that weather conditions will be so bad as they were last winter. The severity of the weather at that time is illustrated by the fact that one of the principal eastern lines spent as much money for clearing snow and ice as it did during the preceding six winters combined. Nevertheless, unless next winter is far more open than usual the organization, resources and facilities of the railroads will be put to a very severe test. Whether the organization the director general has created will prove better able to cope with the situation than did that created by the railways under private management remains to be seen. Unfortunately, there were great delays by the Railroad Administration in placing orders for cars and locomotives, and but little of the equipment ordered by it will be available for use when it is most needed. This will increase the difficulty of the task of the transportation officers. But the Railroad Administration, unlike the Railroads' War Board, can adopt any measures it may see fit to control and direct the movement of traffic or to entirely exclude any part of the traffic from transportation; and this will be of very great advantage in dealing with the situation.

Atchison, Topeka & Santa Fe

WHEN E. P. RIPLEY came to the Atchison, Topeka & Santa Fe on January 1, 1896, Aldace F. Walker was chairman of the board and the road had but recently been in the hands of Mr. Walker as receiver. The map shows the Santa Fe as it is today, but with those lines which have been added since 1896 shown cross hatched. A close study of this map will well repay anyone who is interested in the development of American railroads. Space will not permit of a chronological account of the acquisition or building of these lines further than to say that the first important acquisition was the Santa Fe & Pacific which runs from Albuquerque, N. M., (near Belen) to Mojave, Cal. (between Barstow and Kern Junction), with lines extending to Los Angeles and San Diego, and the relinquishment of the Sonora system, so-called, which was a collection of lines totaling about 350 miles and extending from Benson, Ariz., via Nogales to Guaymas, Mex. These lines are not shown on the map because they have not been operated by the Santa Fe since 1897 and are now part of the Southern Pacific's Mexican lines. The map does not show the double track work which has been done since 1896, but roughly the Santa Fe is double tracked from Chicago to Hutchinson, Kans.; that is the whole main stem is double tracked.

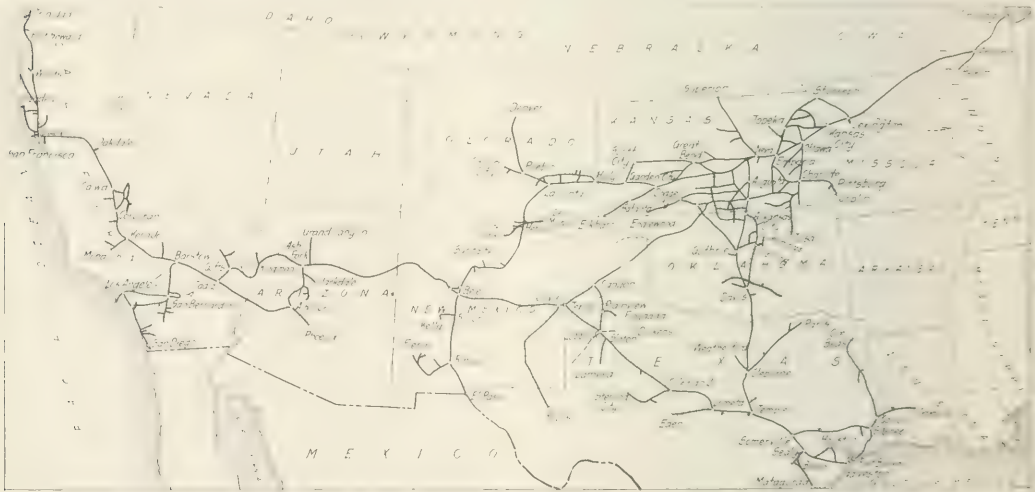
The map cannot show the grade reduction work that has been done since 1896, nor is it within the scope of these comments to go into detail as to the physical additions and betterments which have been made on the Santa Fe in the last 21 years. But the following passage taken from President Ripley's annual report for 1898, after the Santa Fe & Pacific had been taken over, throws so much light on the policy which has guided the development of the system in these twenty years, that it is well worth reading over. "When the Santa Fe & Pacific purchase was made the physical condition of the property was not up to the Atchison standard and it was fully realized that large expenditures would be necessary in order to rehabilitate it These improvements, among other things, included new rail upon the entire line except short sections which were relaid during the receivership; also considerable widening of banks and quite a large amount of ballasting and steel bridge work. Much of the cost of these betterments has been charged to current operating expenses" And again, speak-

ing of old lines east of Albuquerque, President Ripley in the same report said: "It has seemed wise to your directors to take advantage of this year of large gross income to prepare for the possibility of less favorable conditions in the future by continuing the work of putting the property into condition to be operated with the maximum of economy. It will be noticed that the large expenditure made has been made generally for betterments 'under maintenance of road and structures' and 'maintenance of equipment'" (expenses, not capital account).

It will well repay anyone who has available a map of the Chicago, Rock Island & Pacific for the year 1896, to get it out and compare it with the map of the Atchison, exclusive of those lines shown cross hatched on our map. In other words, to compare it with the map of the Santa Fe in 1896. The two maps, the Rock Island and the Santa Fe in 1896, are strikingly similar. Both show a railroad system extending from Chicago via Kansas City to Colorado and into the southwest, each system having a line down into Texas. The most striking difference is in the fact that the Rock Island line in the southwest extended only as far as the Kansas southwestern border, while the Santa Fe extended to the cen-

doubt when in the opinion of a good many shrewd students of railroad history the difference between the success of the Santa Fe and the failure of the Rock Island is the difference between the genius of Mr. Ripley and the lack of genius of the Rock Island management.

In the calendar year 1917 the Santa Fe did much the largest business in the history of the property. The operating revenue (exclusive of other income) amounted to \$165,530,000, an increase over 1916 of \$21,240,000. Operating expenses amounted to \$105,223,000, an increase of \$16,805,000. The increase in taxes, however, was out of proportion to the increase in expenses; taxes in 1917 amounted to \$11,932,000 comparing with \$6,768,000 in 1916. After payment of interest charges and rentals the company had \$38,186,000 available for dividends which was only a few thousand dollars more than was available in 1916. The five per cent dividend on the preferred calls for \$6,209,000 and the six per cent dividend for 1917 and the first quarterly dividend of 1½ per cent for 1918, both of which were paid out of the earnings of 1917, call for \$16,486,000. The company appropriated \$8,348,000 for investments in physical property from earnings. The total additions and betterments including



The Atchison, Topeka & Santa Fe

Legend: The solid lines represent the system operated by the Atchison, Topeka & Santa Fe Railroad and the cross-hatched lines represent lines acquired since 1896.

tral part of New Mexico and the Texas Line of the Rock Island extended only to Fort Worth (an inland cattle center), while the Santa Fe reached the gulf at Galveston.

It would be difficult indeed to measure in millions of dollars the value which has been created for the country served and the stockholders of the Atchison, Topeka & Santa Fe by the wisdom shown by Mr. Ripley in his development of this railroad property. Even under E. P. Ripley the Rock Island might or might not have been capable of such development as that of the Santa Fe, but the fact remains that under Mr. Ripley the Santa Fe system was developed to the 11,284 miles of railroad shown on the map with earnings of \$169,423,000 in 1917—a net corporate income for the payment of interest, taxes and rentals of \$38,186,000, or the equivalent of 15 per cent on the common stock after the payment of regular five per cent dividends on the preferred. Is it surprising that some of the older railroad men and bankers look at the taking over of the transportation system of the United States by the government officials with something of

those paid for out of earnings and those charged to capital account and including also the cost of the acquisition of new mileage was \$26,156,000.

The big increase in expenses in 1917 was in the out-of-pocket cost of moving the business (transportation expenses). These expenses amounted to \$51,932,000 in 1917, an increase of \$11,520,000. It is rather interesting to note which of the primary accounts in transportation expenses show the largest increases. These accounts were, wages of station employees, wages of yard conductors and trainmen, fuel for train locomotives, engine-house expenses, and loss and damage to freight. It is interesting, also, to note that the wages of train engineers and of trainmen are not included in this list. Train engineers were paid \$5,785,000 in 1917 as against \$5,040,000 in 1916, and trainmen \$5,856,000 in 1917 and \$5,059,000 in 1916. Substantial increases in both cases are not proportionate to the increase in other accounts mentioned.

The total ton mileage handled in 1917 was 12,906,000,000. This compares with 11,136,000,000 ton miles handled in

1916. The train load of all freight averaged 520 tons in 1917, as against 486 tons in 1916. The number of passengers carried one mile totaled 5,553,000 in 1917 as compared with 1,363,000 in 1916.

In 1917 there was a much smaller tonnage of agricultural products carried, especially corn and wheat. The total tonnage in 1917 was 6,218,000, comparing with 7,356,000 in 1916. The percentage of the total tonnage carried furnished by agricultural products was 17.46 in 1917 as against 22.13 in 1916. On the other hand, the tonnage of products of mines and of manufactures both show large increases. Products of mines furnished 15,500,000 tons in 1917 and 13,885,000 tons in 1916.

When the government took the Santa Fe and other roads over, the company had \$38,363,000 cash on hand and no loans and bills payable.

The following table shows the principal figures for operation in 1917 as compared with 1916:

	1917	1916
Average mileage of rated	11,284	11,259
Freight revenue	\$116,907,996	\$105,732,452
Passenger revenue	35,834,528	30,476,909
Total operating revenues	165,529,519	144,290,238
Maintenance of way and structures	20,162,853	19,694,833
Maintenance of equipment	27,153,323	22,657,797
Traffic expenses	2,758,804	2,714,714
Transportation expenses	51,932,093	40,411,952
General expenses	3,542,175	3,176,803
Total operating expenses	105,222,878	88,413,487
Taxes	11,932,361	6,768,156
Operating income	49,027,594	48,346,700
Gross income	52,240,229	52,555,449
Net income	18,188,547	18,112,189
Dividends	22,694,087*	
Appropriated for investment and physical property	2,416,180	
Surplus	2,955,460	

*This includes the first quarterly dividend on the common stock for 1918, declared out of 1917 earnings.

†The Atchison, Topeka & Santa Fe changed its fiscal year from the period ending June 30 to the period ending December 31. The figures, therefore, for dividends and surplus on the calendar year basis are not available prior to 1917.

Brooklyn Rapid Transit

MANY OF THE CONDITIONS which have affected steam railroad operation prior to the assumption of control by the government were also in 1917-18 affecting the operation of street and interurban railways. With the street railways, however, the labor problem was even more acute than with the steam railways. The class of labor employed on a system like the Brooklyn Rapid Transit is very largely unskilled labor and the increased demand and higher wage for unskilled labor has been greater proportionately than the increased demand and higher wage of many of the classes of skilled labor employed on steam roads. The Brooklyn Rapid Transit has, for a number of years, pursued a policy of enlightened self-interest in regard to its employees. It has had group life insurance under a plan by which the company paid the greater part of the cost for employees who had a certain record of service. It has made well directed efforts toward employees' welfare, especially in regard to providing restaurants in car barns where good food is served at a reasonable price entailing, of course, a loss to the company. The Brooklyn Rapid Transit was among the first of the larger street railway companies to recognize the higher cost of living by granting its employees a considerable raise based on this increased cost.

In the fiscal year ended June 30, 1918, it became absolutely necessary, in order to hold men, to give various increases throughout the year. At the close of the fiscal year the directors decided to make a large increase in the wages of men in the transportation department, feeling that street railway service of a certain standard was an essential to efficient war work as well as to the ordinary comfort and convenience of citizens generally. This increase will call for an additional expenditure of more than \$1,000,000 a year.

In 1918 the Brooklyn Rapid Transit earned \$30,506,000, an increase over 1917 of \$1,002,000. Operating expenses, however, in 1918 amounted to \$18,112,000, an increase of \$1,370,000, and, in addition, there was an increase in taxes and fixed charges of \$695,000, so that the net income for the year amounted to \$4,112,000 as against \$5,195,000 for the 1917 fiscal year. If no other increase in expenses took place than the \$1,000,000 in wages of men in the transportation department, it would so reduce the surplus that conservatism would require that no dividends be paid. As a matter of fact, however, the Brooklyn Rapid Transit paid only the first semi-annual dividend in 1917-18 and not only discontinued dividends in the second half of the year, but entered into an agreement not to pay any dividends either in cash or script during the time that its new notes, which it issued in 1918 and which are due in 1921, are outstanding. It would appear that Colonel Williams in his annual report states the condition of the company without the slightest exaggeration when he says, "We need more revenue, therefore, not for dividends—just as such an appropriation would be—for bare necessities, made abnormally severe by conditions for which we are not responsible."

The Brooklyn Rapid Transit had \$57,735,000 six-year 5 per cent notes due July 1, 1918. It was found impossible to refund these notes through ordinary banking channels and the company, therefore, applied to the War Finance Corporation, which was created by Congress for just such occasions as this, for aid. Note holders were offered new three-year 7 per cent notes in exchange for their 5 per cent notes and could, if they chose, take 30 per cent of their holdings of old notes in cash instead of new 7 per cent notes. All but between 2 and 3 per cent accepted the plan; most of the note holders, however, taking 30 per cent in cash. This cash was advanced by the War Finance Corporation, and the Brooklyn Rapid Transit gave the corporation its new 7 per cent notes up to the amount advanced. In other words, partly through an agreement for renewal on the part of note holders and partly through the acceptance of Brooklyn Rapid Transit notes by the War Finance Corporation, the company was able to refund the six-year 5 per cent note with a three-year 7 per cent note of the same total face value. There is, therefore, an added interest charge of \$1,154,000 besides the increase of \$1,000,000 in transportation employees' wages.

The company has made a new agreement intended to take the place of the mortgage made in 1902, under which \$150,000 bonds could be issued, but the rate of interest on such bonds was limited to 4 per cent. Under the new mortgage, however, convertible or non-convertible bonds can be issued at rates of interest, which, in the opinion of the board of directors, will be most advantageous. It is planned to acquire or exchange outstanding bonds under the old mortgage for bonds under the new mortgage and the company already has in its treasury \$22,401,000 of these old 4 per cent bonds, representing expenditures made in accordance with the provisions of the mortgage and which, therefore, it is entitled to sell to reimburse itself, but which bonds bearing only 4 per cent interest are unsalable except at an unduly heavy discount. As a matter of fact, there are only \$3,439,000 of the old bonds in the hands of the public.

The Brooklyn Rapid Transit under the so-called dual system of subways is to operate the Broadway subway in Manhattan, while the Interborough Rapid Transit operates the old subway running up Fourth avenue and also the new Seventh avenue subway which makes a second line from the Battery to 42nd street and Times Square on the west side of Manhattan.

The new system of subways is called the "H" system; there being a subway running on the east side of Manhattan Island from the Battery past the Grand Central Station at 42nd street to West Farms and beyond in the Bronx. On the west

side there are two subways from the Battery to Times Square and 42nd street and one from there on up Broadway to 240th street. There is to be a shuttle service between Grand Central Station and Times Square under 42nd street, forming the cross bar of the letter H. This system, incomplete as to stations and connections, was put into operation on August 1, but resulted in indescribable confusion, especially at the two ends of the shuttle service. The service under 42nd street was temporarily discontinued and the new system without the cross bar of the H is now in limping operation. The Brooklyn Rapid Transit is quite frank in its acknowledgment that the poor service on the Broadway line is partly due to incomplete stations and inadequate switching facilities, and in part to the incapacity of the Broadway subway to take care of the volume of traffic which now comes to it as transfer business from the Williamsburg bridge line under Canal street. The plan for the New York City subways calls for the building of other connections between Long Island (Brooklyn and Queens) and the Broadway subway, which building is to be done by the city; but until it is completed the congestion on the Broadway subway will presumably continue to be very bad.

It should be borne in mind that this Broadway subway is operated by a subsidiary of the Brooklyn Rapid Transit, the New York Municipal Railway. The earnings in 1918 from those portions of this subway which are open and the other parts of the dual system operated by the New York Municipal Railway amounted to \$13,057,000. After paying expenses and setting aside maintenance, there was \$4,760,000 available, out of which the company received its \$3,500,000 first preferential and the city was called upon to make up the deficit of \$406,000 to furnish the additional \$1,666,000 second preferential due to the company.

The consolidated balance sheet of the Brooklyn Rapid Transit system shows a total cost of road and equipment including surface lines, advances to lease companies and capital expenditures on the new subways, of \$215,153,000. The company has outstanding, including subsidiary companies' stock in the hands of the public, \$75,571,000 stock and \$119,589,000 bonds including the \$57,735,000 notes previously mentioned. On June 30, 1918, there was \$1,160,000 cash which was included in the total of \$4,027,000 current assets. The current liabilities amounted to \$9,463,000 in which there was included \$3,600,000 of bills payable secured by a deposit of Brooklyn Rapid Transit bonds as well as other bonds.

Even in comparison with a large steam railroad, the business of the Brooklyn Rapid Transit is impressive. In 1918, the total number of passengers carried was 771,044,000. The average earnings per passenger was 3.82 cents. The total mileage of first track operated was 249 and of second track 238 on the surface lines alone, and, in addition, there are 74 miles of Rapid Transit lines of double track, of which 31 miles has third track and 18 miles fourth track.

The Brooklyn Rapid Transit is asking the New York Public Service Commission for an increase in rate of fare which it may charge. It hardly needs profound mathematics to prove that if the 5 cent fare was not unduly high in 1912 or 1913 it is now unduly low. Much has been said about the inconvenience of a 6 cent or 7 cent fare and yet, as a matter of fact, in such cities as Washington, D. C., where six tickets are sold for a quarter by the street railway companies, the vast majority of people buy strips of tickets and apparently find no inconvenience in so doing. It would seem that tickets could be sold in strips costing even multiples of 5 cents at a price which would make the tickets between 6 and 7 cents and place no great hardship on the public, and avoid the universal use of pennies in connection with nickels for street car fare and afford the Brooklyn Rapid Transit and other similarly situated companies the relief which is apparently essential.

Letters to the Editor

Dislocated by Allocation

TO THE EDITOR:

We have just been advised by the purchasing committee of the Railroad Administration at Washington, that our material has got to be "allocated." We have always put the best material that we knew how into our device. It has stood every M. C. B. test, and we don't think it fair that it should now be subjected to some newfangled kind of a test.

We confess that we do not know what this test is. We have asked Harry Frost and he says that it should really be spelled allocated; that it means an alloy of Titanicum and German Vandalism without any bitters. It all depends upon the Mix. We submitted this opinion to Murph, and he says that this is one case that has nothing to do with the Micks; that viewing it from one standpoint, it is ineffable and from another standpoint it depends upon the personal equation. After getting these two expert opinions, we decided to take a firm stand in regard to it and have advised the committee that they can allocate one in every thousand and if it passes the test then they will have to take the balance just as they run.

We had to sell our device to the committee upon the arrangement that the price should first be fixed by the American Iron and Steel Institute, and then be reviewed by the War Industries Board and passed upon by the Council of National Defense, with the further provision that if it should be found that at any time before this, or at any time afterwards anybody had ever sold or should sell one of these at a lower price, then we would adjust our price accordingly, and that in arriving at the price, the wheat crop in Nevada should be taken into consideration. We do not think it fair, therefore, that after the deal is all closed up and the price absolutely fixed as above mentioned, the committee should come in and insist upon allocating our device. We are afraid it will not stand it.

A LOQUACIOUS ALLOCATEE.

Tenders of U. S. Standard Freight Locomotives

CHICAGO, ILL.

TO THE EDITOR:

The description of the first United States standard locomotive, Baltimore & Ohio No. 4500, given in your issue of July 19, indicates that for freight locomotives, at least, the United States Railroad Administration has not yet considered the advisability of adopting a flexible type of truck, such as is generally used under passenger engine tenders, passenger train cars and cabooses, that can safely negotiate all road and yard tracks without liability of derailment.

This recalls the investigation made by H. W. Belnap of the Interstate Commerce Commission, of a wreck that occurred during October, 1913, and in which 17 passengers were killed and 139 passengers and 6 employees injured as the result of the derailment of the forward truck of an engine tender. Mr. Belnap found that on account of the comparatively short wheelbase, high center of gravity, and movement of water in the cistern, surging back and forth from side to side, the tender was subjected to overturning and derailling forces which are aggravated by any irregularity that exists in the tracks.

The amount of attention that has been given to the subject of tender derailments by railroad officers and committees

of the different railway associations during the past 20 years for the purpose of overcoming this serious item of hazard in railway operation, has resulted in many railways of the United States adopting the general foreign practice of a flexible type of tender truck which makes it possible for each wheel always to follow the rail with which it is in contact and without regard to any other wheel in the truck. Such an arrangement avoids the possibility for derailment which occurs where a wheel momentarily relieved of its usual load on soft and irregular track is combined with a type of truck having the journal boxes on each side rigidly connected to the side frame such as is used under the Railroad Administration's Mikado for the Baltimore & Ohio.

Heretofore, on those railroads where excellent track conditions were at all times maintained, it has been possible to operate engine tenders having rigid trucks with few, if any, derailments, but this has been impossible on lines having considerable curvature over rough country where proper track conditions cannot at all times be maintained due to the nature of the sub-grade, or on account of frost, rain or floods affecting the ballast and roadway.

The change in laying track with rails having stagger instead of square joints, has also brought about a great deal of vibration and surging of the tender, such as Mr. Belnap referred to when the track rails are not in first class surface and alinement, all of which tends to cause derailment of rigid types of tender trucks.

Now that locomotives, particularly freight, are being used in all parts of the country with all sorts of track, rail, ballast and other variable conditions, it is more important than ever that tender trucks should be designed so that there will be the least possibility for derailment, and it is for that reason that I am bringing this matter to your attention with the suggestion that it be brought before the proper officials and committees of the U. S. Railroad Administration for their serious consideration, and with the hope that the director general in his plans for unification and standardization, will provide freight and switch locomotive tenders having the same degree of safety for operation as he has given us in the United States standard passenger locomotives.

TRAVELING ENGINEER.

Why Tank Engines Are Not Used in America

NEW YORK CITY.

TO THE EDITOR:

It is with much interest that I have read the communication of Mr. Bolam in your issue of July 19, and two letters on the same subject—Tank Engines—in the issue of July 26. A discussion of the tank engine in the United States today is chiefly of interest from a historical point of view, but it is extremely interesting. As Mr. Bolam states, he has been astonished in the past years that the American railway man did not see or realize the advantage of tank engines for particular service. In England it is accepted that a tank engine is better adapted to all passenger service up to 50 miles, and on English colonial railways and foreign railways controlled by English capital, the tank engine has larger usage, not only for short runs, but as road engines and particularly for what the Englishman calls "bank" engines, or helpers.

Very few lines in the United States have used tank engines to avail themselves of the advantage such engines afford of doing away with turning at the end of the run. The elevated lines in New York did this, and most of the English lines do it. The Boston, Revere Beach & Lynn does not do it. The reason given is that when a tank engine is running backwards, the engineer has to read his signals from the left hand side. Then again some tank engines in this country have been built with such high tanks that the engineer cannot

not see over them to advantage at all times. Owing to the large boiler demanded by the American service, it is not possible to get side tanks of much size on engines which might be built now. The New York Central type has the tank in the rear. The point has been raised in America against tank engines that they are not so easy to get at in making repairs, but I am doubtful whether this argument is of much value. As Mr. Bolam states, the tank engine can give additional traction when it is loaded, starting from the terminal, but this advantage has been used in America as an objection by saying that there was not a uniform traction.

In conclusion it may be stated that prejudice and lack of knowledge of the advantages have been the leading reasons for such a small use of this form of power, and it is not likely, for the reasons which I have stated, that there will be many tank engines built in this country in the future.

GEORGE B. LEIGHTON.

Vestibule Cabs for Locomotives

TO THE EDITOR:

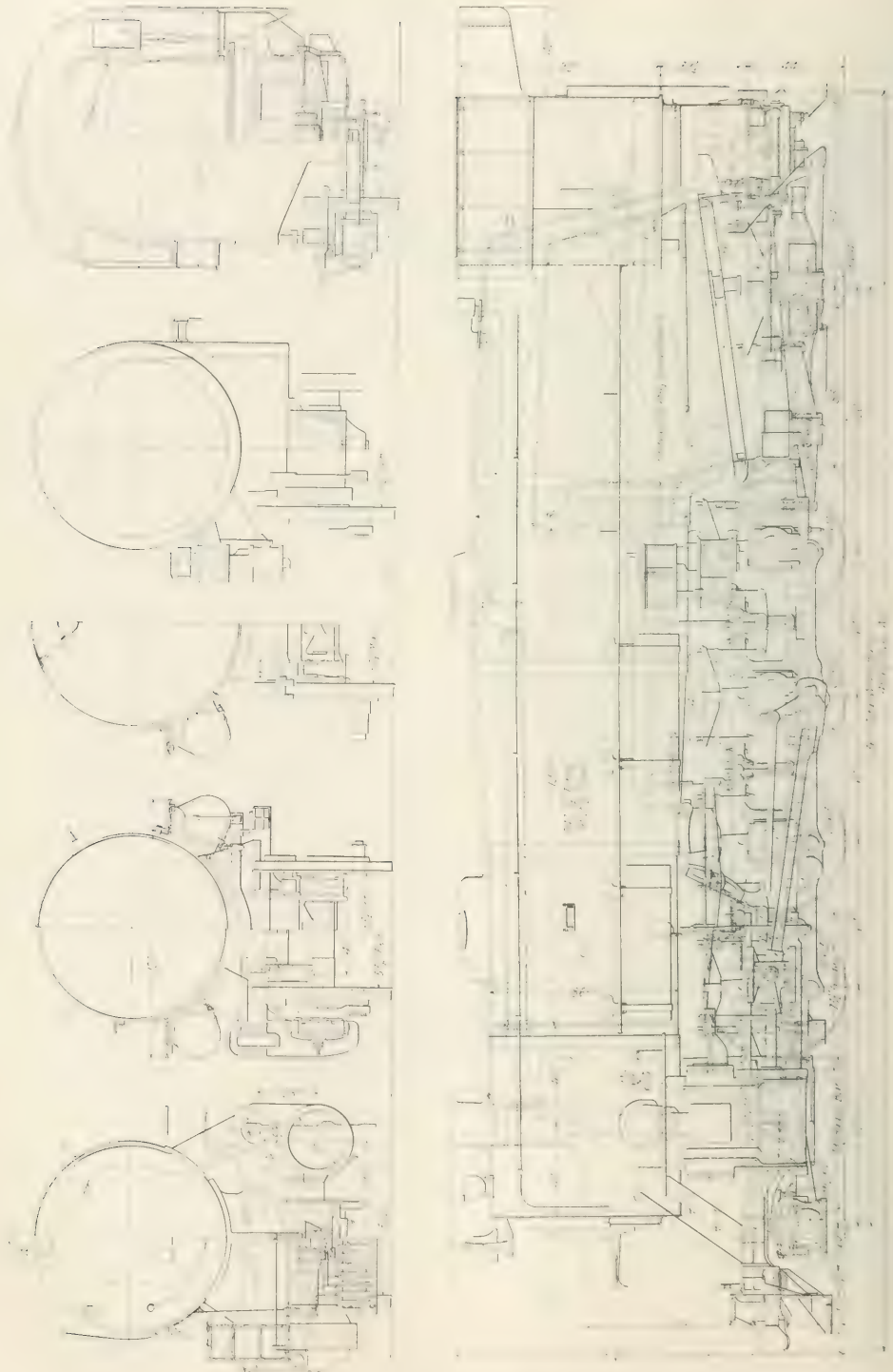
Permit me to endorse the timely editorial in your issue of August 16 on the subject of vestibule cabs. The passage of the law in regard to them proves nothing beyond the fact, already known, that legislators should not be permitted to interfere with locomotive design. What is, however, of considerable interest in this connection, is the fact that the idea involved is by no means new. The plan of using side doors on locomotives other than those of the tank type was tried nearly half a century ago, and, after a more or less checkered career, finally abandoned. Old switchers on the Chesapeake & Ohio, the Pennsylvania, the Buffalo, Rochester & Pittsburgh and some other roads had such an arrangement, but are not heard of today. Of course, the average politician could not be expected to know this, and that is one of the very reasons why he should keep his hands off in cases of this kind.

The American style of cab has long been the safest and most comfortable in the world, and is the product of years of experience and trial. It was designed to provide ample protection from the elements, while affording proper ventilation in the summer, which, as we all know, is very hot in this country. All attempts to change its basic design have failed so far because modifications proved troublesome and ineffective. Years ago the Long Island tried a sheet iron hood over the gangway which made things hot for the crew in summer and cold in winter, and, to cap the climax, shook the cab to pieces! The order then came, "Take 'em off!" No doubt, if railroad "regulation" had been such a thriving business in those days, the legislature would have passed a law enforcing their continued use!

One of the arguments advanced in favor of the vestibule cab is the assertion that it would save firemen from being flung out the gangway. I ask, in all earnestness, what the men who have handled a "scoop" in their day think of such nonsense, and how they can explain their present hale and hearty condition since, if the vestibule contingent is right, they ought to have been dead long ago!

It must be remembered that speeds of 60 or 70 m. p. h. were made 25 or more years ago, and that the locomotives of that period did not ride as smoothly as the heavy Pacific of today. What, then, becomes of this preposterous argument? And what of the men—bless their hearts—who have survived to disprove it? The enforced introduction of vestibule cabs at this late day would involve a senseless and useless expenditure of money that is needed for practical purposes. About all it would accomplish would be to give locomotives a peculiar appearance. Perhaps that is what our novelty-seekers really want.

ARTHUR CURRAN.



Elevation and Cross Sections of the United States Standard Heavy Mikado Type Loco motive



The U.S. Standard Heavy Mikado Type Locomotive

The First of These Locomotives Was Recently Completed by
the American Locomotive Company

THE FIRST of the 157 standard locomotives of the heavy Mikado type to be built for the United States Railroad Administration, has been completed at the Brooks works of the American Locomotive Company. The heavy Mikado type is the second of the standard types to be placed in service, locomotives of the light Mikado type having already been built.* With the exception of the light Mikado type, of which 575 have been ordered, the 157 engines of the heavy Mikado type constitute the largest number of any of the other standard types which have been ordered this year.

The design of the heavy Mikados, like that of the light Mikado type, adheres closely to well established practice and is conservative both in the proportions and in the design of details. As far as practicable, interchangeability of details has been maintained between the various types and a number of those parts on the light Mikado will be found exactly duplicated on the heavy Mikado type.

The boilers are of the conical wagon top type, with a diameter of 86 in. at the front course, increasing to a maximum diameter of 96 in. for the dome course. Comparing this boiler with that of the light Mikado type, it will be seen that the tube sheet is set back three inches farther from the center line of the cylinder saddle than in the lighter engine, and that the combustion chamber is 21 in. instead of 24 in. deep, the length of the tubes being 19 ft. in both cases. There are 247 $2\frac{1}{4}$ in. tubes, and forty-five $5\frac{1}{2}$ in. flues for the units of the type A superheaters with which the engine is equipped. The boiler is fitted with four three-inch Cole safety valves and the Chambers throttle.

The firebox is the same width as that of the light Mikado type, but an increase of 6 in. in length provides a great area of 70.8 sq. ft. as compared with 66.7 sq. ft. in the light Mikado boiler. The firebox is fitted with a Security brick arch, and the Shoemaker fire door. The locomotive is fired by a Standard stoker and is fitted with the Franklin grate shaker. The ashpans has two center hoppers, with swinging drop bottoms, both located forward of the trailer axle. The air opening below the mudring is about $5\frac{1}{2}$ in. wide.

A comparison of the boiler capacity with the cylinder demand on the basis of Cole's ratios shows a slightly better than 100 per cent boiler, both in heating surface and grate area.

The frame construction compares very closely with that of the light Mikado type locomotive. The main frames are of cast steel, 6 in. wide, and include single integral front rails. Over the pedestals the top rail has a depth of $6\frac{3}{4}$ in., while the lightest section between the pedestals is $5\frac{3}{4}$ in. in

depth, these being one-eighth inch thicker than similar sections of the light Mikado frames. Over the binders the lower rails are $4\frac{5}{8}$ in. deep, and have a minimum section $4\frac{1}{8}$ in. deep. Under the cylinders the frames are of slab section 6 in. wide by $10\frac{1}{4}$ in. deep. At the front ends where the front deck casting is attached the section is reduced to a depth of 10 in. by $3\frac{1}{2}$ in. in thickness. The wheel spacing of both types is identical, as is also the distance between the center of the cylinder saddle and the first pair of drivers and that between the center lines of the rear drivers and the trailing truck axle. The trailer frames are separate steel castings, each of which is attached to one of the main frames with fourteen $1\frac{1}{4}$ -in. bolts, the joint being the same as that employed on the light Mikado type locomotives. At the rear end the trailer frames are bolted to the rear deck casting.

The frame bracing of the two types is practically identical. It consists of vertical crossies bolted to the front legs of the forward driving wheel pedestals and to the rear pedestals of the second and third pairs of drivers; and deck braces applied to the top rails between the first and second and the third and fourth pairs of drivers. The forward vertical brace includes a diagonal extension which is bolted to the lower frame rails just back of the cylinders, and in which is also included the radius bar pivot for the front engine truck and the driver brake fulcrum. Cast steel driving boxes of straightforward design, fitted with grease cellars, are used throughout. With the exception of those for the main axle, the boxes and axles are all interchangeable with those used on the light Mikado type locomotive, the journals being 10 in. in diameter by 13 in. in length. The main journals are 12 in. in diameter by 13 in. in length, or one inch larger in diameter than those of the lighter locomotive. The driving wheels are fitted with brass hub liners.

With the exception of the springs, which are heavier for the heavy Mikado type, the Economy constant resistant engine trucks are interchangeable on the two types. The heavy Mikado type is fitted with Cole-Scoville trailer trucks.

Gur. iron bushings are fitted in the cylinders and valve chambers and the packing rings are of the same material. The steel pistons are of single plate sections to which are bolted gun iron wearing shoes. The details of the valve motion follow very closely those of the light Mikado type, the same piston valve and link being used in both cases. The valve chamber heads are also interchangeable. With the exception of the slight difference in the clearance for the front end of the main rod and crosshead pin the crosshead body is identical on both types. The wearing shoes, which are of Hunt-Spiller gun iron, differ in dimensions on the locomotives, but are of the same general style. The valve

*For a description of the United States Railroad Administration standard light Mikado type locomotive see the *Railroad Age* for July 19, 1918, page 131.

I. C. C. Report on Valuation of Texas Midland

Renders Decision on Carrier's Objections to Tentative Finding—Will Report a Final Figure Later

THE INTERSTATE COMMERCE COMMISSION issued its report on the valuation of the Texas Midland late last week. This is the first property of a carrier on which the Commission itself has reported, and it contains decisions on a number of disputed points which will establish precedents for later valuations. Probably the most important finding of the Commission is the statement that, "While it may be questioned whether or not the act requires the finding of a single sum as the value of the property, we are of the opinion that it authorizes the finding of such value for purposes under the act to regulate commerce, and it is our purpose ultimately to make such findings as to each property. Tentative valuations in which a single sum as the value of the property is not stated will in due course be supplemented by such finding and a final valuation, including a single sum as to the valuation of the property will be duly issued. Under the circumstances of the instant case full justice will be done if the findings made as to underlying facts stand, with leave to the carrier and other parties to apply to be heard upon the undetermined question as to what sum shall be stated. Otherwise we shall state our conclusion in due course and complete the final valuation of the carrier."

The Commission found the original cost to date of the property to be \$2,892,360.94; the cost of reproduction new \$3,461,356 and the cost of reproduction less depreciation \$2,597,442. The latter two values are shown in greater detail in the table immediately following:

WHOLLY OWNED AND USED FOR THE PURPOSES OF A COMMON CARRIER		Cost of reproduction of road and equipment	
Acct.	Classes	New	Less depreciation
	I. ROAD		
1	Engineering	\$58,773	\$58,773
3	Grading	411,891	411,891
6	Bridges, trestles and culverts	387,792	289,461
8	Ties	281,112	140,557
9	Rails	525,134	434,205
10	Other track material	103,295	65,944
11	Ballast	127,355	181,808
12	Track laying and surfacing	239,631	173,413
13	Right-of-way fences	48,443	33,911
15	Crossings and signs	29,565	23,217
16	Station and office buildings	199,319	79,063
17	Roadway buildings	37,004	17,491
18	Water stations	30,428	22,267
19	Fuel stations	7,675	5,383
20	Shops and engine houses	8,715	51,447
26	Telegraph and telephone lines	8,715	5,863
27	Signals and interlockers	9,834	7,619
29	Power-plant buildings	6,474	5,308
32	Power-distribution systems	1,867	1,253
35	Miscellaneous structures	29	29
37	Roadway machines	2,306	1,404
38	Roadway small tools	2,295	1,263
43	Other expenditures—road	5,528	4,091
44	Shop machinery	57,333	41,430
45	Power-plant machinery	21,009	15,134
Total, 1 and 3 to 45, inclusive		2,670,912	2,072,723
	II. EQUIPMENT		
51	Steam locomotives	187,978	107,643
53	Freight train cars	190,137	120,423
54	Passenger-train cars	73,435	39,236
55	Motor equipment of cars	57,020	53,769
57	Work equipment	73,236	41,869
Total, 51 to 57, inclusive		582,071	362,940
	III. GENERAL EXPENDITURES		
21	Organization expenses		
23	General officers and clerks		
24	Law	40,364	31,091
24	Stationery and printing		
25	Taxes		
26	Interest during construction	144,280	110,635
Total, 21 to 26, inclusive		144,344	111,726
Grand total, 1, and 3 to 76, inclusive		3,437,327	2,577,389

Texas Midland share (1/2) of 0.1 miles owned jointly with H. & T. C.	1,091	849
Texas Midland share (1/2) of 0.1 miles owned jointly with T. & N. O.	1,395	983
Texas Midland share (1/2) of 0.496 miles owned jointly with M. K. & T. and St. L. S. W.	1,822	1,272
Texas Midland share (1/2) of 0.091 miles owned jointly with St. L. S. W.	19,721	16,949
	3,461,356	2,597,442

Commissioner Aitchison, who was counsel for the National Association of Railway Utilities Commissioners in the hearings of these cases, did not participate in its disposition.

A large part of the report is devoted to the discussion of the protests of the carrier and others to the tentative valuation which was served on the road on October 21, 1916. Hearings on the protest were held on Washington and at other points in 1917. An abstract of the decision of the Commission on the various points raised is given below.

Original Cost to Date

In the tentative valuation it was stated that the "original cost of road could not be found." Figures purporting to show original cost of equipment and land were, however, reported. The corporate and financial history of the carrier, together with a statement of its gross and net earnings from the time it began operations to valuation date, has also been incorporated. From the tentative valuation it is possible to ascertain the amount of money which has been expended in the property as accurately as the records of the carrier permit. Since the service of the tentative valuation certain other sources of information have been made available to us and made of record, which now permit a statement to be made of at least the maximum original cost.

In the instant case we are able to give a figure which clearly represents, within reasonably close limits of accuracy, the maximum amount of money which this carrier, its predecessor, or any other person or persons, invested in the property, as representing the maximum original cost to date thereof, \$2,892,360.94.

Cost of Reproduction New

In complying with the requirement of the act that "the Commission shall ascertain and report in detail * * * the cost of reproduction new" of each piece of property owned or used by a common carrier for common-carrier purposes, we have proceeded upon the theory that the property under valuation is nonexistent. In the tentative valuation in this case we find that the cost of reproduction new of road and equipment, exclusive of lands, is \$3,382,004, arrived at in the following manner: The engineer making the estimate assumed that the road was not in existence. All other conditions in the territory through which the road runs were taken as they existed on valuation date. The engineer then prepared what he conceived to be the most practicable and economical program for the construction of the road. The items which make up the physical property were then inventoried and cost prices fairly representative of conditions on valuation date were applied. To the figures thus obtained was added the estimated cost of placing the items in position as of valuation date, including certain overhead charges. The result thus arrived at is the cost of reproduction new.

So far as we know, this basis for reporting cost of reproduction new has been universally used ever since the valuation of public utilities has been attempted. Cost of reproduction new, as applied to the items embraced in the engineer-

ing report, must be assumed to mean exactly what the words themselves imply, namely, that a railroad actually being operated is conceived of as nonexistent and then theoretically brought into existence by a succession of steps well known to competent engineers.

Topographical Conditions

The bureau, in its estimates of reproduction cost, has in this respect disregarded conditions existing at the time of construction and has considered the right of way of the carrier in connection with the land which adjoins it on valuation date. For example, if tillage land is on either side of the right of way, the right of way is treated as similarly devoid of trees and brush; if a forest adjoins the right of way it is assumed that the right of way is a part of the forest with a corresponding growth thereon. We approve this method as involving the minimum of conjecture.

As previously stated, we interpret the term "cost of reproduction new" literally, i. e., the cost of reproducing under present conditions the existing property of the carrier without computing depreciation. The amount of clearing and grubbing which was necessary in the original construction is reported in "original cost to date" when it can be obtained. There can be no doubt that the building of the railroad has added to the value of adjoining land. We are required to find the present value of lands in a carrier's right of way; and such present value is measured by the value of adjoining lands. It would therefore be improper to allow for clearing and grubbing originally done in addition to the benefit derived by the carrier from the increase in the value of adjoining lands.

Industrial Tracks

In the course of the development of the transportation systems as they exist in the United States today thousands of so-called industrial tracks have been constructed. These tracks have generally been constructed in accordance with contracts between the industry and the carrier, and the considerations of the contracts have varied greatly. In most instances the industry pays a portion of the entire expense of constructing the track, including the cost of the land and materials used.

We have defined an industrial track in Valuation Order No. 12 as a "track which the carrier has not an unrestricted right to use in serving the general public, but which it has obligated itself to use instead exclusively, or preferentially, in serving a particular industry or certain industries." In cost of reproduction new the inventory of the carrier includes such portions of an industry track as it would have a right to remove if it should discontinue the service except that we always include in the carrier's inventory the estimated cost of reproducing any item of property in the industrial track which was in fact paid for by the carrier in original construction. In determining the portions of the track which the carrier would have a right to remove in case of reproduction if the service were discontinued, we assume that reproduction would take place under a contract identical with that covering original construction. Where the carrier has procured the right of way and constructed the track at its own expense, both are inventoried to it. If the industry constructed the track at its expense and owns it, nothing is allowed to the carrier in cost of reproduction new. Where the carrier and the industry have both contributed, which is the usual case, the carrier is credited with an amount covering the estimated cost of reproducing that which it did produce. If the industry has paid for the items of property making up the track, but has given the carrier the right by contract to remove the track, etc., credit is given to the carrier for the reproduction cost of such property. In the case of land nothing is allowed the carrier if the land is

owned by the industry. When, however, the carrier does not own the land, grading and other permanent structures are inventoried as above described. In other words, the carrier is limited to its interest in the industrial track.

That the policy pursued by us regarding industrial tracks is entirely fair to the carrier can not be questioned. The carrier is not only credited with the amount of money which it is estimated would be the cost of reproducing that which it did produce, but in addition thereto is considered the owner of materials going into the tracks, even though such materials were paid for by the industry, when the right of removal on discontinuance of the service can be shown.

Assessments for Public Improvements

In account No. 39 of the classification of investment in road and equipment, the carrier is required to report the cost of constructing public improvements, such as grading, sewerage, curbing, guttering, paving, sidewalks, etc. This account also includes the cost of improvements when made by the carrier's employees under government requirements. The principle announced concerning the treatment of "topographical conditions" in cost of reproduction new applies with equal force to this item; and, since the property of the carrier is presumed to be reproduced under present topographical and other present conditions, it will be seen that no assessments for public improvements would be incurred, and this item would therefore be improper. As assessments for public improvements can only be levied in proportion to benefits received by the lands assessed, the present value of lands adjacent, taken as the basis for the ascertainment of the value of railroad lands, reflects the public improvement assessments in question. It should be stated, however, that if a public improvement for which an assessment against a carrier has been made in the past is located on the right of way of the carrier, or so closely connected therewith that it would be wiped out if the railroad were removed, the estimated cost of reproducing such an improvement would be included in the valuation under the heading of cost of reproduction new.

Property Used but Not Owned

Where property is owned by a common carrier and is used by it jointly with another carrier or carriers for common-carrier purposes, the property is included in detail in the inventory of the owning carrier and reference is made to the use by the other carrier or carriers. The extent and terms of the use appear also in the inventory of the using carrier or carriers.

In the case under consideration the carrier uses jointly with the owner that portion of the St. Louis Southwestern Railway of Texas, commonly known as the Cotton Belt, between Commerce, Texas, and Greenville, Texas, 13.97 miles in length, as a part of its main line. This portion of the Cotton Belt forms the connecting link between two pieces of track owned exclusively by the Texas Midland. Without it the carrier would be unable to perform through transportation service between points located north and south, respectively, of this particular portion of the Cotton Belt. The 13.97 miles has been considered as a single valuation section. It has been inventoried and priced by itself. Cost of reproduction new and cost of reproduction less depreciation for it will be stated separately. This detailed information will appear in the inventory of the Cotton Belt when completed, with a statement that this section is used by the Texas Midland, together with a description of the terms of the use. In the tentative valuation under consideration it is stated "the tracks of the St. Louis Southwestern Railway Company of Texas between Greenville and Commerce, a distance of 14 miles, are used under a trackage arrangement to unite the two pieces of the Texas Midland * * *," so that if it becomes essential it will be possible at any time to

refer to the inventory of the Cotton Belt and ascertain the cost values for that particular piece of property.

Contingencies

In the estimate of cost of reproduction new we have not allowed any amount under the head of "Contingencies," and this omission is assigned as error by the carrier.

In our view the theoretical reproduction of a railroad, such as is assumed in valuation work, is materially different from the original construction and does not justify an allowance for contingencies as such. In theoretical reproduction the property to be constructed by the engineer is before his eyes. The topography of the country through which the right of way runs can be observed. He knows the natural difficulties which will have to be overcome. If rock is found, his estimate is based upon cutting through or removing that rock. The exact amount of materials above the roadbed is capable of ascertainment, and no addition should be made for materials omitted. However, with respect to certain materials the carrier is not limited to the amount necessary to duplicate what is actually in the property. This is illustrated by the item of spikes. It is recognized that in laying rail a certain percentage above the number of spikes required is purchased to take care of losses and imperfections, and an allowance to cover these possibilities is made. It is recognized, of course, that in compiling the inventory of the roadway there are certain quantities which are hidden and can not be observed.

In estimating hidden quantities the representatives of the Commission rely upon the statements of the carriers supplemented by such records as they may possess, tested by the observations of our engineers. These statements and records are accepted unless they appear to be erroneous on their face. Field notes of the Commission containing the estimate of the quantities to be allowed are furnished the carrier if desired, and if objected to the matter is thoroughly investigated. In the application of prices to the items embraced in the inventory, we endeavor to compensate for all expenses which will be met in connection with a particular item. The item of grading furnishes a good illustration. We ascertain the price per cubic yard which is proper to apply for grading, and its determination in this regard is guided by prices paid under contracts for work of this character. However, it is recognized that certain work is performed by the grading contractor which is not included in his contract price, such as erecting temporary bridges, constructing ditches off the right way, etc. To the price per cubic yard which is obtained in the manner indicated above is added an estimated amount to cover the additional expense. A similar addition is made in other cases when necessary.

The statement that no provision for contingencies has been made by us in this proceeding is therefore incorrect. The figure reported as cost of reproduction new is an estimate of the amount of money necessary to reproduce the identical property under valuation. The inventory is made with great care and the prices applied are arrived at after exhaustive study. Every necessary expense is taken into consideration.

Since reproduction new is at best an estimate, it is apparent that an estimate arrived at upon a basis as outlined above is as liable to be too high as too low and that therefore there is no warrant for the addition of a definite amount to cover contingencies, but that any allowance of that kind which ought to be made should be and is taken care of in connection with particular items of property.

Engineering

In the tentative valuation under consideration we allowed for engineering approximately 2.15 per cent of the amount shown as cost of reproduction new of the road accounts, exclusive of land and engineering itself. The carrier contends that this amount is not sufficient and that

between 4 and 5 per cent should be provided. It has also been contended by certain carriers that it is not correct to allot a gross sum for engineering, but that engineering should be assigned to particular pieces of property.

In order to ascertain the proper percentage to apply the bureau made a study of the accounts of different construction projects. This study embraced 121 projects in different sections of the country ranging from $2\frac{1}{2}$ miles to 900 miles in length. The total number of miles of construction was 9,617, the cost of which was \$302,000,000. The amount found charged to engineering varied from 0.837 per cent to 9.732 per cent of the total amount shown as investment in road excluding land. In 6 instances the percentage for engineering exceeded 6 per cent; in 10 instances it was between 5 and 6 per cent; in 4 instances it was below 1 per cent, and in 16 instances between 1 and 2 per cent. In the balance of instances, 85, it ranged from 2 to 5 per cent. The weighted average showed approximately 3.6 per cent.

In view of this study our engineers were instructed to include for engineering an amount which should not be less than 2 per cent nor more than 5 per cent of the investment in road, exclusive of engineering and land. Should a member of the engineering board believe that there are peculiar circumstances which justify the application of a lower or a higher percentage, he is instructed to bring the case to the attention of the bureau.

In the instant case the estimate was first made by the synthetical method and the figure which was used was reached. When the instructions referred to above were issued it was concluded that this figure represented a sufficient amount, and it was allowed to stand.

General Expenditures

Items 71 to 77 of the classification of investment in road and equipment of steam roads are termed "general expenditures." 71. Organization expenses. 72. General officers and clerks. 73. Law. 74. Stationery and printing. 75. Taxes. 77. Other expenditures—general. Our accountants made a study similar to that undertaken in connection with engineering and covering the same list of carriers. The percentage of general expenditures other than interest to all road accounts, excluding land for the different valuation districts, was as follows:

Eastern	2.251
Southern	
Central	
Western	
Pacific	
Average	

After careful deliberation, the bureau concluded that $1\frac{1}{2}$ per cent of the amount of all road accounts, exclusive of land, would be a fair estimate for general expenditures in the case of all roads. Where, however, more than a nominal charter fee has been required, the engineers have been instructed to ascertain the amount of such fee and add it to the $1\frac{1}{2}$ per cent.

Cost of Obtaining Money

The bureau assumed that the reconstruction would be done by a company the credit of which was good and which could purchase supplies at advantageous prices. This policy having been adopted, it was necessary to determine the rate of interest. Since a railroad with good credit has no difficulty during normal times in borrowing money at $4\frac{1}{2}$ per cent, it was felt that the rate of 6 per cent would be ample to cover all incidental items of expense in connection therewith.

Construction Period

The time allowed for the construction period in cost of reproduction new is important in its relation to the amount to be allowed for interest during construction. From our

examination of the records of construction in the past, it is fair to state that, so far as the expenditure of money is concerned, the construction of a railroad is properly divided into two parts—the preliminary period before the construction begins, and the period of construction itself.

In view of the difficulty of estimating the preliminary period and of the further fact that expenditures are small during this time it was decided to state the period required for construction only.

The construction period, as determined by our engineers, does not represent the shortest period in which the railroad could be constructed, but rather that period within which the work might be economically done. The usual delays which occur in normal times, due to labor and market conditions, are assumed to exist, but unusual delays, due to financial troubles and other causes peculiar to individual properties, are eliminated.

All existing means of transportation, aside from the property itself which is under reproduction, are assumed to exist. The carrier in this proceeding is crossed by several different roads and these roads are used theoretically to bring in men and materials to junction points. This enables the engineer to proceed with the hypothetical reproduction at several different places at the same time. This assumption often reduces the period allowed for reproduction materially below that which was required for the building of the property, but since the circumstances and conditions surrounding reproduction are entirely different from original construction, this method is believed to be fair.

Interest During Construction

The rate of 6 per cent interest having been approved, it remains to consider the length of time for which this rate should be applied. If the assumption that the money required for each six months is on hand at the beginning of that six months is reasonable, and we find that it is, the time for which interest should be allowed is one-half the construction period plus three months, which will be ample to cover the relatively small amount of money which is expended prior to construction. This is the method which has been adopted by the bureau, and interest is computed upon the total amount of the road and general expenditures accounts with the exception of land and interest during construction.

Materials and Supplies and Other Working Capital

In the accounting report which accompanied the tentative valuation and made a part thereof is an inventory of the materials and supplies on hand as of June 30, 1914. The records of the carrier show an investment of \$82,943.24 in materials and supplies, while the inventory prepared by the bureau, at prices obtained from invoices rendered the carrier, shows a value of \$96,857.19. The carrier contends that we have erred in not including materials and supplies in the three cost values. The suggestion is made that cash items should also be included and taken at par. In cost of reproduction new, however, the property to be theoretically reproduced is the railroad itself. It does not contemplate the inclusion of materials and supplies and cash on hand, which are so-called liquid assets, and change from day to day. The accounting report, which is a part of the tentative valuation, contains full information with respect to these items as of the valuation date. The method pursued is a compliance with the act.

Second-hand Materials

Where second-hand materials were installed and still exist, the bureau has interpreted cost of reproduction new to mean the cost of reproducing the materials in the same condition in which they were installed. The carrier alleges that this interpretation of the word "new" is incorrect, and that market prices on valuation date for new materials of the

same kind should be applied to such units. A strict interpretation of the word "new" in estimating the cost of reproduction new of a property of that kind would require the substitution of new materials for materials which are known to have been second-hand when the road was "new" or first built. We do not think that the act requires or contemplates this. The property to be reproduced is the existing property as it was when it was put into its present service. When the records of the carrier clearly show that second-hand materials were used the cost of reproduction new will be estimated for the same kind of materials in the same condition as when installed.

Quantities and Unit Prices

The commission gave careful consideration to the protests of the carriers relative to unit prices. In many instances the figures of the Division of Valuation were supported, but in other important instances they were raised in view of the evidence submitted by the carriers. The price of 56 cents for burnettized pine ties was increased to 69 cents; the price allowed for burnt clay ballast was increased from 80 cents to \$1 per yard, and the amount included for track laying and surfacing was increased from \$780 to \$900 per mile of road. No allowance was made in the tentative valuation for telegraph lines. The commission states that "a telegraph line is necessary in the conduct of the business of the carriers and for the purpose of estimating the cost of reproduction new of this property it is assumed that it would equip itself with this facility in the same manner that it did originally." It, therefore, allowed \$8,715 for this account. In view of the increase in the estimates for cost of reproduction new the amount allowed for engineering in the tentative report represented less than two per cent. The commission increased this to 2¼ per cent on the revised estimate.

Depreciation

The act requires us to report in detail as to each piece of property "the cost of reproduction less depreciation." In complying with this requirement the bureau has treated depreciation as the exhaustion of capacity for service. It has inquired how much of such capacity existed when new, what part has been used up, and what part still remains. It states the remaining capacity as a fraction of which the total is the denominator and the part remaining the numerator. Taking cost of reproduction new the depreciation which has already accrued is subtracted, due consideration being given to salvage or scrap when this exists, and the remainder is given as cost of reproduction less depreciation.

The carrier insists that this conception of depreciation is wrong, that the inquiry should be whether the property is in 100 per cent efficiency. So long as it is maintained at 100 per cent efficiency, or what comes to the same thing, so long as there is no deferred maintenance, there can be no depreciation.

After quoting a number of decisions of the courts, the commission states that it is clear, therefore, that when the act was passed, the word "depreciation" as used in the phrase "cost of reproduction less depreciation" had acquired a definite meaning. It must be assumed that Congress used the word in that sense. Nor is there today any other recognized meaning. We approve and adopt the definition of depreciation which the bureau has applied in this case.

Lands

The protest raises two questions, which in fact are one: (1) Shall the Commission ascertain and report the reproduction cost of carrier lands, and (2) shall the Commission ascertain and report the present cost of condemnation and damages or of purchase of the carrier's lands? Together these questions present the issue as to the duty of the Commission to report the reproduction cost of lands.

What is meant by present value, as the term is used in the tentative valuation, is thus defined by the director of valuation:

"Present value * * * is arrived at by ascertaining the number of acres of land owned or used by the carrier for its purposes as a common carrier and multiplying this acreage by a market value determined from the present market value of similar adjacent and adjoining lands. Due allowance is made for any peculiar value which may attach by reason of the peculiar adaptability of the land to railroad use.

"Nothing is included for the expense of acquisition, nor for severance damages, nor for interest during construction."

It seems elementary that the cost of reproduction can be estimated only by assuming that the thing in question is to be produced again, and that if it is to be produced again, it is to be taken as not existent. It seems sophistry to contend that lands of the railroad can be produced again at a cost to the railroad without first making the assumption that they are no longer lands of the railroad; and this necessary assumption carries with it the mental obliteration of the railroad itself.

Considerable testimony was produced to the effect that in the acquisition of a railroad right of way it is necessary for the carrier to pay sums in excess of the value of the land if measured by the present or market value of similar contiguous lands because of elements, such as cost of acquisition, damages to the severed property, cost of buildings and other improvements, accrued taxes and various incidental rights. That there is a marked difference between assuming in advance the total cost of acquisition, whether as the result of condemnation and damages paid or of purchase, in excess of the present value of similar lands in the vicinity, when no railroad has been constructed or is in operation, and the attempt to ascertain and state the cost of reproducing or reacquiring, at the present time, lands which actually have been severed from the adjacent property, have been converted into a railroad, and are being occupied by an operating rail carrier, seems clear.

Because of the impossibility of making the self-contradictory assumptions which the theory requires when applied to the carrier's lands, we are unable to report the reproduction cost of such lands or its equivalent, the present cost of acquisition and damages, or of purchase in excess of present value.

Streets and Highways

Where a street or an alley in a municipality has been vacated, that is, where the use of land as a street or an alley has been discontinued, and the carrier is using the land exclusively for common-carrier purposes, the original cost of the land to the carrier, if it can be ascertained, and its present value, measured by the market value of similar land in the vicinity, will be included in the inventory as land owned by the carrier, unless it affirmatively appears that the carrier does not own it.

Where a street or an alley in a municipality is used as such by the public, and is also used by the carrier for its common-carrier purposes, either along or across the same, no part of the land so jointly used will be included in the inventory as land owned by the carrier, unless it affirmatively appears that the carrier owns it.

Where a highway outside of a municipality is used as such by the public, and is also used by the carrier for its common-carrier purposes, either along or across the same, the land so jointly used, together with its original cost to the carrier, if that can be ascertained, and its present value, measured by the market value of similar land in the vicinity, will be included in the inventory as land owned by the carrier, unless it affirmatively appears that the carrier does not own it.

Appreciation

Carriers have introduced considerable testimony to show that an old roadbed is of more value than a new one and have urged that this value should be stated in some form in the report of the commission. As to the fact, no serious question can be made. While most items of property entering into the construction of a railroad depreciate from the first, the cut and embankment appreciate. It is apparent that it was the intent of Congress to require a statement of all those costs, values and other circumstances which might bear upon the value of the property, for rate-making purposes at least, and possibly for other purposes. Appreciation is a fact which may affect the final value of the property. Without attempting to indicate what its influence should be, or whether it should have any influence, it should if possible be dealt with in our report.

The attempt to measure the value of appreciation by its cost is not consonant with our prescribed rules of accounting, under which the expenses of operation are chargeable to operation. There is no part of this expense which the carrier has carried or could properly carry into its investment account. If the public has once paid for this added expense, which is inherent in the early years of operation, should it be constantly taxed on account of these same expenses in the way of added rates?

Our conclusion upon the whole subject, therefore, is that no separate value can be placed upon appreciation. When it definitely appears that it exists it must be taken into account in determining the value of the property. The influence which appreciation should have upon value may depend upon the previous history of the property. All this depends upon the purpose for which the value is being stated and the manner in which that value is to be determined.

Other Values and Elements of Value

The act requires that "the commission shall in like manner ascertain and report separately other values, and elements of value, if any, of the property of such carrier, * * *

In the tentative valuation under consideration we have stated that "no other values or elements of value were found to exist." The carrier asserts that since no figure has been reported under this heading, the act has not been complied with.

Before the tentative valuation was served, the carrier was requested to file a statement of the items, if any, upon which an allowance under this heading was claimed. In response thereto claim was made on account of (1) going-concern value; (2) connection with other lines; (3) good station facilities; and (4) gradients.

At the hearing counsel for the carrier stated that he did not understand that the carrier would be expected to put in testimony with respect to its claim under this heading. The director of the bureau stated at that time that the commission would be glad to listen to any testimony the carrier might care to offer. Notwithstanding this invitation, no testimony has been offered in this case with respect to the items under consideration.

We have diligently searched for and inventoried the property of the carrier and have reported everything we have found in the tentative valuation already served. The carrier has asserted that there are other values and elements of value in connection with its property, but although repeatedly asked to do so, has failed to name a figure which it believes should be found by us.

In this connection it should be stated that in the instant case going-concern value has been given consideration in the cost of reproduction new and cost of reproduction less depreciation figures. In the cost of reproduction new and cost of reproduction less depreciation figures the values assigned to the property are not those of a dead plant but of a going concern, and to the extent indicated in the Des

Moines Gas Case, this element has been covered in the figures. Going-concern value has been described as the value of an assembled and established plant doing business over one not thus advanced. In making up the inventory we apply prices to the different parts of the property in the light of the fact that it is a railroad and doing business; otherwise the prices which would be applied would be scrap prices.

The owners of the Texas Midland have not received a fair return on their investment in this property. The operation of the road has resulted in frequent deficits. These deficits are not elements of value, but they are pertinent facts to be given consideration in a proper proceeding.

The requirements of the act in this regard have been fully complied with.

What the Railroad Administration Has Accomplished

A Statement by Theodore H. Price, Actuary to Director General
McAdoo, in Reply to a Newspaper Criticism

MY ATTENTION HAS BEEN CALLED to an editorial in a prominent daily newspaper published August 10 headed "Government Railroads," as well as to an article headed "After 7 Months—The Effects of Railroad Unification," published on August 5, in the same paper.

Both these articles criticize government administration of the railroads with an affectation of patriotic tolerance which seems to assume that it is an evil that must be endured during the war despite its alleged inefficiency.

Briefly, the grievances complained of are:

1. The government has not been able to control the cancellation of export and import rates.
2. The government has not been able to control the rates of freight and ticket offices.
3. The withdrawal of the credit previously allowed in the matter of the carrying of goods by motor trucks.
4. The difficulty of getting information regarding tariffs and rates.
5. The discontinuance of the package car service between important jobbing and consuming sections.
6. The withdrawal of the shippers' right to route their freight as they choose.

In support of the claim that these changes have inconvenienced the public without increasing the efficiency or carrying capacity of the railroads, the editor of the paper referred to comments as follows upon the recently published statistical statement of railway operating details and results for the first five months of government operation which ended May 31, 1918.

We have now some details as to the first five months of government operation, and the results are not so encouraging as the two facts stand out very strongly and are worthy of note.

The first is that in these five months, on the face of the figures, the roads carried slightly less ton-mileage than in 1917. This, in spite of the tremendous pressures of war and of the known increase in many lines of production, is certainly very significant. Extra traffic has been carried in other ways, largely, as we know, by motor trucks.

The second fact is that the number of available locomotives and cars remained practically the same as in the first part of 1917. There was no increase. The roads were taken over for their supposed inefficiency. But the government, with all its money and power, has found it easier to acquire experience than to increase the efficiency of the railroad machine.

After five months of unlimited credit and power there is no increase in cars or locomotives, or rail movement, or tonnage hauled. To move their increased traffic the industries of the country have had to resort to the highly expensive carriage by motor trucks over country roads. This may have been unavoidable, and the Railway Administration, like the fuel bureau, may have done everything possible. It may prove its wonderful efficiency and high superiority in time. We merely point out there is no evidence yet that the government is performing no miracles that might not have been expected of the roads themselves, if they had simply had enough money to

This is a fairly complete summary of the attempted arraignment of governmental administration of the railroads.

(Here follow the figures for freight train operation from January to May, which were reproduced in the *Railway Age* of August 9, page 258.—Editor.)

It will be noticed that these figures show that the number of tons of freight carried one mile during the first five months of this year was 0.6 per cent less than during the same month last year. But they also indicate that the loaded freight car mileage traveled in the carriage of this freight was 552,868,-

512 miles, or 8.6 per cent less than the distance traveled under private management in the carriage of nearly the same ton mileage of revenue freight during the same period in 1917.

A reduction in the average daily mileage of locomotives and freight cars will also be noticed. This is likewise due to the heavier train load and car load. It is not economically practicable to haul heavy trains as fast as light ones and the Railroad Administration has adopted the policy of loading trains to capacity and moving them on schedules that are not too fast to be maintained.

The showing indicates—not inefficiency—but a striking increase in the efficiency with which the railroads are being operated. It is directly due to the heavier loading of the freight cars and the greater train load now pulled by each engine. The average carload has been increased from 26.2 to 28.5 tons, or 8.8 per cent. If this ratio is maintained, it will be the equivalent of an addition of 8.8 per cent, or 211,200 freight cars to the present equipment of about 2,400,000 cars, and if the ratio of increase in the train load, equal to 2.7 per cent, is maintained, it will be the equivalent of adding about 1,750 to the present equipment of some 65,000 locomotives of all sorts. Surely this is better than buying new cars and locomotives at a time when they can only be had at extravagant prices and the manufacturing energies of the country are overtaxed to provide the things required for the winning of the war.

Instead of proving the inefficiency of government management, the newspaper referred to seems to have adduced the strongest possible proof of its efficiency and wisdom in demonstrating that the old cars and engines are being made to do more work than they performed under private management. The same progress toward the intensive use of the present equipment is to be found in the report of loaded cars arriving at Philadelphia and Pittsburgh during the first four weeks of July. This report is as follows:

Philadelphia and Pittsburgh four weeks ending July 27, 1918, and

	1917	1918
Loaded cars arriving	2,752,765	2,752,765

These figures show an increase of 9 per cent in the tonnage and a decrease of 7 per cent in the cars used. The number of tons per car in July, this year, is 30.2 as against 25.7 tons in the same period last year. The increase of 18 per cent, if it were general throughout the country, would be the equivalent of an addition of about 432,000 cars to the freight car equipment of the railroads.

Although the government has recently ordered 100,000 new freight cars and about 4,000 engines have been under order for a long time, to provide for the expected increase in the traffic, they cannot be turned out in a day and while waiting for them the present capacity of motive power and rolling stock is being scientifically increased, not only by in-

creasing the car load and train load, but by sending the traffic over the shortest and least resistant routes without regard to the caprice of the shipper. Moreover, priority has been given to orders for the large number of locomotives required by General Pershing for military operations in France and the locomotive works have been thereby prevented from delivering promptly the engines ordered for the railroads.

In several cases the distance that freight in transit between two important cities formerly traveled has been shortened by from 200 to 500 miles and in one instance recently some 8,999 cars carrying freight between two western cities were within a period of sixty days re-routed so as to effect a saving of 195 miles in the mileage traveled by each car. This was the equivalent of 1,754,644 car miles, which at six cents a car mile means a saving of \$105,278.

As to the alleged movement of freight by motor truck it can only be said that the government is moving regular freight and passenger trains promptly, notwithstanding the extra tax imposed on its facilities by a troop movement now averaging 1,100,000 men per month, that there is no freight congestion or delay, that the cars supplied to the coal mines are now in excess of the daily loadings and that if shippers are sending their goods in unusual quantities by motor truck which is not provable and is doubtful, their action is not the result of a lack of railway transportation.

In fact, the Railroad Administration has of late been urging merchants to take advantage of the present carrying ability of the railways to stock up against their winter's needs when weather conditions make train operation more difficult.

Of the other items in the indictment of government operation of the railways referred to it may be remarked:

1. That the advance in the cost of transportation is less

have involved a wasteful use of facilities that are needed for the winning of the war, and

7. That if shippers were allowed to select the routes by which their freight would be carried, the efficiency and economy that are shown to have been secured by re-routing could not have been obtained.

To this categorical refutation of the grievances alleged by complainants whose attitude reminds one of the couplet which runs

"The good old times—

All times are good when old,"

and suggests that they are to be classed with the chronic reactionaries and opponents of progress, I can only add that two months' close study of what has been and may be done under a unified management toward increasing the serviceable efficiency of the American railways convinces me that the wisdom of the President's action in taking over the transportation facilities of the country will be cumulatively demonstrated as the years roll by.

Rail Specifications Compared

IN VIEW OF THE PROSPECT of an order for rails by the Railroad Administration, the question arises as to what specifications will govern their manufacture, test and inspection. Specifications have been prepared by manufacturers, several associations and a number of individual railroads, and all are being used to a greater or less extent. In general these specifications are not far apart, but they all differ as to one or more details and up to the present there has been

COMPARISON OF VARIOUS SPECIFICATIONS FOR COMMON WEIGHTS OF RAIL, 110 LBS. PER YARD

Name	Tensile	Carbon						All sections					
		100	105	110	115	120	125	100	105	110	115	120	125
Am. Ry. Engr. Assoc.....	3-17-15	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	10+—	16 16 17 17 17 18	18	2 3
Am. Ry. Assoc.....	17-00-130 1	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 3
Am. Soc. Test. Mat.....	9-10-14	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	21	2 3
Manufacturers.....	1914	53-66	53-66	53-66	59-72	59-72	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 3
Colo. Fuel & Iron Co.....	1-1917	53-63	55-65	55-65	58-68	58-68	60-70	60-90	06—	20—	16 16 16 17 17 18	18	2 0
Tenn. Coal, Iron & R. R. Co.	1914*	53-66	53-66	53-66	59-72	59-72	62-75	60-90	06—	20—	16 16 16 17 17 18	18	2 0
U. S. Steel Products Co.	9-1914	40-55	45-60	45-60	55-70	55-70	55-70	60-90	04—	20—	15 16 16 17 17 18	18	2 0
Hottel.....	2-16	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 0
A. & N. W. Ry. Co.	2-17	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 0
P. R. R.	1-1917	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 0
N. Y. C. & H. R. R.	2-15-15	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 0
P. R. R.	2-15-15	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 0
P. R. R.	4-1916	53-66	53-66	53-66	62-75	62-75	62-75	60-90	04—	20—	16 16 17 17 17 18	18	2 0

* Under A. A. A. standard "B" for Tennessee Coal, Iron & Railroad Company.

† Increase carbon 0.01 per cent for each 0.003 per cent decrease in phosphorus to 0.03 per cent. § Carbon 1.00 per cent, 105-lb. rail same as given for 100-lb. rail.

than the advance in wages and the price of almost every other commodity that society requires.

2. That through bills of lading for export cannot be issued because the government has preempted the ocean room and there is no assurance that the goods can be forwarded upon arrival at the seaboard.

3. That as competition between the railroads no longer exists there is no occasion for competitive solicitors and ticket offices and that their abandonment will save the railroads about \$23,000,000 annually.

4. That the government is not authorized to extend credit to consignees for the amount of the freight they owe when the goods are delivered, and that it cannot exceed its legal authority.

5. That a new and simplified classification and rate book has been prepared and will be effective and available as soon as the shippers themselves approve it.

6. That a continuance of the package car service would

little hope of the adoption of a common standard specification acceptable alike to all the manufacturers and all of the railroads. As a means of indicating the differences in the provisions of the more widely-known specifications, the table has been prepared showing their chemical and physical requirements. We are indebted to C. W. Gennett, Jr., of Robert W. Hunt & Co., Chicago, for this information.

FRENCH LADY ENGINEERS.—The Paris journal *Le Génie Civil*, gives the list of the new students for the engineering school, the *Ecole Centrale des Arts et Manufactures*. There are over 340 students who have passed the examination for admission to the course, the number including six young ladies whose position in the list is a very favorable one. It is probable, adds our French contemporary, that the number of female students will increase in following years, and that young ladies having the required inclination will find in engineering situations worthy of their merits.

Operating Expenses Show Increase of \$461,000,000

AN INCREASE in operating expenses of \$461,694,818 in the first six months of 1918 over the same period of 1917 and an increase in the operating ratio from 71.34 to 87.23 per cent are the features of the summary of railway earnings of Class 1 roads issued by the Interstate Commerce Commission last Saturday. The operating revenues for the six months of 1918 totaled \$2,081,448,000 as compared with \$1,897,930,501 in 1917. The operating expenses, however, were \$1,815,706,527 in 1918, as compared with \$1,354,011,709 in 1917, and the net income was only \$151,657,111 in 1918 as against \$440,050,413 in the first six months of last year.

The figures for June as given in the summary show an increase in operating expenses of \$200,000,000 over June of last year as against an increase in operating revenues of not quite \$50,000,000, this bringing the operating ratio from 67.37 up to 110.62 per cent, and resulting in a net loss during June, 1918, of \$63,000,000. This, however, is largely due to the fact that the operating expenses for June, 1918,

include wage increases representing back pay since December 31, 1917. The reported increases of 164 roads for January to May, inclusive, not previously included in operating expenses, are:

Maintenance of way and structures	7,200,000
Maintenance of equipment	1,242,100
Traffic	7,000,000
Transportation	7,000,000
Miscellaneous operations	849,636
General	4,200,000
Total	\$133,045,194

If the above amounts were excluded, the operating expenses for June, 1918, would be:

Maintenance of way and structures	\$50,185,189
Maintenance of equipment	76,670,235
Traffic	4,030,950
Transportation	159,114,343
Miscellaneous operations	3,315,194
General	9,189,297
Transportation for investment—Cr.	452,074
Total	\$302,055,194

The railway operating income (item No. 22 of the summary) for June, 1918, would then be \$74,083,538, or \$318 per mile of road against \$427 per mile for June, 1917, and against an average of \$376 per mile for the months of June, 1915, 1916 and 1917.

INTERSTATE COMMERCE COMMISSION SUMMARY OF MONTHLY REPORTS OF LARGE ROADS

Compilations, subject to revision, from reports of revenues and expenses of steam roads in the United States for the month of June, 1918. (Cents omitted.) This summary covers only roads having operating revenues above \$1,000,000 for the year ended December 31, 1917.* [Includes 180 Class I roads and 14 Switching and Terminal Companies.]

FOR THE MONTH OF JUNE									
UNITED STATES									
Item		Amount		Per mile of road operated		Amount		Per mile of road operated	
		1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....		733,014.05	231,831.31			59,386.84	59,079.25		
Revenues:									
2. Freight.....		\$262,452,763	\$247,318,427	\$1,126	\$1,067	\$125,661,151	\$111,625,305	\$2,116	\$1,889
3. Passenger.....		94,067,475	68,113,521	407	294	41,035,453	30,106,132	691	510
4. Mail.....		4,480,755	4,927,465	21	19	1,735,395	1,941,106	29	33
5. Express.....		9,600,570	9,345,141	42	40	4,728,239	4,534,416	80	77
6. All other transportation.....		10,750,176	10,634,087	46	46	6,377,264	5,860,723	107	99
7. Incidental.....		10,078,472	9,124,516	47	39	6,293,654	5,221,740	106	88
8. Joint facility—Cr.....		480,300	337,949	2	2	282,549	162,405	5	3
9. Joint facility—Dr.....		184,141	131,237	1	1	81,442	73,943	1	1
10. Railway operating revenues.....		393,505,570	349,669,869	1,688	1,508	186,032,263	159,377,884	3,133	2,698
Expenses:									
11. Maintenance of way and structures.....		67,091,061	41,246,833	290	178	28,875,730	17,244,972	486	292
12. Maintenance of equipment.....		106,356,311	55,599,056	457	240	5,767,184	26,999,952	889	457
13. Traffic.....		5,473,481	5,456,985	23	24	1,401,126	2,092,697	40	35
14. Transportation.....		238,416,885	122,990,034	1,033	530	11,445,688	61,377,583	2,011	1,060
15. Miscellaneous operations.....		4,164,830	2,803,174	18	12	1,037,657	1,303,192	33	22
16. General.....		13,408,801	8,173,739	58	35	5,082,840	3,560,078	101	60
17. Transportation for investment—Cr.....		452,074	687,975	2	3	53,579	75,656	1	1
18. Railway operating expenses.....		435,096,305	235,581,846	1,867	1,016	211,355,346	112,502,818	3,559	1,904
19. Net revenue from railway operations.....		**41,786,926	114,088,023	**179	492	**25,323,083	46,875,066	**426	794
20. Railway tax accruals (excluding "War Taxes").....		17,111,004	18,114,792	74	65	7,604,432	5,905,538	128	100
21. Uncollectible railway revenues.....		61,733	4,483			1,561	14,260		
22. Railway operating income.....		**58,959,663	98,000,918	**253	427	**32,040,466	40,955,269	**554	604
23. Equipment rents.....		**2,738,702	**5,421	**12	**10	**4,716,185	**3,491,300	**779	59
24. Joint facility rent (Dr. Bal.).....		1,628,361	1,533,333	7	7	728,896	652,187	13	12
25. Net of items 22, 23 and 24.....		**63,326,726	95,118,174	**272	410	**38,385,577	36,811,692	**646	623
26. Item 25 without deduction for back pay, January-May, inclusive.....		69,716,475		299		28,483,289		480	
27. Ratio of operating expenses to operating revs., %		110.62	67.37			113.61	70.89		

August 23, 1918.

SOUTHERN DISTRICT									
Item		Amount		Per mile of road operated		Amount		Per mile of road operated	
		1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....		42,961.72	42,739.01			130,665.69	130,013.005		
Revenues:									
2. Freight.....		\$39,951,822	\$36,288,168	\$930	\$849	\$96,814,790	\$99,404,954	\$741	\$765
3. Passenger.....		17,009,396	9,349,639	396	219	36,632,626	28,657,730	281	230
4. Mail.....		718,149	714,000	17	17	2,043,641	2,242,099	16	17
5. Express.....		1,169,472	1,204,773	27	28	3,762,868	3,605,952	29	28
6. All other transportation.....		718,153	680,167	17	16	3,654,759	4,084,188	27	21
7. Incidental.....		1,630,933	1,717,413	38	28	3,315,185	2,944,863	35	25
8. Joint facility—Cr.....		91,162	77,744	2	2	115,524	97,800	1	1
9. Joint facility—Dr.....		8,608	4,680	1	1	47,671	33,312		
10. Railway operating revenues.....		60,995,354	49,286,691	1,420	1,153	146,281,762	141,005,294	1,120	1,085
Expenses:									
11. Maintenance of way and structures.....		10,589,330	5,682,843	246	133	28,226,001	18,319,018	216	141
12. Maintenance of equipment.....		18,637,552	6,578,725	434	223	34,991,409	19,085,167	268	147
13. Traffic.....		1,068,925	998,090	25	23	2,002,430	2,366,198	15	18

14. Gas station.....	16,572,360	16,572,360	1	1	16,572,360	1	1	16,572,360	1	1	16,572,360
15. Miscellaneous operations.....	248,663	248,663	1	1	248,663	1	1	248,663	1	1	248,663
16. General.....	1,401,172	1,401,172	1	1	1,401,172	1	1	1,401,172	1	1	1,401,172
17. Transportation for investment—Cr.....	130,219	130,219	1	1	130,219	1	1	130,219	1	1	130,219
18. Railway operating expenses.....	68,512,341	34,087,795	1,595	798	155,228,618	88,991,233	1,188	685			
19. Net revenue from railway operations.....	**7,516,987	15,198,896	**175	355	**6,946,856	52,014,061	**68	400			
20. Railway tax accruals (excluding "War Taxes").....	802,961	1,137,138	33	33	747,467	1,137,138					
21. Uncollectible railway revenues.....	7,294	16,647	1	1	1,188	1,188					
22. Railway operating income.....	**9,845,152	13,045,111	**229	305	**16,171,015	44,909,538	**123	345			
23. Equipment rents.....	495,057	1,305,175	11	31	1,482,426	**71,206	11	**1			
24. Joint facility rent (Dr. Bal.).....	150,439	180,234	4	4	7,707	7,707					
25. Net of items 22, 23 and 24.....	**9,542,534	14,170,052	**222	332	**15,398,615	44,137,430	**118	339			
26. Item 25 without deduction for back pay, January-May, inclusive.....	13,742,346	330	330		1,188	1,188					
27. Ratio of operating expenses to operating revs. %.....	112.32	69.16	.....	.....	106.12	63.11	.....	.....	

August 23, 1918. *Does not include the Kansas City Terminal Railroad. **Debit item.

FOR THE SIX MONTHS ENDED WITH CLOSURE

UNITED STATES

Item	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
28. Average number of miles operated.....	232,949.26	231,840.57	.....	.....	59,379.85	59,073.08	.....	.....
Revenues:								
29. Freight.....	\$1,434,723,161	\$1,351,575,145	\$6,159	\$5,829	\$639,553,798	\$599,839,098	\$10,771	\$10,154
30. Passenger.....	448,208,768	360,620,773	1,924	1,556	187,078,008	156,691,514	3,151	2,652
31. Mail.....	27,121,960	30,654,883	116	132	10,436,794	12,048,566	176	204
32. Express.....	56,822,417	50,804,460	244	219	27,162,586	23,880,931	457	404
33. All other transportation.....	55,855,140	55,424,407	240	239	31,497,289	31,122,051	530	527
34. Incidental.....	56,796,191	47,803,933	244	206	31,765,893	26,542,247	535	450
35. Joint facility—Cr.....	2,754,311	1,989,350	12	9	1,437,707	947,907	24	16
36. Joint facility—Dr.....	833,948	742,560	4	3	442,010	442,763	8	7
37. Railway operating revenues.....	2,081,448,000	1,897,390,501	8,935	8,187	928,490,065	850,629,551	15,636	14,400
Expenses:								
38. Maintenance of way and structures.....	287,199,132	218,566,803	1,233	943	123,264,927	90,312,221	2,076	1,529
39. Maintenance of equipment.....	461,399,840	326,384,886	1,981	1,408	226,976,488	157,613,172	3,822	2,668
40. Traffic.....	27,747,379	32,083,867	119	138	11,448,997	12,057,571	193	204
41. Transportation.....	967,571,816	717,465,395	4,154	3,095	427,904,427	356,122,719	7,964	6,028
42. Miscellaneous operations.....	18,975,016	16,755,562	81	69	8,931,364	7,339,404	150	125
43. General.....	55,656,602	46,949,337	239	203	24,754,794	20,583,214	417	349
44. Transportation for investment—Cr.....	2,843,258	3,468,441	12	15	385,925	339,126	6	6
45. Railway operating expenses.....	1,815,706,527	1,354,011,709	7,795	5,841	867,895,072	643,689,175	14,616	10,897
46. Net revenue from railway operations.....	265,741,473	543,918,792	1,140	2,346	60,594,993	206,940,376	1,020	3,503
47. Railway tax accruals (excluding "War Taxes").....	92,237,876	85,400,088	396	369	37,375,157	34,455,729	629	584
48. Uncollectible railway revenues.....	309,190	315,173	1	1	86,924	95,125	1	2
49. Railway operating income.....	173,194,407	458,203,531	743	1,976	23,132,912	172,389,532	390	2,917
50. Equipment rents.....	**13,705,009	**10,457,184	**59	**45	**21,812,150	**20,900,450	**367	**352
51. Joint facility rent (Dr. Bal.).....	7,832,287	7,695,934	33	33	3,594,633	3,893,433	61	65
52. Net of items 49, 50 and 51.....	151,657,111	440,050,413	651	1,898	**2,273,871	147,595,639	**38	2,500
53. Ratio of operating expenses to operating revs. %.....	87.23	71.34	.....	.....	93.47	75.67	.....	.....

SOUTHERN DISTRICT

WESTERN DISTRICT

Item	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
28. Average number of miles operated.....	42,967.18	42,737.59	.....	.....	130,602.23	130,029.90	.....	.....
Revenues:								
29. Freight.....	\$234,538,918	\$210,854,302	\$5,458	\$4,934	\$560,640,445	\$540,681,745	\$4,293	\$4,158
30. Passenger.....	80,981,322	54,204,872	1,885	1,268	180,149,438	149,724,387	1,379	1,151
31. Mail.....	4,288,370	4,657,469	100	109	12,396,796	13,948,848	95	107
32. Express.....	7,511,644	7,292,470	175	171	22,148,187	19,631,059	170	151
33. All other transportation.....	4,537,824	4,245,491	106	99	19,820,027	20,056,965	152	151
34. Incidental.....	7,481,128	5,549,027	174	131	17,548,870	15,672,659	134	121
35. Joint facility—Cr.....	658,467	449,182	15	10	558,137	392,261	5	5
36. Joint facility—Dr.....	125,058	131,336	3	3	266,880	168,451	2	1
37. Railway operating revenues.....	339,862,915	287,161,477	7,910	6,719	813,095,220	760,139,473	6,226	5,846
Expenses:								
38. Maintenance of way and structures.....	43,234,537	33,133,500	1,006	775	120,709,668	95,121,082	924	732
39. Maintenance of equipment.....	73,717,259	52,344,195	1,716	1,225	160,706,093	116,427,519	1,231	895
40. Traffic.....	5,174,785	6,148,573	120	144	11,123,507	13,877,723	85	107
41. Transportation.....	142,773,052	95,679,704	3,323	2,239	351,894,337	265,662,972	2,695	2,043
42. Miscellaneous operations.....	1,793,450	1,645,488	42	39	8,250,892	7,044,670	63	34
43. General.....	8,398,833	7,017,819	196	164	22,502,975	19,348,604	172	149
44. Transportation for investment—Cr.....	372,895	618,721	9	15	2,054,438	2,510,594	16	19
45. Railway operating expenses.....	274,709,021	195,350,558	6,394	4,571	672,102,434	514,971,976	5,154	3,961
46. Net revenue from railway operations.....	65,153,894	91,810,919	1,516	2,148	139,992,526	245,167,497	1,072	1,885
47. Railway tax accruals (excluding "War Taxes").....	13,425,563	12,730,537	312	298	41,437,156	38,213,822	317	294
48. Uncollectible railway revenues.....	75,039	68,315	2	1	147,227	151,733	1	1
49. Railway operating income.....	51,633,292	79,012,067	1,202	1,849	98,408,203	206,801,942	754	1,590
50. Equipment rents.....	1,963,587	8,559,966	46	200	6,143,554	11,883,306	47	15
51. Joint facility rent (Dr. Bal.).....	1,140,157	1,058,517	27	25	3,097,497	12,743,984	24	21
52. Net of items 49, 50 and 51.....	52,476,722	6,513,516	1,221	2,024	101,454,260	205,941,258	777	1,584
53. Ratio of operating expenses to operating revs. %.....	80.83	68.03	.....	.....	82.88	75.67	.....	.....

**Debit item. †Excludes figures for Wabash-Pittsburgh Terminal Ry. Excludes figures for St. Louis, Iron Mountain & Southern Ry. for five months ended May 31, 1917.

Private Car Lines to Receive One Cent a Mile

Interstate Commerce Commission Finds This Rate Necessary
to Help Compensate for Increased Costs

THAT THE ALLOWANCE paid by railroads for the use of privately owned tank cars should be made one cent a mile instead of $\frac{3}{4}$ cent and that this increase should also be applied to other privately owned cars; that greater care should be taken to return private cars belonging to small owners and that carriers should operate enough icing plants of their own and not permit the big packers to ice their competitors' shipments, are the leading points in a decision of the Interstate Commerce Commission issued on Thursday of last week.

The decision contains much information as to the use of privately owned cars. It shows how they first came into use and of what great value they are to their owners and the point is made that they serve an important duty in transportation and could not well be dispensed with.

The decision bears the title "In the matter of private car lines" and will be found in 50 I. C. C. 652. It follows a detailed inquiry instituted in 1912 as to the rules, regulations and practices governing the operation of private cars. The length of time which has elapsed is a result of delay caused by court proceedings, one relating to the jurisdiction of the commission and the other to the power of the commission to require carriers to supply cars to shippers.

The Commission's Findings Summarized

The commission's findings are summarized in the report as follows:

1. As the situation now exists, and under the circumstances and conditions shown of record, shippers may continue to lease cars from sources independent of carriers by railroad.

2. A charge in addition to freight rates should not be made for furnishing to shippers refrigerator, tank, or other special type of car, or for transporting their shipments therein, unless the freight rates are predicated on the transportation in another type of car less expensive and not so difficult to operate.

3. Payments should be made by carriers on the basis of the loaded and empty mileage, and mileage should be computed on the basis of distance tables without the elimination of mileage through switching districts.

4. There should be no increase in the present payment for use of refrigerator cars and so-called meat cars for transportation in that part of the country east of El Paso, Tex., Albuquerque, N. Mex., and Salt Lake City and Ogden, Utah.

5. The present payment of $\frac{3}{4}$ cent on the loaded and empty movements for the use of tank cars of all kinds by all carriers by railroad should be increased to 1 cent per mile for the loaded and empty movements; the increased allowance should be paid for the use of live poultry cars, palace stock cars and heater cars, but the increase should not apply to stock cars, coke cars, coal cars, rack cars, flat cars, box cars, or pocket cars, although they may be privately owned or leased.

6. Carriers should publish in their tariffs a rule that private cars when unloaded at destination, unless otherwise ordered by the owner or lessee, must be promptly transported, loaded or empty, in the direction of the plant of the owner or lessee.

7. Where carriers own tank cars which are furnished to shippers on request, they shall publish in their tariffs rules for the distribution thereof whereby each shipper who makes

reasonable request may receive his proportionate share of available cars.

8. Re-icing charges on shipments of fresh meat and packing-house products and dairy products should be based on the cost of the ice and salt used, the labor, investment in icing plants, etc., together with a reasonable profit. The carriers only should perform the service of re-icing and make charges therefor; and shippers of these products should not be permitted to perform the service of re-icing their own and competitors' shipments en route, either directly or through corporations controlled by them.

9. Tariffs of carriers be so changed that private cars standing on the private tracks of their owners shall not be subject to demurrage charges.

10. The Master Car Builders Association rules need not be filed in tariffs of carriers; and suggestions made at the hearing as to modifications in rules and practices should be adopted by the association.

Abstract of the Report

On January 1, 1913, there was a total of 137,179 cars of all kinds owned by private interests, including those owned by railroad-owned car lines. On January 1, 1918, this number had increased to about 200,000, including approximately 70,000 tank cars, 65,000 refrigerator cars, and about 65,000 other privately owned cars, including stock, coal, poultry, heater, palace stock cars and box cars. At a conservative estimate the amount of money invested in these cars is \$250,000,000. In addition to this, large sums of money have been invested by owners in the construction of repair plants, side tracks, etc. The great increase in the number of privately owned cars in the last three years has been relatively larger than in any similar previous period, due to congestion on the railroads and the necessity for having more cars to handle the same amount of traffic. The number of tank cars in particular has increased greatly.

Allowances Paid by Carriers

Allowances paid to private car owners have always been on a mileage basis. From 1867 to 1873, the rate was from $1\frac{1}{2}$ to 2 cents per mile on all cars; 1873 to 1877, from 1 to $1\frac{1}{2}$ cents; in 1877, it was made from $\frac{3}{4}$ of a cent to 1 cent; in 1893, an allowance of 1 cent was fixed for refrigerator cars west of Buffalo, N. Y.; in November of that year, the rate was made 6 mills on all cars except private refrigerators, which were allowed 1 cent by western carriers and $\frac{3}{4}$ of a cent by eastern carriers generally. There were some modifications of the allowances in the east. On October 1, 1917, the allowance for refrigerator cars is 1 cent per mile on the east of the Mississippi river became 1 cent. At this time, the allowance for refrigerator cars is 1 cent permile on the loaded and empty movements between all points east of El Paso, Tex., Albuquerque, N. Mex., Salt Lake City, and Ogden, Utah. The territory west of the described line is known as the transcontinental zone. In that zone, on shipments requiring refrigeration in private cars for distances of 800 miles or less, the payment is 6 mills per mile; excess over 800 miles, $\frac{3}{4}$ of a cent; when loaded with freight not requiring refrigeration, 6 mills, regardless of distance; and when moving empty, no allowance.

The allowance on live poultry cars is generally $\frac{3}{4}$ of a cent, although there are a few exceptions when 6 mills is paid. On palace stock cars, except when moved in passenger

trains, the allowance is on the basis of 6 mills per mile, with the exception of many railroads in the southeast, which allow $\frac{3}{4}$ of a cent. The allowance for tank cars is uniformly $\frac{3}{4}$ of a cent for loaded and empty movements. For use of all other cars, including coal, coke, stock, and box cars, the allowance is 6 mills per mile. None of the allowances include movements within the switching limits, as defined by carriers, within terminals.

Operation of Private Cars

From the fact that private car owners have an interest in the prompt movement of their cars, such cars move more rapidly, and also move empty to a greater extent than the same kind of cars owned by carriers.

Most perishable freight moves from the west, southwest, south and southeast to the northern and northeastern sections of the country. There is very little perishable freight available for return loading. Railroad car lines utilize their cars to as great an extent for return loading as possible. Private car owners object to return loading of their cars, if by so doing, the return movement is delayed. There are many articles that can not be loaded into refrigerator cars, especially meat cars, because of odor, or because the dampness in the car would not permit of such loading.

Tank cars are not generally loaded for return movement, and with some exceptions move empty half the total mileage. The Union Tank Line serves so many concerns with numerous refineries and stations in all parts of the country that it occasionally happens that loads may be found for movements in both directions. As a rule, private cars designed to transport acids, vinegar, wine, etc., move empty on the return.

The Duty of Carriers

It is well-settled law that the duty of a common carrier is to furnish equipment for transportation of articles it advertises to carry. The general duty of carriers at common law, and under the act, is to furnish such cars and other facilities as are reasonably necessary to enable them to fulfill their public obligations. It has been held that in the absence of discrimination the power to enforce the duty does not reside with the Commission. In this proceeding the question of where the power resides to enforce the duty is not necessarily involved. In section 15 of the act it is provided that if the owner of property transported directly or indirectly renders any service connected with transportation, or furnishes any instrumentality therein, the charge and allowance therefor shall be no more than just and reasonable, and that the Commission is empowered to determine what is a reasonable charge as a maximum to be paid by the carrier or carriers for the service rendered, or for the use of the instrumentality furnished. An amendment to section 1 of the act, approved May 29, 1917, provides as follows:

"The Commission shall, after hearing, on a complaint filed by a shipper, make such orders as may be necessary to enforce the duty of carriers to furnish equipment without complaint, establish reasonable rules, regulations, and practices with respect to car service, including the classification of cars, compensation to be paid for the use of any car not owned by any such common carrier, and the penalties of other sections of this act, and of the rules."

The Congress has thus recognized the use of privately owned cars in transporting the commerce of the country, and has provided for their control by the Commission through rules and regulations of carriers hauling them.

For more than 30 years privately owned cars have been extensively used to transport commodities in interstate commerce. They came into use originally because the railroads would not, or did not, supply them in sufficient quantities to meet the demand. Practically all carriers have refused to furnish tank cars for transportation of oil and other liquids, or cars with brine tanks and racks for transportation of carcass meat. There are certain exceptions to this rule. Refiners of petroleum oils with substantial unanimity state that

as a practical matter carriers could not furnish tank cars in a manner to insure their efficient use. The packers, who are the largest users of refrigerator cars, including meat cars, state that they are perfectly willing that carriers should own all cars used by them, "provided they are insured at all times an adequate supply." The proviso qualifies their acceptance of the principle to the extent of practically nullifying it. If all cars were owned and furnished by carriers, in times of shortage the packers, as well as all other shippers of like traffic, would be entitled to no more than their fair share of all cars available. No class of cars in railroad service is used more effectively than the cars owned by large shippers. They have organizations of men to see to it that their cars move as promptly as possible, both loaded and empty. The carriers of the country could not as effectively handle the entire refrigerator and tank-car equipment as is now done by the intervention of private owners. The car lines have forces of experts to watch the crop prospects and to advise as to the needs of particular sections of the country, to secure cars and see that they are on hand for the transportation of all sorts of products in refrigerator cars. If there is a crop failure in one section of the country, the cars are sent to other sections, and are kept actively in use to the highest degree possible. The oil refiner produces certain kinds of oil and desires to reach certain customers. No carrier could inform itself as to his needs and insure that he would have the kind and number of cars to enable him to conduct his business economically and efficiently. If private ownership or control of cars of particular types results in greater economy and more efficient use, the whole public is to that extent benefited.

In the beginning, carriers could no doubt have insisted upon their right to furnish all equipment. They did not do so, and in the course of years there has grown up a system of private ownership of such magnitude and importance that it must be reckoned with as an existing condition.

The system of the use and supply of private cars that now exists can not be at once and radically changed, without serious consequences to shippers, carriers and the public. At the hearings an endeavor was made to secure evidence with respect to normal transportation conditions. The abnormal conditions of last fall and winter are admittedly not such as would indicate what would be just and reasonable practices, as a general rule, for carriers, shippers, private-car owners or the public.

How Should a Shipper Secure Cars?

As a general principle, a shipper of traffic over the railroads of the country ought not to be required to deal with any other than the carrier. If the carrier has not the kind of a car in general use that is demanded by a shipper, the most simple and direct method is for the former to secure it from some source and furnish it, but the custom has been otherwise with respect to certain kinds of cars. In many cases, shippers are under compulsion to furnish cars by reason of carriers' failure to supply them upon request. In practice, the shipper either buys the cars used by him, or rents them from concerns engaged in the business of supplying cars. If a request were preferred to a carrier for a kind of car it did not own, considerable delay might occur before it could be secured. To a shipper of perishable products or a shipper who is bound by a short time contract, such delay might cause serious loss. So far as the carrier is concerned it can make no difference whether the shipper is owner or lessee. So far as the shipper, or the relation of one shipper to another is concerned, there may be a marked difference between an owner and a lessee.

Some car companies engaged in the business of manufacturing cars and supplying them to shippers for use in transportation have and take a vital interest in the movement of such cars by carriers. They enter into contracts with ship-

pers to supply them with all the cars needed for a certain period, usually a term of years. Men are employed whose duty it is to keep posted as to the location of all cars, so that demands of patrons may be most expeditiously and economically met. There can be no doubt but that this method of handling the business leads to a highly efficient use of cars.

Larger owners have organizations to look after the movements of cars and this promotes their prompt movement en route and through terminals. They have representatives at important junction points who advise as to movements and look after the prompt handling of cars.

As before stated, it is undoubtedly in the interest of all shippers that needed cars should be secured from the carrier direct, but so long as the system of the use of privately owned and operated cars continues to play so important a part in transportation by railroad in this country, and so long as carriers fail to provide themselves by ownership or lease with cars to transport so important a part of the commerce moving over their lines, there seems to be no sound reason why shippers should not continue to secure cars through independent car companies. The need is to secure the largest use of all freight equipment, and the car companies have been an important agency in this regard.

Should Car Owners Publish Their Charges to Shippers?

Charges of car owners to shippers range from \$15 to \$150 per car per month. The lower charges are on unexpired long time contracts and will not be renewed under present conditions. Five years ago, the average rental charge was about \$30 per month. In 1917, the average contract was made at \$85 per month. Except as to a few car companies, there is no regularity with respect to charges car owners make for equipment leased or furnished shippers. The amount of the charge seems to be measured by the needs of the particular shipper. During recent months there has been such a demand for cars that owners admit that they have received very high prices for single trips or other short time use. In normal times there is not such demand, and the charges are much less.

Under the law as construed by the courts, car lines and others engaged in leasing cars to shippers are not common carriers and thus do not come under direct control by the Commission. When a car, regardless of ownership, is being moved in interstate commerce by a common carrier subject to the act, there is no doubt of our power to control the carrier's operation of the car so that there shall result no undue preference to any shipper. The act does not impose on common carriers the obligation to haul private cars in interstate commerce. If private cars are used, they must be under an arrangement stated definitely in tariffs. *Procter & Gamble Co. v. C. H. & D. Ry.*, 19 I. C. C., 556, 560.

No one has complained, so far as this record shows, of the amount of the charges for lease of cars, or that the charges are applied in an unjustly prejudicial manner. As a means of removing undue prejudice or unjust discrimination we have the right to require the carrier to provide specifically in its tariffs the terms under which all similarly situated shippers may demand and secure upon even terms the use of cars employed upon the carrier's line. We do not feel that on the facts of this record or under present conditions the requirement should be ordered.

Should a Separate Charge for Special Cars Be Established by Carriers?

This was one of the questions that was thoroughly discussed at the hearings and is fully considered on brief. The first difficulty is to define "special equipment" or "special car." Carriers define "special equipment" to be that which "does something to the freight," or that which has a value to the shipper over and above the mere hauling, the defini-

tion to apply to a car furnished by a shipper as well as one by a carrier.

In substantially all rate cases of any importance that have been considered by the Commission relating to articles transported in refrigerator or other cars of peculiar type, carriers have defended their rates by showing more or less in detail that the commodities are transported in such cars, of greater weight, and more expensive to operate than ordinary cars. These facts thus called to the attention of the Commission have not been ignored in passing upon the reasonableness of the rates in issue in the particular cases. Certain articles were not transported in appreciable quantities, and from certain parts of the country not at all, until after the refrigerator car was perfected, and freight rates were made with a view to transportation of such products in that kind of a car and in no other. The wide diversity of traffic and the special transportation that many carriers perform would make a car special in one section of the country, or over one railroad, that would, in another section or over other railroads be an ordinary car.

Many of the rates now published by carriers include the transportation of articles in cars for the hauling of which carriers here assert they are entitled to extra compensation. It would be practically impossible to determine what rates do or what do not include the hauling of commodities in special types of cars. Any attempt to state separate charges of the nature proposed would be a prolific source of litigation, and, in many instances, would impose unjust and unreasonable charges on shippers or receivers of freight.

Basis of Compensation for Use of Private Cars

When a shipper furnishes his own car for transportation of articles in common use and which move in large volume, he relieves the carrier of so much of its obligations as a common carrier. This is true whether the shipper furnishes the car as owner or lessee. Carriers recognize this and make allowances to the owner or controlling shipper, as before stated, for the use of such cars. The question here to be considered is as to the basis of the allowance or payment, therefore. When this case was first heard, the only power of the Commission to regulate payments by a carrier for an instrumentality of transportation furnished by the shipper was the power given in section 15 of the act to determine what is a reasonable charge as the maximum to be paid by the carrier. This provision was directed to the prevention of rebates by way of excessive allowances to shippers, and has never been considered as granting power to fix a reasonable amount as an initial proposition as payment for the use of the car. The act of May 29, 1917, hereinbefore referred to, grants power to the Commission to fix the compensation to be paid for the use of any car not owned by the carrier.

Carriers contend that the amount paid for the use of shippers' cars should not exceed that sufficient to cover repairs and depreciation, and that therefore some of the allowances are now too high. Car owners contend that the allowance or payment now made for the use of their cars is too low, and that it should be in such an amount as to provide for maintenance, depreciation, cost of operation, taxes, and a reasonable interest on the investment.

The amounts paid by carriers for the use of tank cars or refrigerator cars does not permit of the operation of any of them at a profit considered reasonable by owners, and has not during any time during the last six years; and some of them were and are operated at a loss, taking into account a return on investment, cost of repairs, maintenance, and depreciation.

It is clearly established that shippers of petroleum oils, fresh meat, packing-house products, and dairy products could not have done the volume of business they have done in the past, or that their plants were constructed to do, ex-

cept they had possessed themselves of private cars over which they could exercise, and have exercised, control. The oil refiner and meat packer demand an adequate supply of cars at all times. It is conceded by shippers that neither an adequate supply nor its efficient distribution can be afforded by carriers. The requirement has been that there shall be the most efficient use of tank and refrigerator cars, which has been one of the results of private ownership. While this has undoubtedly been of benefit to carriers, it has been of incalculable benefit to shippers as well.

The allowance that shall be paid for the use of private cars under all the circumstances and conditions shown must be considered on the average. There can not be, with propriety, as many different rates of payment as there are owners with varying ability to efficiently handle the cars with respect to mileage earnings, repairs, and depreciation, nor can there be as many rates as there are different kinds and grades of privately owned cars. Representatives of carriers assert that a proper basis is payment for repairs and depreciation. Carriers should at least pay for repairs and such depreciation as occurs while the car is in railroad service. The amount of depreciation can not be determined with accuracy. The attempt to fix a stated basis of allowance for use of privately owned cars would by no means result in justice to all owners or to all carriers. The experience through many years under normal conditions has dictated certain allowances which have been accepted by owners and carriers. Changed conditions have led to an attack upon the allowances now paid by carriers. No attempt will be made here to fix what shall be a reasonable basis from which the amount of the allowance to be paid by the carriers shall be ascertained. This phase of the case will be considered in the light of past experience and the evidence of record.

How Should the Compensation Be Determined?

Substantially all parties to this proceeding agree that the mileage basis upon which payments are made for the use of private cars should be continued.

There is no serious difficulty in making settlement as between owner and carrier on the mileage basis. Under present rules, loaded and empty mileage is equalized as regards routes of movement. That is to say, the shipper is required to give each route, or each carrier in the route, a loaded mile for each empty mile of haul, under penalty of paying rates for hauling empty equipment only, which range from 4 cents to 10 cents per mile. Whether under unified operation, should it become permanent, some other rule in this regard may be necessary, is a matter that can not be determined here. Under normal conditions the mileage basis secures to the owner payment for the operation of his car. That is what he is entitled to and it is that for which the carrier should pay.

Deductions from mileage by private cars through terminals are now made. Mileage is calculated from switching limits to switching limits. It is the general rule not to make payment for the movement through switching districts of important points. Many years ago when switching limits were not as extended as today, the matter was of no especial importance. Today it is possible to have a movement through Chicago of over 30 miles within the switching limits, and 10 or 12 miles is by no means uncommon in other cities of the country. Car owners do not urge that payment be made for the use of their cars in switching service. Their demand is that they receive payment for line hauls. This is reasonable, and is not objected to by carriers. The computation of mileage as a basis of payment for private cars should be upon the distance of the haul, reference being made to the distance tables established by the carriers. The practice with respect to such payments should, of course, be made uniform.

Amount of the Compensation

It is conceded by car owners that they are not properly entitled to make a profit on their cars used by carriers. They demand, as a rule, that the entire cost to them, together with interest on their investment, shall be covered by payment for their use. A return sufficient to pay all costs, including interest on the investment, has not been realized from the payments or allowances now made by carriers.

Since 1912 the cost of cars and repairs has materially increased, and there has been little change in the mileage earnings. If anything, during 1917 the movement has been less than in previous years because of congestion, embargoes, etc. While the figures are not at hand, priority orders that have been given for shipments of food products to the Atlantic seaboard for shipment abroad have not so materially affected the mileage earnings of the packers during recent years as compared with other private car earnings.

Owners receive larger returns for refrigerator than for tank or other kinds of cars. The reason for this is that perishable freight requires rapid transportation to prevent deterioration. It moves in the fastest freight trains of all carriers. Packers and car lines who are largely engaged in shipping perishable commodities insist on the prompt movement of their cars, both loaded and empty. Tank cars do not usually move with equal rapidity. The shipments are not perishable and do not require expedited movement, nor do they ordinarily get it, except in special cases. Large users of tank cars, however, have organizations to keep the cars on the move as continuously as possible. The packers have branch houses in all important cities of the country to which shipments are made in large quantities. For example, Swift & Co. have 450 of such branch houses. The shipments of the packers to New York and for export constitute about 25 per cent of the total.

The cost to the carriers of moving tank cars or refrigerator cars has not been determined. The average tank now in use holds 8,000 gal., and the average load weighs 55,000 lb. The average load in a refrigerator car weighs about 30,000 lb. Including the ice, the weight would be about 34,000 lb. The service of the carrier on the loaded movement of a tank car is greater than on a refrigerator car, and the average earnings are also greater. A proportion of refrigerator cars contain return loads, and tank cars return empty in most instances. The investment in a tank car is about the same as in a refrigerator car, and repairs by the owner to a refrigerator car usually exceed those to a tank car.

Owners of tank cars contend that the rate was fixed many years ago when the cars cost about \$1,000; and that if the allowance was proper at that time, it is inadequate now when cars, even on a normal basis of charges, cost from \$1,500 to \$1,600. The cost of repairs and maintenance of tank cars has steadily increased. The same is true of refrigerator cars. As before stated, the average carload of oil today weighs about 55,000 lb. Twenty years ago the average load was about 24,000 lb. In other words, the average load has increased two and one-half times, and the revenue of the carriers per car mile has more than doubled.

Cars purchased in the latter part of 1917 cost on the average about \$3,700. The marked increase is due to increased costs of material and labor and is not a measure for costs in normal times.

A large owner of tank cars testified that the average cost of tank cars in 1913 was \$1,100, and in 1917 prices ranged from \$1,650 to \$3,755 per car during the earlier and latter parts of the year. He stated that under the $\frac{3}{4}$ of a cent allowance the average earnings in 1914 were \$63.09. The cost of maintenance, including depreciation, plus 6 per cent on the actual cost less depreciation, amounted to \$158.74 per car; that is to say, during the year 1914, the mileage failed to pay expenses and a 6 per cent return on the investment

by \$95.65 per car. In 1914, in order to secure a return of 6 per cent on depreciated investment, and to pay operating expenses, the mileage allowance should have been 1.89 cents; in 1916, 1.65 cents; and in 1917, 1.75 cents. The Union Tank Line Company shows that the average cost of repairs to its cars in 1914 was \$65.07, and that depreciation at 5 per cent was \$42.70, a total of \$107.77. At 1 cent per mile, the average earnings of its cars would have been \$91.97, or \$15.80 less than cost on the basis stated. In 1917, according to returns from this company, the average cost of repairs was \$49.07 per car; depreciation at 5 per cent, \$42.58 per car; and the mileage earnings were \$90.87 per car. It is stated that much of the equipment is new, and repairs are on a minimum basis.

In figures set out in the appendix, the earnings of Swift & Company on refrigerator cars in the year 1912 appear. This company may be taken as representative of the packers. The returns from mileage received by them are the highest of any refrigerator car in private ownership. The following table gives the average earnings and depreciation at 5 per cent on the average value per car, together with the total for the years 1915, 1916 and 1917:

Year	Cost	Mileage earnings	Repairs	Depreciation	Total depreciation and repairs
1915.....	\$896.36	\$191.10	\$138.81	\$44.82	\$183.63
1916.....	916.34	204.52	158.71	45.81	204.52
1917.....	870.00	197.51	196.77	44.50	232.27

Discrimination in Use of Private Cars

Because of their superior organization, and their ability to give carriers tonnage, the leading packers of the country have been able to secure better use of their cars than some of their competitors. These great shippers of perishable articles have used to the fullest extent their splendidly effective organizations to secure prompt service for their cars used in shipments of their products. Smaller competitors who have not, and can not afford to have, such organizations, have secured very much less efficient service from the private cars they own or control.

The failure to return cars to the smaller packers is due to the neglect of a lawful duty by carriers. The obligation to treat each shipper fairly, no matter how small his shipments may be in comparison with those of another shipper, is one carriers cannot escape. Whether under the terms of the act the carriers have been guilty of unjust discrimination in the cases referred to, can not be determined on this record. The duty imposed on the carrier by law is to give equal treatment to all shippers who are in position to demand it. Where the same carrier or carriers serve two shippers, who, by their location, the character of their output, and distance from markets where their products must be disposed of, are in substantially similar circumstances and conditions, the serving carrier or carriers can not lawfully prefer one to the other in any manner whatsoever.

Meat packers everywhere are under compulsion, if they are to ship carcass meat, to supply themselves with cars, and carriers transport them under arrangements with the shippers. If the carriers were required to publish in their tariffs a rule to the effect that private cars when unloaded at destination, unless otherwise ordered by the owner or lessee, will be promptly transported, loaded or empty, in the direction of the plant of the owner or lessee, doubtless much of the apparent injustice hereinbefore referred to would be avoided. A rule similar in terms to that suggested was applied by carriers with respect to foreign cars on their lines previous to April 26, 1917, but it was not applicable to private cars.

Shippers of oil in tank cars are required to furnish the cars, and many shippers of perishable products other than fresh meat find it necessary to own or control cars, because they can not in any other manner secure an adequate supply. The suggested rule should apply to all private cars in order

to prevent discrimination, and to secure to owners such use of their cars as their necessities may require.

Railroad Owned Tank Cars

Carriers throughout the country generally have provisions in their tariffs which name rates on petroleum oil and other liquids in tank cars that they are not under obligation to furnish such cars. Other carriers provide that shippers must furnish tank cars. Notwithstanding this many of them have cars which are used in commercial service. For example, the Pennsylvania Railroad system owns 448 tank cars, and rates named for transportation of liquids in tank cars are governed by the official classification, which provides that

In prescribing rates in this classification for liquids in tank cars, the carrier is not under obligation to furnish such cars, but the classification does not relieve the carrier of its obligations to furnish tank cars.

The Atchison, Topeka & Santa Fe system owns 1,065 tank cars and leases 100, making a total of 3,065. Its rates on articles transported in tank cars are governed by the western classification, which provides that

Where the classification provides ratings on commodities in tank cars such ratings do not obligate the carrier to furnish tank cars in case the carrier does not own a class of made arrangements for supplying such equipment.

Carriers which own tank cars should be required to distribute those it furnishes to shippers in accordance with rules and regulations published in tariffs whereby each shipper who makes reasonable request may receive his fair and proportionate share of the available cars.

Refrigeration Charges

As a rule, charges for refrigeration of fruits and vegetables are in stated amounts per car, per mile, or per package, for the entire service from origin to destination. It is also a rule that charges for refrigeration of fresh meat and packing-house products are based on a rate per ton of ice and salt furnished. This statement applies to substantially all shipments east of the transcontinental zone. From Missouri river territory to north Pacific coast, Spokane, and Montana territories, the charges are based on a stated sum per car for the service. *Westbound Transcontinental Refrigeration Charges*, 54 I. C. C., 140. Practically all dairy products, including eggs, dressed poultry, butter, oleomargarine, and cheese in certain territories, move under tariffs which name the freight rates for transportation, including refrigeration. In other territories they move under charges for the ice furnished or under stated charges.

The rates for fruits and vegetables are named in stated amounts for the through service. The car line receiving the charge is required to pay certain carriers for ice furnished.

In 1914, 151 railroads reported that they owned and operated 1,347 icing stations. During the same year Armour interests operated 29, Swift & Company 6, and 4 were jointly owned by Swift & Company, Armour & Company, and Morris & Company. The exact number now owned and operated by carriers and others does not appear, but it is stated that there has been no substantial change since 1914.

Some of the great packing concerns of the country now operate directly, or through corporations they control, a number of icing stations at which they re-ice their own shipments, as well as those of competitors, and any perishable commodities that require re-icing en route at those stations.

At all stations in official classification territory, with two exceptions, where re-icing is done for shipments of fresh meats by the packers for railroad companies, the latter pay the former \$2.50 per ton of ice furnished. Rates for re-icing are published in tariffs of the carriers, but the icing stations operated by the packers are competitive with similar stations operated by carriers. There can be but one conclusion reached from a consideration of these facts, and that is that

the packers have so located their icing stations that in the past whatever rates they have been willing to accept for the service of re-icing control the rates for re-icing with respect to the movement of fresh meats and packing house products.

It is insisted by carriers generally that it is necessary, in order to prevent discrimination, that charges for refrigeration should be a stated sum in cents per 100 pounds of freight transported. That is to say, that carriers as a rule in this proceeding advocate that refrigeration charges should be a stated sum in cents per 100 pounds of freight hauled in each car, based on the carload minimum; and that for less-than-carload shipments there should be a stated sum for the entire service in cents per 100 pounds for the tonnage hauled, with a minimum charge per shipment which should be the equivalent of the less-than-carload charge for 100 pounds.

The railroad-owned car lines are of the opinion that the refrigeration charge should be either based on the freight transported, or on a per car basis.

It is stated of record that there are now no stated refrigeration charges published based on the weight of the freight hauled. There are charges now in effect based on the package and distance of the haul. The Commission has approved stated charges on a per car basis in transcontinental service.

Shippers were of opinion that it would not be possible to fix refrigeration charges with reference to the lading of the car, without discrimination; that such charges would require a shipper to pay for maximum refrigeration in a car furnished by a carrier twice as much in the case of a 60,000-lb. load as for 30,000-lb. load; and that the charges would vary with each load shipped, although the service rendered by the carrier, so far as the refrigeration is concerned, would be the same with respect to each load.

There are some practices connected with re-icing service now performed by carriers with respect to shipments of fresh meat, packing house and dairy products, that should be changed. The larger meat packers are engaged to a considerable extent in shipping dairy products as well as products of their meat-packing plants. As heretofore explained, considerable re-icing service in official classification territory through which shipments pass on their way from west to east and southeast, is performed for the railroad either directly by the packers or by corporations they control. Whenever transportation service of this character is farmed out by the carrier to a shipper, who renders the service with respect to his own shipments, as well as those of competitors, there may be, and there quite likely are unlawful results. A meat packer located on the Missouri river, and by no means an insignificant concern, measured by the volume of its shipments, complains vigorously that re-icing performed by a competitor at an interior point in official classification territory is not satisfactory, and that its competitor has access to the billing and is advised of the character of the shipments and to whom they are made, contrary to the provisions of section 15 of the act. The evidence is not clear as to particular instances of improper icing, but there can be no doubt that access to the billing of a shipper by another and a competitor is unlawful. If the shipper who renders the service makes a profit therefrom, there at once arises the question whether such profit does not amount to a concession to him from the rates he pays on his own traffic.

Aside from these considerations there is dissatisfaction and unrest amongst competing shippers when disputes as to the amount and character of icing is referred to one of them who rendered the service. The situation obtains when the icing is done by a corporation controlled by a competitor as well as when it is done directly by the competitor. Of course, there can be no valid objection to carriers doing by an agent what they may do themselves, where such agent is not a shipper or otherwise interested in transportation of the articles with respect to which the service is rendered.

This record does not contain evidence sufficient to determine what would be a reasonable charge for service of re-icing fresh meats, packing house, and dairy products, but it does indicate that it is now being performed by carriers at less than cost. Charges for the service should be upon a just basis considering the costs proper to be included such as salt, ice, labor, etc., together with a reasonable profit.

Demurrage on Private Cars

Under the existing tariffs of carriers private cars are made the subject of demurrage when standing on private tracks of owners. It is agreed by both carriers and owners that tariffs should be so worded as to exempt a private car from demurrage under such circumstances. It was stated that provision would have been made some time ago for such exemption except for the difficulty of determining who was the owner of a car. It was agreed that a shipper who leases a car for a term is to be considered the owner during such term, and that a stencil mark on the car as defined in tariffs should be conclusive as to ownership for purposes of exemption from demurrage.

Master Car Builders' Association Rules

During the hearing private car owners made complaints which were chiefly directed to the fact that carriers did not render bills for repairs promptly; that evidence as to improper repairs, or repairs that had been charged for but not made was not permitted to overcome the statement of the repairing carrier; that cards formerly attached to cars showing repairs made at the time were not now sent with the cars; and that private car owners did not have representation on the executive or arbitration committees.

There is no serious complaint as to the rules regarding the making of and charges for repairs. The general disposition of car owners was to conform to the rules if they are faithfully observed. Some private car owners desire that the Commission require carriers to publish the rules in their tariffs and have them observed accordingly. Aside from the question of jurisdiction of the Commission over operations of carriers in this respect, carriers object to such filing on the ground that the effect would be to set the rules as they now are so that necessary changes could not be promptly made. Application to the Commission for permission to make changes which might be required would delay operation, and complicate a system which as a whole has operated satisfactorily. Many private car owners were not in favor of the publication of the rules in tariffs.

A representative of the Master Car Builders' Association stated at the hearing that there appeared to be no objection to returning to the practice of attaching repair cards at the time the repairs are made to the cars of private owners, provided that the bill was not nullified if the card was lost or destroyed. To this, car owners agreed, and it is suggested by them that there be attached to their cars a steel pocket or other receptacle in which the repair card might be placed. The representative of the association also stated that there is no good reason why representatives of private car owners should not be on all committees of the association, including the executive and arbitration committees. He further stated that every effort would be made to induce carriers to render repair bills more promptly, and that disputes as to improper repairs or repairs charged for but not made would and should be decided by the arbitration committee under the facts of each case presented and in accordance with the weight of the evidence.

These suggestions were approved by the private car owners, and if they are adopted, many troublesome and harassing disputes growing out of bills for car repairs will be at an end.

Doings of the United States Railroad Administration

Director General Visits Long Island Terminals; Allocation of New Cars; Employees and the Draft

WASHINGTON, D. C.

DIRECTOR GENERAL McADOO spent the latter part of last week at New York inspecting the railway terminals on Long Island and in New Jersey. He is spending this week in Washington, but is expecting to start out again next week on another inspection trip. New England, in particular, is expected to receive early attention. Carl Gray, director of the division of operation, and Frank McManamy, assistant director in charge of mechanical matters, visited New England last week and returned with favorable reports. The mechanical situation, in particular, is reported as much more favorable this year than last year at this time.

The Director General Interviewed

While he was in New York, the director general was asked in an interview if he thought government regulation was here to stay and would result in government ownership. No one could foretell that, he said in reply, and expressed his belief that the people would settle that in their own way at the proper time. However, he added, he hoped to demonstrate the benefits of a unified system of control.

Mr. McAdoo also spoke on the war time passenger service and said that in his opinion traveling conditions on the railroads were not so bad as some people would have it believed.

The director general also said:

"I familiarized myself in a general way with the Long Island terminals today, and I want to say that they are becoming increasingly important because of the army and navy supplies handled there. I found the situation very satisfactory, and the work on the storage warehouses is proceeding wonderfully. Splendid progress has been made. The whole Long Island situation is good.

"Of course we are terribly short of passenger cars all over the country, and particularly on Long Island, but the pressure on the equipment on Long Island is so great because of the military camps. It is hard to meet all the demands for war service, and at the same time maintain all passenger service up to normal. The purpose of the Railroad Administration is to give sufficient and efficient passenger service consistent with the paramount needs of the war. Wherever an apparent impairment results, it springs not from the desire to make the service inefficient, but because war demands make it unavoidable.

"When the people are inclined to question some things they must remember that the curtailment of passenger service on the railroads of the country was a war necessity. They must remember that the demands on the railroads have never been so great and that the facilities of the country are taxed as never before. Aside from the movement of troops, there is, of course, a supreme demand for the movement of freight. So that it is evident that every unnecessary passenger train would absorb so much man power, coal, necessary locomotives, and other needs. Then, of course, there is a great amount of steel required for the necessary purposes of war, so that not so much of it as we might perhaps desire can be turned to account in the way of passenger trains.

"One thing we did want to raise rates, which we thought would cut down travel, but the result has not been what we anticipated. We think it fair to penalize a man for taking a Pullman and to eliminate the needless hiring of sections."

In reference to the Railroad Administration organization, he said:

"I am looking for brains, and I don't care what political label they wear, so long as a man is loyal and wants to help lick the Kaiser quickly. The supreme test in this country right now is to deliver the goods in every line of endeavor."

Compensation Contract Near Solution

In speaking of the compensation contract at New York, Mr. McAdoo said that the matter was near solution. He expressed the opinion that the delays in coming to terms about the standard contract were not due to the government and declared that the railroads would be justly treated at all times.

N. L. Amster, president of the Investors Protective Association, in an interview in Boston has also expressed his hope for an early settlement:

"The railroad rental contract has reached a point where it is likely to be presented to the individual carriers any day now. One of the two points on which there was the greatest contention was giving the Railroad Administration unrestricted power to deduct from rental money whatever sum in their opinion was necessary for property improvements, extensions or betterments. This has finally been adjusted so the roads will have power to superintend the spending of their own money.

"The other point on which there was apprehension was the 'acceptance clause' by which railroads were asked to give up any claims to damages for losses through diversion of business during federal control. The government could strip the railroads of business and good will. I have been advised that the matter will be adjusted with fairness to the roads.

"I feel the contract will be satisfactory and will protect both bond and shareholders."

Allocation of the 100,000 Standard Cars

The following table gives the allocation of the Railroad Administration's 100,000 standard freight cars as determined by the Division of Operation. It will be noticed that the cars are well distributed, only two roads, the Pennsylvania lines west and the Baltimore & Ohio, being allocated over 5,000 cars. The Pennsylvania lines east and the New York Central proper will each receive 4,500.

ALLOCATION OF 100,000 STANDARD FREIGHT CARS

Railroad	No.	Type of car
Ann Arbor	300	Single sheath box
Atlanta, Birmingham & Atlantic	200	Single sheath box
Atlanta, Birmingham & Atlantic	150	Gondola—drop bottom
Atlantic Coast Line	500	Single sheath box
Atlantic Coast Line	300	Single sheath box
Atlantic Coast Line	750	Gondola—drop bottom
Atchafalaya, Topeka & Santa Fe	1,200	Double sheath box
Atchafalaya, Topeka & Santa Fe	1,000	Gondola—drop bottom
Baltimore & Annapolis	300	Single sheath box
Big Four	1,000	Double sheath box
Big Four	1,000	Hopper
Bessemer & Lake Erie	500	Hopper
Boston & Maine	1,500	Single sheath box
Boston & Maine	1,000	Gondola—drop bottom
Baltimore & Ohio	2,000	Single sheath box
Baltimore & Ohio	500	Gondola—low side
Baltimore & Ohio	2,000	Hopper
Baltimore & Ohio	1,000	Gondola—drop bottom
Buffalo, Rochester & Pittsburgh	800	Hopper
Carolina, Clinchfield & Ohio	300	Single sheath box
Carolina, Clinchfield & Ohio	750	Gondola—drop bottom
Chicago & Alton	500	Gondola—drop bottom
Chicago & Western Indiana	300	Single sheath box
Chicago, Indianapolis & Eastern	1,500	Double sheath box
Chicago & North Western	2,500	Double sheath box
Chicago & North Western	1,500	Gondola—drop bottom
Chicago, Indianapolis & St. Louis	300	Double sheath box
Chicago, Indianapolis & Western	300	Gondola—drop bottom
Central of New Jersey	1,000	Single sheath box
Central of New Jersey	500	Gondola—low side
Central of New Jersey	500	Hopper
Chicago & Eastern Illinois	500	Double sheath box
Chicago & Eastern Illinois	500	Gondola—drop bottom

Chesapeake & Ohio.....	1,000	Single sheath box
Chesapeake & Ohio.....	2,500	Hopper
Colorado & Southern.....	300	Double sheath box
Chicago, Rock Island & Pacific.....	1,000	Double sheath box
Chicago, Rock Island & Pacific.....	1,000	Gondola—drop bottom
Chicago, St. Paul, Minn. & Omaha.....	500	Double sheath box
Chicago, St. Paul, Minn. & Omaha.....	200	Gondola—drop bottom
Delaware & Hudson.....	500	Single sheath box
Delaware & Hudson.....	1,000	Hopper
Delaware, Lackawanna & Western.....	500	Gondola—low side
Delaware, Lackawanna & Western.....	700	Hopper
Delaware, Lackawanna & Western.....	500	Gondola—drop bottom
Duluth, North Shore & Atlantic.....	300	Double sheath box
Detroit, Toledo & Ironton.....	300	Gondola—drop bottom
Elgin, Joliet & Eastern.....	500	Double sheath box
Erie.....	1,000	Single sheath box
Erie.....	500	Hopper
Erie.....	800	Gondola—drop bottom
El Paso & Southwestern.....	500	Double sheath box
El Paso & Southwestern.....	200	Gondola—drop bottom
Florida East Coast.....	500	Single sheath box
Georgia.....	300	Single sheath box
Georgia.....	100	Gondola—drop bottom
Great Northern.....	1,500	Double sheath box
Hocking Valley.....	500	Gondola—drop bottom
Illinois Central.....	2,000	Double sheath box
Kansas City Southern.....	300	Double sheath box
Long Island.....	500	Single sheath box
Louisville & Nashville.....	2,000	Hopper
Louisville & Nashville.....	2,000	Gondola—drop bottom
Lehigh Valley.....	1,000	Single sheath box
Lehigh Valley.....	500	Gondola—low side
Lehigh Valley.....	1,300	Hopper
Lehigh Valley.....	500	Gondola—drop bottom
Michigan Central.....	1,000	Single sheath box
Michigan Central.....	1,000	Gondola—drop bottom
Maine Central.....	500	Single sheath box
Minneapolis & St. Louis.....	300	Double sheath box
Missouri Pacific.....	1,500	Double sheath box
Missouri Pacific.....	1,000	Gondola—drop bottom
(Including St. L. I. M. & S.)		
Northern Pacific.....	1,000	Double sheath box
Norfolk & Western.....	800	Single sheath box
Nashville, Chattanooga & St. Louis.....	200	Gondola—drop bottom
Norfolk Southern.....	200	Single sheath box
Northwestern Pacific.....	100	Double sheath box
New York, Chicago & St. Louis.....	500	Double sheath box
New York Central.....	2,000	Single sheath box
New York Central.....	500	Gondola—low side
New York Central.....	1,000	Hopper
New York Central.....	1,000	Gondola—drop bottom
(Including L. S. & M. S. and C. I. & S.)		
New York, New Haven & Hartford.....	1,500	Hopper
Pennsylvania.....	2,000	Single sheath box
Pennsylvania.....	500	Gondola—low side
Pennsylvania.....	2,000	Hopper
Pennsylvania Lines West.....	2,000	Single sheath box
Pennsylvania Lines West.....	1,000	Gondola—low side
Pennsylvania Lines West.....	2,500	Hopper
Pennsylvania Lines West.....	2,000	Gondola—drop bottom
(Including P. C. C. & St. L. and Vandalia.)		
Pere Marquette.....	500	Single sheath box
Pere Marquette.....	500	Gondola—drop bottom
Philadelphia & Reading.....	1,000	Single sheath box
Philadelphia & Reading.....	500	Gondola—low side
Philadelphia & Reading.....	2,000	Hopper
Pittsburgh & Lake Erie.....	500	Single sheath box
Pittsburgh & Lake Erie.....	500	Gondola—low side
Richmond, Fredericksburg & Potomac.....	500	Single sheath box
Seaboard Air Line.....	500	Single sheath box
Southern Railway.....	2,000	Single sheath box
(Including C. N. O. & T. P., A. G. S., N. O. & N. E., Harriman & N. E., & V.)		
Southern Pacific.....	2,000	Double sheath box
Spokane, Portland & Seattle.....	300	Double sheath box
St. Louis-San Francisco.....	1,500	Double sheath box
St. Louis-San Francisco.....	1,000	Gondola—drop bottom
Toledo & Ohio Central.....	250	Double sheath box
Toledo & Ohio Central.....	1,000	Hopper
Texas & Pacific.....	500	Double sheath box
Toledo, St. Louis & Western.....	500	Double sheath box
Toledo, St. Louis & Western.....	500	Hopper
Union Pacific System.....	1,000	Double sheath box
(Includes O. S. L. and O. W. R. & N.)		
Wabash.....	1,500	Double sheath box
Wabash.....	1,000	Gondola—drop bottom
Wheeling & Lake Erie.....	1,000	Hopper
Western Maryland.....	300	Single sheath box

Total.....100,000

SUMMARY

Single sheath box.....	35,000
Double sheath box.....	25,000
Gondola—low side.....	25,000
Gondola—drop bottom.....	20,000
Hopper.....	7,000
Total.....	100,000

Fourth Liberty Loan Appeal

"We have the Kaiser groggy—let us keep hitting hard now until he is counted out," says Director General McAdoo in his appeal for Liberty Loan subscriptions by railway employees in the coming loan campaign. He says that he wants every railroad man to go the limit in lending his available

means to Uncle Sam. He suggests that they begin to save now, and says that no employee can make better use of the back pay recently awarded him than by putting it in Liberty Bonds.

The appeal is given in Circular No. 51, the distribution of which to employees was begun on Tuesday. This circular follows:

"In order to raise sufficient money to arm, equip and support our gallant soldiers and sailors, to finance our other war activities, and to extend necessary credits to our allies, to enable them to continue the war against the German military despotism, the Fourth Liberty Loan campaign will begin September 28, 1918. Every loyal American must invest in the securities of his government to the limit of his ability if America is to triumph in this war.

"Railroad men and women are doing a vital service for their country. They responded patriotically to the appeal of the government in the First, Second and Third Liberty Loan campaigns, and I hope that they have bought liberally of War Savings Stamps. They are also operating the railroads, which is war service of primary importance. I am sure that they count it a glorious privilege to do this vital work for their country. I deeply appreciate what they have already done, but there is more to do, and I am sure that they will do more if the way is pointed out to them.

"The enormous sums required to finance democracy's part in the war impose a new duty upon each and every one of us. Liberty Loans must be offered from time to time until the Kaiser is licked to a finish. Each of these loans must be subscribed in full. No patriotic American will have performed his duty by subscribing to one loan only, or by buying a few War Savings Stamps. Each and every one should practice every possible economy, save every possible dollar, and buy as many Liberty Bonds as he can afford every time a Liberty Loan is offered to the country.

"In the Fourth Liberty Loan campaign which is just ahead of us I wish to make a special appeal to every railroad employee to go the limit in lending of his available means to Uncle Sam. Now is the time to prepare for that campaign by saving every possible dollar, so that each may be ready to do his part before the subscription closes. Hundreds of thousands of employees in the railroad service of the United States have received, or will receive, checks for back pay, in accordance with the provisions of the Wage Order I approved May 25, 1918, and Supplement No. 4 to General Order 27, issued on July 25, 1918. No employee can make better use of his back pay than to lend it to the government at interest, thus securing an investment of absolute safety for himself and building up a reserve for a rainy day.

"You must remember that you are not asked to give your savings to the government; you are asked merely to lend your money to your government—and for what purpose? To back the millions of the finest American boys ever collected together in a great army, and to help them fight irresistibly for our lives, liberties, and vital interests. One and a half million of these splendid boys are already in France, and already they have given the Kaiser a dose from which he is staggering and from which he will not recover. But the pressure must be kept up. Arms, ammunition, and food supplies of all kinds must go forward in a continuous stream if the pressure is to be maintained. It depends upon us who stay at home to keep the pressure applied. We must lend our money to our government, lend it to the limit, so that the government may in turn put in the hands of our splendid sons the things without which they can not fight and without which the defeat of the Kaiser and his hateful military despotism can not be accomplished.

"I want the railroad men and women of the United States to do more, if possible, than anybody else, because I want them to be among the first always in patriotism, in service, and in sacrifice to our great and glorious country. We have

the Kaiser groggy—let us keep hitting hard now until he is counted out."

The Warranty in Purchasing Contracts

The Fuel Administration has followed the example of the war department in giving some idea of the methods it will adopt in following the interpretation of the contract covenant as given by the office of the attorney general. An effort has been made to get the Railroad Administration to do the same and the matter is now before John Skelton Williams, director of the division of finance and purchases, for his decision.

The Fuel Administration's announcement was in the form of its correspondence with the attorney general. Its letter to the attorney general was in the form of four questions, as follows:

"1. Where coal is purchased by a jobber from an operator at a price below the mine price fixed by the President or the United States Fuel Administrator, can such jobber sell such coal to the United States govern-

ment at the mine price so fixed? Of course, in the case of such a sale the jobber would be the 'contractor' and not the operator, and it would appear that the profit realized by the jobber might not be construed as compensation paid by the operator to the jobber for the procurement of the contract.

"2. Is the above provision intended to prevent an operator from employing a sales agent on sales of coal to the government where such sales agent receives as compensation for his services either a fixed price per ton or a percentage of the selling price? In the determination of this question it should be borne in mind that many coal operators do not maintain their own sales departments, but employ established distributors of coal to act as sales agents under term contracts, on which such sales agents undertake to sell the output or a given quantity of the operator's coal for a fixed or percentage compensation.

"3. Is the above covenant to be construed to prevent any agency of the government from employing a distributor of coal as purchasing agent and paying such agent the commission allowed by rule 2 of the rules and regulations in reference to licenses contained in publication No. 22, inclosed herewith?

"4. Are contracts between coal operators and railroads to be construed as government contracts so as to require the insertion therein of the covenant quoted above. In answering this question the fact should be considered that a very large percentage of coal purchased by railroads in the past has been purchased—(1) At the government price through jobbers, who in turn purchase from the operators below the government price. (2) At the government price from sales agents, who receive their compensation from the operators. (3) At the government price through purchasing agents employed by the railroad and paid by the railroad the purchasing agent's commission permitted by the above-mentioned rule 2."

ATTORNEY GENERAL'S RULINGS

The attorney general's ruling is contained in a letter dated August 19, which reads as follows:

"I have before me your letter of July 20 on the subject of the covenant against contingent fee operators which the President has directed to be inserted in all government contracts.

"You ask how far the requirement of the insertion of this covenant is to be observed in certain circumstances arising in the coal industry, and what its effect will be if so inserted.

"I have no hesitation in saying that the circumstances set forth in your

first, third, and fourth paragraphs are within neither the letter nor the spirit of the covenant.

"In the second paragraph you ask: 'Is the above provision intended to prevent an operator from employing a sales agent on sales of coal to the government where such sales agent receives as compensation for his service either a fixed price per ton or a percentage of the selling price?'

NO RESTRICTED SITUATIONS

"The letter of the covenant and the President's request is broad enough unquestionably to include such a situation, but it is clear, when the attendant circumstances are considered, that the situation is not within the spirit either of the President's order or of the covenant. Rules and regulations have been promulgated relative to licenses for the distribution of coal and coke by which the compensation to be paid to sales agents is rigidly controlled. Manifestly, it was not the intention of the President in requesting the insertion of this covenant to modify the policy or affect these rules and regulations. The situation in the coal industry is, therefore, outside the mischief which the covenant was intended to cure, and unquestionably outside the President's intent.

"It is my opinion, therefore, that the covenant has no relation to any of the situations set forth in your letter."

New Importance of Conductor's Train Report

The regulations governing the reporting of operating statistics, as given in Circular No. 15, which was effective August



Robert Rice
Federal General Manager, Colorado
& Southern



G. F. Hawks
Federal General Manager, El Paso &
Southwestern



J. P. O'Brien
Federal Manager, Oregon-Washington
Railroad & Navigation Company

1, instruct that the conductor's train report shall be the source of the basic information for train miles, locomotive miles, car miles, gross ton miles, rating ton miles, net ton miles and train hours. To insure the accuracy of the conductor's report, the regional directors, acting on instructions from the Division of Operation, have sent the following communication to all federal and general managers:

Referring to Circular No. 15, making effective the new forms for reporting operating statistics:

Attention is directed to the fact that the conductor's train report is to be the source of the greater part of the basic information, and that the accuracy of that information and of the averages or ratios derived therefrom will depend in a large measure on the accuracy of the wheel reports. It is advisable therefore, to bring this subject to the attention of the federal and general managers, and to ask them to instruct division superintendents to see that all conductors understand that hereafter their wheel reports are to be relied upon to a much greater extent than ever before as the basis for important statistics, and that they must make every effort to have the reports as correct as possible.

Now that each car load shipment is accompanied by a waybill, the principal reason for inaccuracies in the tonnage figures on the wheel report is removed. Circular No. 15, paragraph 9, provides that the weight of cars containing less than carload freight may be reported as an arbitrary tonnage, such arbitrary to be specified by proper authority and to be based on the experience of the carrier (as to average load in such cars). In such cases the conductor should report as the gross tons the stencilled tare weight of the car plus the arbitrary tons for contents.

The circular provides further that when carload freight is billed at estimated weights, conductors will report such estimated weights as the net tonnage.

As stated in Circular No. 15, the form of wheel report in use on individual roads, if it does not now provide for the complete data, should be amended to conform to the new requirements. In such cases, it may not be possible to obtain the complete figures for August, but the reports on the O. S. forms, in so far as it is possible to furnish the figures, should be rendered for that month. There should be no difficulty in making the September report complete.

Division superintendents should be required not only to see that clear

instructions are issued to conductors (as to their wheel reports) and to billing clerks (as to showing complete data on the waybills) but also to see that such instructions are observed. This may be accomplished only by a system of checking the wheel reports periodically so as to detect and correct carelessness or misunderstanding.

Tourist Fares to California

Announcement was made by the Railroad Administration last Friday that tourist fares to California, tickets on sale all the year with nine months' limit as heretofore, will be 90 per cent of double the one-way fares bearing the same percentage relation to the present one-way fares as the former round-trip fares bore to the old one-way fares. The fares from the Missouri river will be \$5.40 higher than they were formerly; from Chicago \$9.81 higher; from New York \$17.55 higher. Winter tourist fares to Florida and Southern points will be made on the same basis as to California, namely, 90 per cent of double the one-way fares, and the new fares will bear about the same average ratio to the present advanced fares as the old winter fares bore to the old one-way fares. Tickets will be sold from October 1 to April 30, both inclusive, with return limit June 1, stop-overs to be allowed on going or return trip within final limit as heretofore.

New Feeder Cattle Rates from Texas

The director general announced last Friday that representatives of the livestock interests of the Southwest have been advised that he will at once instruct that rates be published on feeder cattle from Texas to all points east, including Kentucky and Virginia. These rates will be on the basis fixed by the Interstate Commerce Commission in the Shreveport case, plus the advances required by General Order No. 28, the rates for feeder cattle being 75 per cent of the beef cattle rates. There have not been heretofore any through rates on cattle from Texas to the Southeastern territory, and these rates are to be published because of the emergency existing in the Southwest under drouth conditions, which made necessary the movement of stock out of that territory to points where feed can be found.

Grain Transportation Permits Must Be Approved by Inland Traffic Manager

The Railroad Administration and the Exports Control Committee have decided, in order better to control the port situation and thereby prevent congestion and to secure maximum transportation results, to concentrate the approval of transportation permits, covering all export grain and grain products, through one channel, and to that end, it has been arranged that, effective at once, the issue of these permits shall hereafter be subject to the approval of C. E. Spens, manager of inland traffic for the Food Administration, and who also is a representative of the Railroad Administration. The permits will be issued directly as heretofore, by the freight traffic committee, but only when approved as mentioned.

At present this arrangement will only include North Atlantic ports, where heretofore the permit system has obtained. It is the intention, however, also to inaugurate the permit system in the immediate future at all Gulf Ports, when the issue of permits will be subject to the same approval as at North Atlantic ports.

Mr. Spens has opened an office at 42 Broadway, New York, with C. A. Lahey, assistant manager of inland traffic, of the United States Food Administration, directly in charge of the new work.

7,173 Troop Trains

The railroads of the United States from May 1 to June 30, 1918, operated 7,173 special troop trains, using a total of 95,246 cars. In this same period the railroads handled a total of 5,377,468 soldiers, including the men handled on

special trains, on regular trains and drafted men. These figures were given out by the Railroad Administration on August 22 in the following table:

	May 1, 1917.	June 1, 1918.	Total
Special trains operated.....	2,850	4,323	7,173
Grand total cars used.....	39,349	55,897	95,246
Averages:			
Cars per train.....	13.8		
Hours per train.....	49		
Miles run per train.....	942		
Miles per hour.....	19.1	20.0	
Passengers per train.....	353		
Persons handled:			
On special trains.....	1,007,174	1,895,476	2,902,650
On regular trains.....	708,671	371,181	1,079,852
Drafted men.....	502,384	892,930	1,395,314
Total.....	2,218,432		5,177,816

63,000 More Cars of Grain

In last week's issue, page 342, appeared a table showing that the railroads under federal control in the five weeks ending August 3 had handled 44,000 more cars of grain this year than last. Additional figures for the weeks ending August 10 and 17 now bring the total number of cars of grain loaded to 197,428, for July and the first half of August this year, as compared with 134,604 in the same seven weeks of last year. As will be seen from the table, however, the biggest week so far has been that ending August 3, the two succeeding weeks having shown decreases from the totals established that week.

Week ending	North West District		Central Western District		Southwest District		Total	
	1917	1918	1917	1918	1917	1918	1917	1918
July 6.....	3,311	3,866	24	202	14	1,395	1,313	
July 13.....	4,717	3,547	27	273	14	960		
July 20.....	3,605	5,547	27	440	141	566	1,191	
July 27.....	3,117	8,536	38	518	125	588	1,212	
Aug. 3.....	6,294	7,890	560	900	3	168	416	
Aug. 10.....	5,245	5,461	546	769	1	144	534	
Aug. 17.....	6,294	7,890	546	515	113	677	820	
Total.....	30,609	43,029	2,785	3,617	480		711	

Week ending	North West District		Central Western District		Southwest District		Total	
	1917	1918	1917	1918	1917	1918	1917	1918
July 6.....	3,680	4,466	4,255	1,360	2,754	14,662	13,839	
July 13.....	4,743	3,210	3,085	7,730	3,088	8,950		
July 20.....	4,022	3,839	5,169	10,332	3,422	6,677		
July 27.....	4,210	3,727	5,895	13,195	3,800	7,147		
Aug. 3.....	3,292	4,716	7,383	5,543	6,667	15,391		
Aug. 10.....	3,678	5,614	8,379	12,373	11,115	24,891		
Aug. 17.....	5,781	7,628	8,946	10,606	2,638	4,996	24,891	32,577
Total.....	30,609	43,029	2,785	3,617	480		711	

Fidelity Bonds

The regional directors are sending out to federal managers in their jurisdictions questionnaires asking for information with regard to fidelity bonds, the cost thereof, the method of handling, etc., for the three years 1915, 1916 and 1917. The reason for sending out these questionnaires is explained by the following paragraph, which is taken from the instructions issued by one of the regional directors: "In view of the director general's Order No. 24, instructing lines not to renew any expiring insurances 'except bonds and policies insuring fidelity of employees in handling funds, but that such bonds and policies shall be continued', please direct all lines not to renew, for a longer period than one year, any such bonds or policies or contracts therefor, that might terminate, as with a further consideration of this subject it may be desirable to change the method or practice with regard thereto."

Fuel Conservation

The manager of the fuel conservation section has addressed to regional directors a communication relative to the fuel losses caused by hostlers not handling to the best advantage the movements of engines to and from the passenger stations. In this letter he said:

"My attention has been directed to the fact that a great

many terminal locomotives are delivered to the crews at the passenger stations by hostlers; in a similar manner the crew on arrival abandon the engines in the passenger stations, hostlers moving same to roundhouse.

"In many instances the engines are fired up so as to conform to the schedule established by the hostler and his helper, enabling him perhaps to move all passenger engines during a certain pre-determined period. In a similar manner engines are allowed to stand at passenger stations, in some instances for several hours, waiting for the hostler to remove same to the roundhouse, this situation representing a very material fuel loss.

"Will you ask the several federal managers to make a canvass of this situation, attempting to organize the stand-by time of passenger locomotives moved by hostlers from and to passenger stations to the end that such be reduced as much as possible."

Headlights for Switching Engines

At the meeting of the Committee on Standards for Locomotives and Cars which was held in Washington last week the question of suitable headlights for switching locomotives was discussed and it was unanimously agreed by members present that electric headlights are more efficient and economical than any other type of headlight. The regional directors have, therefore, been advised to express to their federal managers the desire that when necessary to make changes in headlights on switching engines to meet the requirements of the law or on account of renewals they be equipped with a headlight of the incandescent type with a turbo-generator and the bulb of suitable wattage.

Car Service Circular

Circular C. S. No. 27, issued by the Car Service Section on August 19 ordered that effective immediately and until further notice, all open top cars of St. Louis & San Francisco ownership made empty in the Southern region must be returned empty to lines of the St. Louis & San Francisco east of the Mississippi via short route.

Light Loading of Foodstuffs

The Car Service Section in Bulletin No. 41 emphasizes the urgent necessity for reporting all violations of Rule No. 9 of the United States Food Administration relating to the minimum loading of foodstuffs shipped in carload lots. The bulletin bears the title "Stop Light Loading of Foodstuffs," and two of its three pages quote Rule No. 9 as revised and give in detail the minimum carload weights required by the rule. It then says:

"1. United States Food Administration Rule 9, only applies to shipments moving as carloads, and on carload rates.

"2. Comparatively few railroads are reporting to this section violations of Rule 9, indicating that the matter is not being given proper attention.

"3. Commencing at once, in order to avoid duplication, these reports must be made by railroads originating shipment. Agents at points of origin will make necessary inspection of the loading of commodities on which trade units are established to determine to what extent cubical capacity of equipment is utilized.

"4. At large stations where agents cannot inspect the loading, some arrangements should be made to have either a personal representative or an inspector of weighing and inspection bureau make weekly check for violations.

"5. Agents at point of origin will require shippers to show on bill of lading reasons for not complying with Rule 9. A report must immediately be made to his superior officer, who will report promptly to car service section for handling with the Food Administration. No other investigation will be conducted by any railroad officer or committee.

"6. Rule 9 should be reissued as revised and all agents made familiar with its provisions.

"7. All reports sent to this office should be in duplicate with a separate sheet for each commodity."

Capital Expenditures

R. S. Lovett, director of the division of capital expenditures, on August 23 issued two circulars relating to the reporting of expenditures for capital account. In supplement 3 to D. C. E. circular No. 7, he said:

D.C.E. Circular No. 7, dated May 27, 1918, dealing with expenditures chargeable to capital account in excess of the amounts specifically authorized by the addition of the following paragraph:

FIFTH: Such requests should bear the same serial number as the original D.C.E. Form 3 or 4 to which should be added a suffix number commencing with One. For example: If the original request was numbered 25, the request covering the excess expenditure should be Number 25-1, and in the event a second request is submitted it should be Number 25-2.

In all cases where the work was authorized or commenced prior to January 1, 1918, and an unexpended balance was reported on D.C.E. Form 1, the next serial number should be assigned to the request submitted to cover any excess expenditure made in connection therewith.

In D. C. E. circular No. 11 he said:

I observe many requisitions on D.C.E. Forms 3 and 4 for capital expenditures without approval by the personal signature of either the federal manager or the regional director. All such requisitions for capital expenditures in excess of \$5,000 must be approved by the personal signature of either the federal manager or the regional director. When thus approved by the federal manager, the regional director's approval may be evidenced by his signature executed by his agent, except in cases involving capital expenditures in excess of \$25,000, in all of which cases his personal signature will be required.

Weekly Report on Coal Loading

The weekly report to the director general by the Car Service Section for the week ending August 10 shows a total of 256,534 cars loaded during that week. This is considerably more than were loaded in the same week last year but less than during the week ended August 3 which itself showed a decrease from the week ended July 27. A summary of the figures follows:

	1918	1917
Total cars bituminous.....	213,618	250,451
Total cars anthracite.....	39,280	41,462
Total cars lignite.....	3,636	2,859
Grand total cars all coal.....	256,534	226,580

A summary of reports for the week ended August 17, 1918, based on actual reports from most roads, but with the results on some roads, estimated, follows:

	1918	1917
Total cars bituminous.....	207,753	175,768
Total cars anthracite.....	36,857	37,943
Total cars lignite.....	3,406	2,996
Grand total cars all coal.....	248,016	216,707
Increase of 1918 up to and including week ended August 17 over same period of 1917, 452,573 cars.		

Bureau for Suggestions and Complaints

Director General McAdoo wants the public to help him secure as satisfactory and efficient passenger service as possible under war time conditions. To this end he will soon issue a request to the traveling public to send him any criticisms or suggestions and has established a Bureau of Suggestions and Complaints at Washington to handle them.

This bureau has been placed in charge of Theodore H. Price, actuary to the Railroad Administration. Mr. Price will be assisted by Ballard Dunn, a newspaper man of Chicago, and until recently publicity representative of the Union Pacific in that city, who has been given the title of assistant actuary.

The duties of the new bureau are announced in the following notice, which, as noted in Circular No. 50, will be displayed permanently in all stations and passenger coaches on the Federally operated railroads and which, when practicable, shall also be displayed on all time-tables, dining car menus and other printed matter prepared for public distribution.

I desire your assistance and cooperation in making the railroad service while under federal control in the highest possible degree satisfactory and efficient.

Of course, the paramount necessities of the war must have first consideration.

Our gallant sons who are fighting in France and on the high seas cannot be adequately supported unless the railroads supply sufficient transportation for the movement of troops and war materials and to keep the war industries of the Nation going without interruption.

The next purpose is to serve the public convenience, comfort, and necessity to the fullest extent not incompatible with the paramount demands of the war.

In order to accomplish this, criticisms and suggestions from the public will be extremely helpful, whether they relate to the service rendered by employees and officials or impersonal details that may convenience or inconvenience patrons of the railroads. It is impossible for even the most vigilant management to keep constantly in touch with local conditions and correct them when they are not as they should be, unless the public will cooperate in pointing out deficiencies and disservice when they exist, so that the proper remedies may be applied.

I have, therefore, established a BUREAU FOR SUGGESTIONS AND COMPLAINTS in the director general's office at Washington, to which the public is invited to resort.

Aside from letters of complaint and suggestion, the public can render a genuine service by sending letters of commendation of employees who are conspicuously courteous and efficient in the performance of their duties. Nothing promotes the esprit of a great organization more than recognition from time to time of those employees who perform their duties faithfully and commendably.

It is requested that all communications be brief and explicit and that the name and address of the writer be distinctly written.

Also give the time of day or night, the number of the train, the name of the railroad, and, if possible, the name of the employee whose conduct is complained of or whose services are commended, together with such other information as will enable me to take appropriate action.

Please address W. G. McADOO, Director General of Railroads, Bureau for Suggestions and Complaints, Washington, D. C.

Freight Claim Section

The director general has announced in circular No. 48 the establishment of a freight claim section of the division of law with jurisdiction over all matters pertaining to claims for loss and damage and their prevention. John H. Howard, formerly general claim agent of the Chicago & Alton, has been appointed manager of the new section with offices in the Southern Railway Building, Washington.

In Circular No. 49, dated August 22, the announcement was also made that effective August 1 the handling of loss and damage freight claims and the prevention of causes of such claims was placed in charge of freight claim agents, reporting to the head of the legal department of each railroad. Claims for personal injury and damage to property, other than freight, will be handled by the legal department. Overcharge and relief claims will be handled by the accounting department.

Railroad Employees and the Draft

Posters placarded at every one of the 56,000 railroad stations of the country will be one of the many means taken by Provost Marshal General Crowder to insure 100 per cent publicity and 100 per cent registration under the man-power bill about to be passed by Congress. These posters, made up in the form of four-page newspapers will also go into all post offices and factories. On the first page will be messages from President Wilson, the Secretary of War, the Secretary of the Navy and other high officials calling on the nation to respond. On the back page will be detailed instructions for the guidance of registrants. Across the two inside pages will be spread the poster announcement of the registration date and the ages affected.

The use of posters is, however, only a small part of the entire campaign. Newspapers, trade papers, hand bills, street car cards, and personal appeals through clergymen, four-minute men, etc., will all be used. In fact, the campaign that has been marked out will probably be the most intensive ever undertaken by the government, considering the time within which it must be carried through. It is the intention of the provost marshal general's office, in order to meet the pressing demands of the man-power program, not to let more than 10 days elapse, if possible, between the signing of the bill and registration day.

The Railroad Administration has already taken steps to

notify railway employees concerning the necessity of applying for deferred classification. As noted in the *Railway Age* of last week, the provost marshal general has sent a message to all draft officials requesting reconsideration of the classification of railway men at present in Class I with a view to leaving in railway service those skilled men whose withdrawal would handicap efficient transportation. The Central Western regional director last week emphasized the necessity for filing claims for deferred classification for such men, in a wire to his federal managers, reading as follows:

"You are authorized to indicate to men in your employ that the director general wishes those entitled to deferred classification to apply for it because of the valuable service they can render the government by continuing in railroad service. Please also understand that where an individual does not wish to make application or where it is impracticable for him to do so, application may be made by the federal manager or representative of the United States Railroad Administration and I understand draft officials have been so advised by General Crowder."

Railroads Largest Users of Steel

That the largest of the government steel requirements is that of the railroads was the conclusion of a meeting of the War Industries Board last Thursday, called to consider means for securing the maximum use of steel for wartime purposes. The meeting was presided over by Bernard M. Baruch, chairman, and was attended by the fuel administrator, a representative of the Department of Labor, a number of other government officers, the War Service Committee of the United States Steel Institute and a number of steel manufacturers. Carl Gray, director of the division of operation, represented the Railroad Administration. The full question of the government steel requirements was taken under review with a view to meeting every ounce of the demand, if that is possible. It was determined that the steel requirements for the government were in the following order: First, the railroads; second, shipbuilders; third, the War Department, and fourth, the Navy. The question of supplying these demands in such fashion that there need be no curtailment of the actual war requirement for steel was put squarely before the manufacturers and all others concerned in any way with steel production.

To accomplish this it was decided that there must be: First, greater conversion of mills to the production of steel that is required in the war program.

Second, an increase in the coal supply, particularly by-products coal, available for mills engaged in government work.

Third, shutting off further steel shipments to industries other than those engaged in meeting war needs.

Fourth, more rigorous conservation in the handling of steel in the mills.

The steel men in the meeting promised to co-operate to their utmost in meeting the government's steel requirements and virtually pledged themselves to so increase their output as to guarantee the needs of the war program.

Books to Be Audited Every Six Months

The director of the division of public service and accounting on August 15 issued P. S. & A. Circular No. 23, calling for an audit of the accounts of federal treasurers and paymasters once in every six months. The circular follows:

The accounts of federal treasurers and paymasters, charged with the responsibility of collecting and disbursing public funds, shall be audited within three months of the date hereof (August 15).

The audit of such accounts shall be under the direction of the chief accounting officer of the carrier or such of his assistants as he may delegate to conduct the work.

The cash balance on deposit at the various depositories shall be verified by a statement of the depository.

be reconciled therewith.

The original report of such audits shall be retained in the appropriate files of the accounting department. A copy of such report shall be submitted to the federal manager and to the undersigned, which shall include a statement of the amounts on deposit and the names of the depositories in which the funds are held.

Shortages, other than those of a petty nature, or any other unusual condition in the federal treasurer's cash accounts or records, disclosed by the audit, shall be promptly reported by telegram to J. S. Williams, director of finance, Washington, D. C., and a copy thereof forwarded by mail to the undersigned.

Any complete audit of the Federal treasurer's cash account conducted under the jurisdiction of the chief accounting officer of the carrier in connection with the opening of the new accounts prescribed in General Order No. 37, may be accepted as a compliance with this circular for the first audit of the year ending December 31, 1918, provided that a copy of the report of the audit is filed with the undersigned and the accounts are again audited before the close of the year.

Bonds for "Order" Shipments

In response to inquiries concerning P. S. & A. Circular No. 20, the following information has been given in P. S. & A. Circular No. 24, by the division of public service and accounting, concerning bonds required to protect railroad interests when "order" shipments are delivered without the surrender of bills of lading.

1. Bonds in amount twice the amount of the invoice must be executed when single shipments are delivered. The bond must be prepared in the name of the consignee as principal, with individual or corporate surety. The principal cannot act as his own surety.

2. Blanket bonds in satisfactory amounts, by which in meant bonds continuing in effect, for amounts in excess of the aggregate value of all shipments to be released, may, when conditions require it, be accepted from the consignee. These bonds are restricted to shipments arriving at one station on one railroad, except that when a number of terminal stations are under the jurisdiction of one agent in such a way that proper supervision may be exercised over delivery of shipments, the bond may cover all such stations. When shipments approaching in value the amount of the bond have been delivered, additional security shall be required.

3. Blanket bonds, as described in paragraph 2, may be executed by shippers, under the terms of which carriers will accept written or telegraphic orders to deliver "order" shipments. When such bonds are arranged, initial carriers will notify all interested lines, and show reference to such bonds on each waybill.

4. When "order notify" cars are diverted in transit, and the consignee becomes the shipper, the provisions of the circular relating to the shipper and the initial carrier shall apply to the giver of the reassigning order and the carrier to which such order is given.

5. The fourth paragraph of P. S. & A. Circular No. 20 has been modified and as follows:

Shipments consigned to shipper on "straight bill of lading—original—not negotiable"—shall be delivered only upon surrender of consignee's written or telegraphic order for such freight to the agent of the delivering carrier and the payment of freight and other charges.

The requirement that bond shall be filed is eliminated.

6. Under proper conditions "Order notify" shipments may be placed in warehouses operated by responsible companies, without bonds, subject to release by the railroad agent, when bill of lading has been surrendered.

7. A form of bond for use of shippers was attached to P. S. & A. Circular No. 20. With slight modifications, this bond may be used by consignees, or the forms heretofore in use on individual railroads, with necessary changes indicating W. G. McAduo, director general of railroads, as the changes may be made available.

8. All bonds must be satisfactory to the federal treasurer of the carrier, and the provision, "individual or corporate," applies with equal force to all. It is not expected that federal treasurers will personally act upon each bond, but that agents or others will be authorized to act for them under certain bonds, and under specific instructions.

Definition of Delivery of Freight

To allay any misunderstanding with respect to what constitutes delivery of freight at destination, as provided for by General Order No. 25, and for the purpose of defining when transportation charges are due, the following rules have been promulgated by the division of public service and accounting and issued in P. S. & A. Circular No. 25 on August 15:

1. The lien on property transported should not be released if there is doubt as to the willingness or ability of the consignee to promptly pay the transportation charges. In such cases the present practice should be continued and payment of freight charges exacted before placement of cars on private siding, before delivery of cars to terminal switching carrier or before seals are broken after placement on public team tracks. If commodities are transported in open cars, freight charges should be collected before cars are unloaded, and if considered necessary, before placement on team track.

2. Cars consigned to bonded customers or to regular responsible customers are to be considered as delivered when placed upon industrial sidings or team tracks, either those connecting directly with the road haul carrier or those located on terminal switching lines.

3. Cars will be considered to be delivered when placed on interchange tracks with industrial railroads.

4. Under the provisions of paragraphs 2 and 3, cars will also be con-

sidered as delivered when constructively placed, as provided by demurrage rules.

Transfer of Balances to Federal Accounts

"Examination of the returns made by accounting officers in response to P. S. & A. Circular No. 18, dated July 15, 1918," says the director of the Division of Public Service and accounting in P. S. & A. Circular No. 26, "indicates that some of them have misconstrued the provisions of General Order No. 17, rules and regulations which shall govern the recording of and accounting for all transactions arising under federal control, and have carried from the corporate books to the federal books balances in accounts as of December 31, 1917, other than those authorized in the general order.

The authorized accounts are:

"Cash,"

"Demand loans and deposits,"

"Deposits on bills and deposits," covered by paragraph 5 of the order.

"Net balances receivable from agents and conductors," covered by paragraph 3; and

Moving pictures of labor saving devices in track work.

Although paragraph 8 of the order specifically instructs that no assets and liabilities other than those above referred to, and such others as may be authorized in accordance with paragraph 5 of the order, shall be transferred to the federal books, some of the trial balances received indicate that accounting officers have carried to the federal books road and equipment accounts, suspense or clearing accounts, and other deferred debit and credit items appearing on the corporate books as of December 31, 1917.

Chief accounting officers should immediately have examined the journal entries made on the federal books which involve the transfer of balances of December 31, 1917, for the purpose of ascertaining whether they have strictly complied with the requirements of General Order No. 17 and bulletins interpretative thereof. In the event that their books disclose amounts representing balances as of December 31, 1917, the transfer of which was not authorized, they should immediately make the necessary entries in their accounts expunging such unauthorized items from the federal books.

Should any difficulty be encountered in disposing of items arising out of operations subsequent to December 31, 1917, affecting accounts not transferred, application for the procedure to be observed in disposing of such items should be made to the undersigned.

Output of Locomotive Builders to Be Increased

The War Industries Board announces that at a recent conference between representatives of the board, representative locomotive builders' officers of the Railroad Administration, and officials of some of the government departments, plans were worked out whereby the output of the locomotive shops of the country will be increased to 6,000 engines a year. The conference also formulated plans for the equitable distribution of the locomotive output to meet the military needs and the needs of the Railroad Administration. The conference was attended by Bernard N. Baruch, chairman, and other members of the board; S. M. Vaulain, Andrew Fletcher, C. K. Lassiter, Walker D. Hines, assistant director of railroads; Colonels Tyler and Wright of the army engineer corps; C. R. Gray, director of operation, United States Railroad Administration; J. R. Flannery, director of railroad equipment for the War Industries Board, and Henry Rea of the Committee on Munitions and Plants.

The increases in capacity discussed at the meeting will be taken care of by the builders, who will be financed by War Finance Corporation. The 6,000 locomotives mentioned will be divided about half and half, Pershing and Railroad Administration giving Pershing practically his full requirements, leaving some for other foreign governments and giving Railroad Administration its minimum necessary requirements.

The Roadmasters' Convention

THE THIRTY-SIXTH ANNUAL CONVENTION of the Roadmasters and Maintenance of Way Association will be held at the Auditorium Hotel, Chicago, on September 17 to 19. The program is being prepared with special reference to the problems of this year. The attention of the United States Railroad Administration has been called to this convention and R. H. Ashton, regional director of the Northwestern region, in whose area the meeting will be

held, has recommended to the director of the Division of Operation at Washington that all regional directors be urged to arrange for a full representation of their roadmasters at this meeting. The program is as follows:

FIRST DAY—MATERIAL DAY

Opening exercises.
Report of Committee on the Reclamation of Track Materials: G. B. Oatman, chairman.
Paper—"Common Defects in Rails and Means of Detecting Them in Track," by Charles W. Gennett, Jr., Mgr. Rail Inspection Department, R. W. Hunt & Co., Chicago.
Report of Committee on Fences, Cattle Guards and Farm Crossings: Chas. Newberg, chairman.
Moving pictures of labor saving devices in track work.

SECOND DAY—LABOR DAY

Round Table Discussion of Labor Conditions.
Address—"What the government is trying to do for the railway track labor situation," by M. G. Kibbe, in charge of the railway division, United States Employment Service, Chicago.
Report of Committee on Labor Saving Devices.
Paper—"Methods of Purchasing and Inspecting Ties and the Outlook for an Adequate Tie Supply," by John Foley, forester, Pennsylvania Railroad, and associate manager of the Forests Products Section, Central Advisory Purchasing Committee, United States Railroad Administration.
Paper—Rail Situation.
Report of Committee on Fences, Cattle Guards and Farm Crossings.

THIRD DAY

Committee Report—Best Methods of Raising Track.
Business Session—Election of Officers, etc.

The Track Supply Association is completing its arrangements for an exhibit in rooms adjoining the convention hall. Forty-five firms have already made arrangements for exhibits and the display will be one of the largest and most practical which has been presented at any convention. The following firms have already made arrangements to exhibit:

EXHIBITING MEMBERS

Air Reduction Sales Company, New York.
American Hoist & Derrick Company, St. Paul, Minn.
American Steel & Wire Company, Chicago.
American Valve & Meter Company, Cincinnati, O.
Anchor Company, New York.
Barrett Company, New York.
Bethlehem Steel Company, Bethlehem, Pa.
Carbie Manufacturing Company, Duluth, Minn.
Chicago Malleable Castings Company, Chicago.
Creser Adams & Co., Chicago.
Duff Manufacturing Company, Pittsburgh, Pa.
Earbines, Morse & Co., Chicago.
Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.
Frictionless Rail Company, Boston, Mass.
Hayes Track Appliance Company, Richmond, Ind.
Husck Manufacturing Company, New York.
Ingersoll-Rand Company, New York.
Kalamazoo Railway Supply Company, Kalamazoo, Mich.
Lackawanna Steel Company, Buffalo, N. Y.
Luther Grinder Manufacturing Company, Milwaukee, Wis.
Madden Company, The, Chicago.
Milburn Company, Alexander, Baltimore, Md.
Mudge & Co., Chicago.
National Lock Washer Company, Chicago.
National Malleable Castings Company, Cleveland, O.
National War Savings Committee.
P. & M. Company, Chicago.
Pocket List of Railroad Officials, New York.
Positive Rail Anchor Company, Marion, Ind.
Q. & C. Company, New York.
Rail Joint Company, New York.
Railroad Supply Company, Chicago.
Railway Review, Chicago.
Reading Specialties Company, Reading, Pa.
Rampao Iron Works, Hillburn, N. Y.
Sellers Manufacturing Company, Chicago.
Simmons Boardman Publishing Company, Chicago.
Southern Ry. Supply & Equipment Company, St. Louis, Mo.
Templeton, Kenly Company, Chicago.
Track Specialties Company, New York.
Union Switch & Signal Company, Swissvale, Pa.
Verona Tool Works, Pittsburgh, Pa.
Wharton, Jr., & Co., Inc., Wm., Easton, Pa.
Wyoming Shovel Works, Wyoming, Pa.

NON-EXHIBITING MEMBERS

Ajax Forge Company, Chicago.
Brown, M. H., New York.
Carnegie Steel Company, Pittsburgh, Pa.
Cleveland Frog & Crossing Company, Cleveland, O.
Creepcheck Company, The, New York.
Elliott Frog & Switch Company, East St. Louis, Ill.
Balkwill Manganese Crossing Company, Cleveland, O.

Monon Issues Routing Tariff to Save Car Mileage

THE RAILROAD ADMINISTRATION has given the question of routing traffic considerable attention this year, but the first railroad to issue a tariff showing specifically the most economical routes between stations on its line—which in many cases are via other roads in whole or in part—is the Chicago, Indianapolis & Louisville. C. I. & L. Routing Tariff No. 7757, is entitled "Instructions Governing Short-Line Routing of Freight Traffic between C. I. & L. Ry. Stations on Main Line and Branches (South of Monon, Ind.), and C. I. & L. Stations on the Indianapolis Division (Gurnsey, Ind., to Indianapolis, Ind., inclusive). In a foreword, A. C. Tomy, general freight agent, states that agents of the road, in the discharge of their daily railroad duties, can serve their country in no more effective way than by a careful observance of the instructions contained in the tariff.

The possibilities of saving car mileage through the application of the short routing principle by Monon agents becomes apparent when one looks at a map of the railroad. The main line, south of Monon, Ind., to Louisville, Ky., and the Indianapolis division, from Monon to Indianapolis, form two sides of a triangle with Monon as the northern apex. The intention of the routing instructions, with certain exceptions indicated in the tariff, is that all traffic from the main line and branches (south of Monon) to the Indianapolis division shall move over connecting east-and-west lines rather than around via Monon. To do this means to save car miles and that, in turn, means conservation of equipment, power and labor. It is proposed to apply the short routing principle not only to local Monon traffic moving between divisions, but to through traffic moving from and over the Monon to connecting carriers.

The tariff contains a list of all stations on the Chicago, Indianapolis & Louisville with numbers assigned to each. In a table, the routes to be taken between each station on the Indianapolis division and stations on other parts of the line, which are designated by their numbers and grouped together when common routing applies, are indicated by letters ranging from "A" to "L." The significance of these letters is shown elsewhere in the tariff in a routing chart which sets forth the routes to be used for both c. l. and l. c. l. traffic. To illustrate, stations 84 to 97, inclusive, take route "C" to Deer Creek, Ind., on the Indianapolis division. Reference to the routing chart shows that route "C" requires the movement of c. l. freight via the C. I. & L. to Linden, Ind., thence via the Toledo, St. Louis & Western to Frankfort, and over the Monon again from Frankfort to destination. The routes designated on the chart are also subject to exceptions which are explained in detail.

The tariff is intended to make routing as simple as possible for the Monon agent, and to relieve him of the necessity of working out a short route for every shipment that he handles. Any saving effected as a result of the routing instructions will be of value to the American railway system and the country in its time of trial. A saving of only 10 car miles per day by each agent—an economy which seems easily attainable—would mean a very considerable saving by the road as a whole and a very substantial addition to the rolling stock and man-power of the transportation system of the nation.

AIR MAIL FROM PARIS TO ST. NAZAIRE. The experiment with an airplane postal service between Paris and St. Nazaire, on the coast, was made on August 17, the start from Paris being witnessed by the Minister of Posts. The airplane left from the suburb of Le Bourget.

Orders of Regional Directors

UNNECESSARY BURNING OF LIGHTS IN CARS.—The eastern regional director calls attention to the fact that lights are burned unnecessarily in cars while waiting in storage yards and terminals; this exhausts the batteries and involves expense. Too much light is used in some of the cars throughout the night.

Private Cars of Individual Ownership.—The eastern regional director asks for information concerning the number of private cars of individual ownership cared for or stored which, under present circumstances, cannot be used, and which might be purchased at a reasonable price and converted into day coaches or sleepers.

Pullman Accommodations and Railway Passes.—The following rule has been announced by the eastern regional director: "The holder of a railroad pass shall be entitled to purchase but one berth or seat in a sleeping or parlor car for each person named in the pass; if additional space is desired payment shall be made of the additional amount required by tariff regulations governing collection of charges for exclusive occupancy of sections, compartments and drawing-rooms. Sleeping car passes shall be honored to the extent of the accommodations therein provided."

Application for Priority.—The Priorities Committee, through T. C. Powell, member for the Railroad Administration, has advised that it is necessary to designate an official who will be authorized to sign applications for priority under oath. It is desirable that the head of the purchasing department be the official designated to make these applications. In view of the fact that on some lines other officials make contracts for purchases or for construction, etc., it may not be feasible in all cases for the purchasing agent to make the necessary application and it may be necessary to have more than one officer designated. So far as practicable, however, it would be desirable to have one official for each company designated to make the application.

Cars Loaded with Scrap.—In view of the extraordinary demand for coal loading equipment, the Southern regional director has suggested that scrap materials be not loaded until it is reasonably certain that disposition can be provided without delay. Whenever possible the use of coal cars for scrap loading should be avoided. Close co-operation in this respect by departments involved will be of great assistance in the existing coal car situation.

Speed Limit for Troop Trains.—A limit of 25 miles an hour has been placed upon troop trains where any freight cars are handled in the train.

Sleeping Car Reservations.—The regional director of Northwestern railroads announces that the rule prohibiting assignment of space to offices located off the line of sleeping and parlor car runs has been canceled. Hereafter passenger traffic officers of the railroads concerned may assign space at their discretion, but in doing so will exercise care that assignments are made in such a manner as to maintain a minimum amount of vacant space and at the same time afford the traveling public every opportunity to utilize all available space.

Engine Terminal Facilities.—The regional director of Central Western railroads urges that all engine terminals be put in first-class condition before November 1, to prevent a recurrence of the difficulties experienced last winter because of crippled facilities for the maintenance and repair of locomotives.

Diversions of Fruits and Vegetables.—The regional director of Southwestern railroads announces that H. B. Kooser, vice-president and general manager of the American Refrigerator Transit Company will provide facilities for the transmission of information to shippers and receivers, and for handling diversions and reconsignments of all fruits and vegetables in transit over lines in the Southwestern region.

Mr. Kooser will issue instructions as to how the information will be handled.

Surety Bonds, Fruits and Vegetables.—The regional director of Northwestern railroads announces that the fourth paragraph of Circular No. 20 of the Division of Public Service and Accounting requiring that a bond be filed by shippers with initial carriers covering fruits and vegetables shipped on straight bills-of-lading, has been canceled.

Grain Doors.—In a letter dated August 23 the regional director of Northwestern railroads announces that complaints of shortages of grain doors and grain door lumber preventing prompt loading of grain cars are being received, and that it is therefore important that an immediate canvass be made of all grain shipping stations respecting supplies and requirements. Emergency supplies may be transferred from other points if necessary and lumber may be purchased locally if delay to equipment may be avoided thereby.

Employment of Drought Sufferers.—The regional director of Southwestern railroads calls attention to a letter written by the Governor of Texas to the Director General regarding the conditions in the drought-stricken region of Texas. Many of these drought sufferers are in destitute circumstances and are wholly unable to pay transportation to enable them to get where employment may be secured. Southwestern railroads are asked to make use of this opportunity to fill their labor requirements and are authorized to furnish transportation to the men.

Eliminating Dead Movement of Locomotives.—In Order No. 43, dated August 24, regional director of Southwestern railroads calls attention to the prevailing practice of shipping locomotives dead in trains from builders and from foreign line repair shops to points where they are assigned. This movement is exceedingly slow, and the tonnage thus handled amounts to approximately 500,000,000 ton miles per annum. These locomotives should not only be self-propelling, but in many instances could be used advantageously to pull trains while enroute. The circular is supplemented with a set of detailed instructions as to how to handle locomotives of this type.

Baling Requirements for Cotton Fabrics.—"It has been brought to my attention," says B. L. Winchell, southern regional director, "that some cotton mills in this region have been tendering for shipment cotton fabric in bales covered with very thin, sleazy cheese cloth, with the result that the shipments almost invariably arrive at destination with the cover partly destroyed and the goods in a dirty, torn and badly damaged condition. This covering of baled goods is not permitted under classification rules. Will you please see that your agents at points where such mills are located are instructed not to accept this commodity when packed in this way."

Painting and Lettering Freight Cars.—The Eastern regional director has issued the following instructions:

1. The preservation of freight car equipment of all railroads under federal control will be maintained by necessary repainting and restenciling. When paint on freight equipment cars has become perished to the extent of permitting the steel to rust and deteriorate, or the wood to become exposed to the weather, they should be repainted. The car body (including roof) should be entirely repainted if, for any cause, it is found necessary to paint one-third or more of the car. Before applying paint to steel, it should be scraped and cleaned off with a wire brush; wood parts should be scraped so as to clean off all blisters and loose paint, including removal of protruding nails and tacks.

2. The station marking showing where car was last reweighed should not be changed unless the car is reweighed.

3. When repainting freight equipment cars two coats will be applied to all new parts and old parts of body which have been reworked causing removal of paint. One coat will be

applied to parts where old paint is in good condition. Should the old paint be found to such condition requiring two coats, they may be applied.

4. The stenciled letters and numbers on all freight equipment cars will be maintained and identity kept bright. When the lettering or numbering is found in bad condition renew the identity by either repainting the car or by applying new stenciled letters and numbers. In selecting cars for this purpose preference should be given those on which the marking and painting is in the poorest condition.

5. If there is not sufficient paint on car properly to retain the new stenciling, and condition of car does not justify entire repainting, one coat should be applied as a panel back of the stenciling, so that the paint used in applying the numbers and letters will hold; otherwise the marking applied will soon become illegible and make it necessary to again apply the identity marking within a short period.

6. Detention of equipment from service for painting should be avoided when possible. A great deal of this work can be done to open cars in transportation yards when under load in storage.

Theft of Mail Matter.—The law provides that "railroad companies carrying the mails shall furnish all necessary

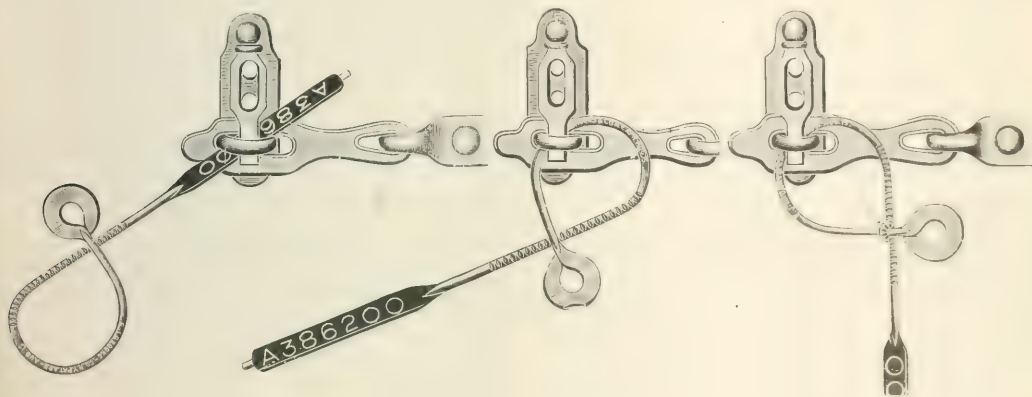
as closed rooms present too great an opportunity for pilfering.

At some of the large terminals where the trucking is made through tunnels, subways and recesses in buildings, there is found to be an opportunity for rifling mails which can be largely cured by supervision and proper lighting. It is the duty and responsibility of the railroads to protect mail in storage and baggage cars, and when such equipment is switched in and out of terminal yards it should be locked or otherwise protected against improper handling or pilferage.

A Self-Locking Car Seal

A CAR SEAL of the self-locking type with no hidden parts has recently been developed by E. J. Brooks & Co., Inc., New York City. It consists of a single piece of steel wire, looped and flattened at one end, on which is stamped the name of the railroad, and flattened at the other end to receive the serial number.

The method of applying and locking the seal is clearly shown in the illustrations. After being properly inserted through the hasp lock of the car door the seal is locked by



Brooks Twist-Lock Car Seal

facilities for caring for and handling them while in their custody * * * they shall provide station space and rooms for handling, storing, and the transfer of the mails in transit * * * and for offices for the employees of the railway mail service engaged in such station work." Reports show a general disregard of the provisions of the law for the protection of the mails.

It is claimed the facilities for storing, trucking and handling of the mails at many railroad depots are totally inadequate. The quantity of mail has increased so much that it is the almost universal practice to store the mail awaiting transfer on trucks to avoid labor in unloading and reloading. These trucks are often without protection, enabling the public and employees to pilfer the mails. Care should be exercised in the selection of railroad employees to handle the mails, and at the larger points systematized, so honest and competent employees will be selected and properly supervised. It is suggested that such railroad employees, especially at larger points while engaged in handling mail, be required to wear the established cap, badge or other adopted identification so that supervising officers, railroad special agents and post office inspectors can more readily determine whether authorized employees only are handling the mail. In providing space at stations for the storage of transfer mail and other mail, it is suggested that screen protection is superior to a closed room

twisting the vertical end of the wire about the horizontal end near the flat loop. On the side of the vertical portion of the wire which comes on the inner or compression side of the twisted loop formed in locking the seal, is a series of nicks which insure that the seal may be locked without danger of breaking the wire. To unlock the seal this loop is simply untwisted and the nicked side of the wire is thereby brought into tension, which insures that the seal cannot be unlocked without breaking. A similar series of nicks is placed on the back side of the horizontal portion of the seal to prevent the possibility of successfully tampering with the seal should an attempt be made to lock it by twisting the horizontal portion of the wire about the vertical.

This seal has been in use on one of the eastern railroads for some time.

RUSSIAN RAILROAD MISSION IN SIBERIA.—Eighty-four of the Stevens Railroad Commission, sent from the United States to Russia in May, 1917, to assist in restoring the Russian railroads and who have been at Nagasaki for eight months, have arrived at Vladivostok. They will begin work on the Siberian Railroad behind the Czecho-Slovak lines between that city and Knabavorsk.

The Work of the Ford Company's Traffic Department

Self-Interest as Well as Force of Necessity Makes Car Conservation One of Its Main Policies

NO ONE INQUIRES nowadays whether heavier loading of freight cars is beneficial to the shipper. Those who have suffered loss and inconvenience in readjusting their business to promote car conservation are reminded that transportation facilities must be carefully husbanded if the tremendous traffic offered for movement by the government and by our factories, mines and farms is to be taken care of. Shippers are likewise thoroughly cognizant of the fact that the existing supply of equipment must be utilized most intensively if their own wares are to move in quantities at all commensurate with their outputs. Car economy, translated into terms of capacity loading and the prompt release of equipment, has become a patriotic duty.

Although it is unnecessary to justify car conservation from the point of view of the shipper's self-interest, it is nevertheless a fact that intensive loading is, for a number of years has been, a cardinal principle of the policies of the Ford Motor Company, Detroit. Needless to say, it was adopted as a Ford policy because it paid and paid well. Just how well it pays, in dollars and cents, is for reasons dictated by modesty or business considerations, not available for publication. Suffice it to say, many thousands of dollars have been saved yearly by close supervision of loading, and while the curiosity of the reader as to *how much* is saved cannot be satisfied, *how* it is saved—a more important matter from the shipper's standpoint—will be outlined in this article.

The instrument through which the Ford Motor Company supervises the handling of shipments to and from its plants is its traffic department. This branch of the organization has an intimate knowledge of all commodities shipped and received, as well as the classifications and tariffs which govern their movement. The department sees to it that goods are properly packed, billed and described, and devises loading methods which permit increased utilization of cars, either through new schemes of packing and stowing shipments or through loading different commodities in the same car when mixing is authorized by the classifications. The absence of specific ratings for the major portion of automobile parts makes it necessary to classify them by analogy. It is obviously essential, therefore, that the Ford traffic department be thoroughly familiar with the 3,000 parts constituting the Ford automobile—the relation of one part to another, the kind of material going into each and how it is manufactured.

Average Carload Weight Increased 10 Per Cent in 60 Days

The phase of the traffic department's work which is of most general interest is without doubt the heavier loading of cars. It may seem surprising, but it is nevertheless a fact, that the average weight per loaded car shipped by the Ford motor plant was increased 10 per cent within the short period of 60 days. Through this increased efficiency in loading the number of cars required for outbound shipments from the Highland Park (Detroit) plant of the Ford company was reduced from 110 cars per day at the beginning of October, 1917, to 100 cars in December.

The science of loading cars as practiced by the Ford traffic department is applied to two distinct problems—shipments of parts consigned to the numerous assembly plants and shipments of set-up machines. The loading of parts lends itself much more readily to the conservation of car space than the loading of set-up automobiles, especially when mixing privileges authorized by the classifications permit the stowing of different parts in the same car. Unlimited mixing is

authorized by Rule 10 of the Official Classification. The only restrictions specified are that the freight charges on the highest rated article shall apply on the entire lading and that the weight of the commodity with the highest rating shall be at least 10 per cent of the minimum per car provided in the classification. Limited mixing has been permissible in Southern Classification territory since October 1, 1915, and in Western Classification territory since April 20, 1917. The shipment of two separate carloads in one car is authorized by all three classifications.

In general, the secret of successful mixing is to load heavy and light commodities of the same class together. The mixture of knock-down fenders and front axle parts, for instance, permits loading not only to stenciled car capacity, but to the cubical limits of equipment as well. Previous to the war carloads of these parts averaged about 40,000 lb., or 4,000 lb. in excess of the minimum weight. Now the average lading is 90,000 lb. By knocking down automobile tops and loading them with cushions the same number of top sets which formerly occupied an entire car now take up only half a car. Radiators, as shown in the illustration, are loaded to the car roof, but on account of their low specific gravity do not exceed to any great extent the minimum weight necessary to secure a carload rating. By an ingenious method of stowing motors upright by screwing them to iron quoits on the car floor, as illustrated in the photograph, one-third of the car space, under the roof, is conserved for miscellaneous light parts. Because of their high specific gravity motors are generally loaded into small cars.

The car of windshields, seat cushions and spark coils, shown in the photograph, is loaded to cubical capacity. It contains 1,080 windshields, 320 cushions and 500 spark coils, and weighs 34,000 lb. The automobile gear parts and fenders shown in an early stage of stowing in the illustration, average 89,000 lb. to 100,000 lb. in weight per car when fully loaded. The interior view of the car being loaded with seat cushions indicates the care taken to prevent injury in transit. Seat cushions are the bulkiest material shipped by the Ford company with the exception of closed car bodies. A car fully loaded weighs 14,000 lb. Chassis are generally loaded diagonally, as this method enables the company to ship an average of 10 per car. Wheels which were formerly in fourth class in Official Classification territory could not be shipped in mixed carloads because very few automobile parts are in that class. When wheels were reduced to fifth class more intensive loading was made possible by the application of the mixing principle.

Aside from the advantages derived from the lower rates on knock-down shipments, limited track space and a general shortage of equipment has made them practically a necessity. Nevertheless the Ford company still ships a considerable number of set-up motor cars, most of which go to the territory served directly by the Detroit plant. The remainder of the country is largely supplied by the assembly plants, located at 29 different cities, which assemble automobiles from the parts received from the parent plant. Coupelets, however, are an exception to the rule, as they cannot be shipped in parts without injury to the finish of the bodies. It was formerly a great problem to use maximum car space in shipping coupelet bodies, but this difficulty has been overcome by loading automobile parts with them. For instance, it is not now uncommon for a carload of coupelets to contain 200 windshields or 115 springs. The loading of set-up automobiles of all types also has been studied to good advantage

by the Ford traffic department. Formerly six touring cars was considered the absolute limit of a set-up carload. Now a 40-ft. car containing two touring cars, a sedan, a motor truck, a coupelet and a runabout is not an unusual shipment. This is possible through a well-planned arrangement of the bodies in the car and by attaching the windshields to the walls and bracing the wheels in the corners and on the floor.

Ratings on Automobile Parts

The automobile industry has had such a remarkably rapid growth that it has been impossible for any classification com-



Radiators Are Loaded to the Car Roof

mittee to keep pace with it. As a consequence the extent to which it has been possible to utilize the maximum capacity of equipment in shipping automobile parts has been limited by the existing ratings, rules and regulations of the classifications. As was previously pointed out, the mixing privilege is permitted by Rule 10 of Official Classification and is also authorized to a certain extent by the two other classifications. The traffic department of the Ford Motor Company has labored consistently to secure carload ratings on automobile parts where they did not exist, as well as the rectification of inconsistencies in existing ratings to permit the fullest application of the mixing principle, thereby insuring the maximum use of railroad equipment.

Prior to February, 1915, there were very few carload ratings on self-propelling vehicle parts in Southern Classification territory, while c. l. ratings on non-self-propelling vehicle parts were quite numerous. Perhaps the main reason for this incongruity was that most automobiles moved in the South only in set-up shape with occasional l. c. l. shipments of repair parts. There was no occasion for granting c. l. ratings on automobile parts until in the expansion of its business the Ford Motor Company established two assembly plants in the South, one at Atlanta, Ga., and the other at Memphis, Tenn. The Ford company thereupon applied for ratings on its parts, pointing out that while the parts would move at a lower rate a higher minimum weight would insure greater revenue per car to the carriers than the higher rate on carloads of set-up machines with a lower minimum weight.

In reply to the objection that less equipment is required for the shipment of parts than for the transportation of set-up automobiles and that, therefore, the carriers would not really benefit by the change, the Ford company called attention to the fact that the Interstate Commerce Commission has recognized the earnings per car-mile and per train-mile as the fairest tests of the reasonableness of rates. It was also emphasized that the cheaper rates on parts to the assembly points would make prompt deliveries of machines and repair parts to the consumers possible. As a result the demand for automobiles would increase, thus swelling the volume of traffic on parts to the assembly points and making up in a measure the differences, should there be any, in the amount of equipment used in shipping machines in the set-up and completed knocked-down forms. From the point of view of car conservation, the company pointed out, the shipment of parts deserved every encouragement.

High Rates Discourage Industry in South

The most convincing argument presented to the Southern Classification Committee was the presentation of evidence showing that a large part of the territory which, from the standpoint of distance, should have been served by the Atlanta and Memphis assembly plants of the Ford Motor Company was being supplied with set-up machines by the St. Louis branch. A number of concrete examples illustrating this point were cited by the Ford traffic department in its petition. The appended figures, included in the application, are based on ratings granted by the Southern Classification



This Car Is Loaded to Cubical Capacity, Containing 1080 Windshields, 320 Seat Cushions and 500 Spark Coils

Committee in February, 1915. Had they been computed in accordance with the ratings previously in effect the difference in favor of St. Louis would have been much greater. On the basis indicated, the knock-down cost of parts to Atlanta was \$16.65 per machine, or \$99.60 for a carload of six; \$10.66 per machine to Memphis, or \$63.96 for a carload of six; and \$5.25 per machine to St. Louis, or \$31.50 for a carload. A

comparison of the transportation costs from St. Louis and from Memphis and Atlanta points in the South is obtained by adding the cost of shipping the parts to the assembly point to the set-up rate from the branches to final destinations.

INDEX: PER CARRIED TO CHATTANOOGA		
Parts for six automobiles to Atlanta	\$99.00	
Set-up cars Atlanta to Chattanooga	\$7.00	
	\$106.00	
Parts to St. Louis	\$31.50	
Set-up cars St. Louis to Chattanooga	\$3.00	
	\$34.50	
Difference in favor of St. Louis	\$32.10 per carload	

Similar computations of rates to other points in territory tributary to Atlanta and Memphis showed the following comparisons:

ATLANTA TERRITORY			
Place	Total via Atlanta	Via St. Louis	Difference per c. l. favor St. Louis
Jacksonville, Fla.	\$160.60	\$149.50	\$11.10
Lake City, Fla.	204.60	193.50	11.10
St. Petersburg, Fla.	226.60	209.50	13.10
Miami, Fla.	257.60	246.50	11.10
Savannah, Ga.	160.60	149.50	11.10
MEMPHIS TERRITORY			
Place	Total via Memphis	Via St. Louis	Difference per c. l. favor St. Louis
Columbia, Tenn.	\$138.96	\$117.50	\$21.46
Nashville, Tenn.	113.96	92.50	21.46
Knoxville, Tenn.	147.96	140.50	7.46
Clarksville, Tenn.	102.96	92.50	10.46
Bristol, Tenn.	171.76	137.70	24.06
Greenwood, Miss.	127.96	127.46	.50

The case presented by the Ford company was so conclusive that the Southern Classification Committee granted the application for new ratings substantially as filed, and put them into effect late in the summer of 1915. As a result of the more liberal policy of this committee the Atlanta and Memphis assembly plants of the Ford Motor Company have increased in importance and two additional branches have been opened in the South, viz., at Louisville, Ky., and Charlotte, N. C.

Importance of Proper Billing, Packing and Loading

It is obvious that a company which ships over 3,000 different commodities in addition to set-up automobiles must have an intimate and practical knowledge of rates and ratings. The general traffic department of the Ford company maintains up-to-date files of tariffs and classifications and, in addition, carefully worked-out schedules showing the application of the classifications to each of the parts making up the Ford machines. These schedules are of particular importance because most automobile parts are not covered specifically by the classifications, and therefore must be classified by analogy. The schedule for each classification contains the l. c. l. and c. l. ratings, the minimum weight per carload, the description and the weight of each part manufactured by the Ford company. In addition, an index of the articles, by alphabetical arrangement and by part number, facilitates ready reference to the schedule. The inter-territorial application of each classification is also shown, so that it can be readily determined which classification governs a given shipment.

Familiarity with the classifications is absolutely essential if goods are to be packed and loaded properly. If low and high-rated articles are packed together the high rate, of course, applies to the whole consignment. An error of this type was recently cited in the Ford Traffic Bulletin by W. S. Hogue, general traffic manager. A box of bolts and washers weighing 230 lb. also contained about 20 lb. of felt gaskets. As the gaskets were first class and the bolts and washers fourth class the company was forced to pay the first class rate on the entire shipment.

Mr. Hogue considers the maintenance of an up-to-date tariff file one of the most important functions of his department. Rate files alone are not at all satisfactory because of the absence of rules governing their application. To illus-

trate: The first class rate from St. Louis, Mo., to Kansas City is 55 cents per 100 lb. The Western Classification provides a minimum charge of 100 lb. at the rate applicable to the article shipped. Assuming that the commodity to be shipped takes a first class rate, the minimum charge in that case is 32 cents, because the tariff provides that the minimum charge in Western Trunk Line territory is third class.

Inasmuch as railroad billing clerks cannot be expected to have an intimate knowledge of the goods tendered by hundreds of shippers and the phraseology ordinarily used by different companies in describing them, the Ford traffic department adheres very closely to the technical language of the classification or tariff in describing and billing freight. It has learned by experience that proper description prevents many unnecessary disputes with the carriers.

How Shipments are Handled

As orders are received from the various assembly plants

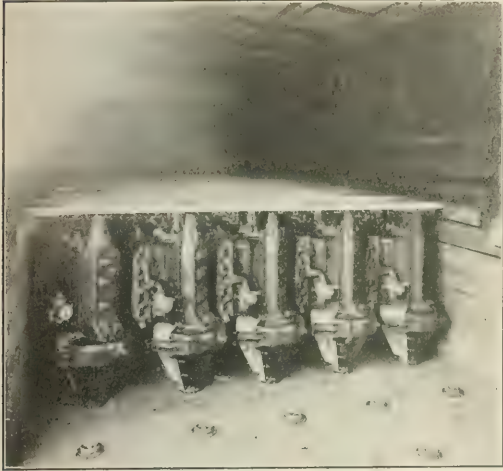


Car Being Loaded with 2000 Fenders, Together with Gear Parts. Cars Containing this Mixture Weigh from 89,000 to 100,000 Lb. Net When Fully Loaded

the traffic department determines whether they can be filled in part or in full, and makes out requisitions for them, which are sent to the stock department. The parts ordered are then sent by the stock department to the loading dock, where two classification experts determine how they shall be assembled in cars to take advantage of the best ratings and how the cars shall be routed. Each night the office of the loading dock notifies the yardmaster of the number of cars which will be required for the following day, thereby insuring a supply of equipment when the shipments are assembled and ready for loading.

The billing in connection with each shipment is handled in a very simple and effective way. The invoice which goes to the branch through the mail, and copies thereof which are filed in the accounting department and manufacturing department, the requisition on the stock department, the packing slip which accompanies the goods in the car and two copies thereof which are filed in the service department—are all filled out in one writing. A separate set of bills is made out for each part shipped to avoid the complications which would result if all the parts ordered by a branch were not immediately available for shipment. Each bill also contains spaces for entering both the quantity of a part ordered

and the quantity shipped, as in some cases it is impossible to ship at once the entire amount of any one article ordered by a branch. The invoice and the copy filed in the accounting department, as well as the packing slip, also contain entries giving the price of each part shipped. When a car has been completely loaded the invoices and the packing slips are pinned together and totaled, the packing slips being sent to the branch in the car, and the invoices being sent respectively to the accounting department and by mail to the branch.



Motors Are Stowed Upright, Being Screwed to Quoins on the Car Floor

The packing slip also contains the following entries: The number of each package contained in a shipment, the kind of package, its weight and its rating, and the track on which the car was loaded. Generally packages are weighed by official weighmasters of the Western Weighing and Inspection Bureau. This plan makes it possible to compute the total weight of a car, thereby preventing subsequent detention for weighing the car in its entirety. Two copies of each packing slip are filed in the service department, one numerically according to the order number and the other alphabetically according to the assembly plant. This enables the service department to give accurate and prompt information to a branch concerning the loading of a car in case packing slips are lost or destroyed.

The Auditing of Freight Bills

The auditing of freight bills is one of the most important services which the Ford traffic department performs for its company. Hardly any two freight auditors working independently of each other and without consulting each other as to methods interpret classifications with results that are identical. In the words of Mr. Hogue, general traffic manager of the Ford Motor Company, "no business can afford to trust a matter involving dollars and cents entirely to the seller." This applies equally as much to transportation as to any other commodity. If the service of a rate expert is necessary in the matter of standardized commodities it is doubly necessary in the matter of automobile supplies, in which case the practice is to classify and rate by analogy. Formerly the Ford company settled its indebtedness to the railroads only after it had carefully audited the freight bills against it and inaccuracies had been corrected and matters

of dispute settled. Under the new rule inaugurated by the Railroad Administration requiring the prepayment of freight the auditing of bills is equally important, although errors in billing or rating can be rectified only by filing claims after the bills have been paid.

Traffic Department a Benefit to Railroads as Well as to Ford Company

The traffic department of the Ford Motor Company is performing a service which is beneficial not only to the industry which employs it, but also to the railroads and the country at large. To be sure, its close study of car loading has been prompted in large measure by reasons of economy, but nevertheless it has proved a boon to the carriers in a protracted period of car scarcity and likewise to a nation calling for maximum transportation with the existing facilities. In petitioning classification committees for revised ratings and mixing privileges the Ford company has also been actuated primarily by selfish motives. The changes which it has secured in this manner, however, have made heavier car loading possible, thus aiding the cause of car conservation at a time when it is exceedingly important. The close attention paid to the billing and description of freight, intra-



The Seat Cushion Is the Bulkiest Part Shipped. A Car Fully Loaded Weighs About 14,000 Lb

company billing of shipments, the auditing of freight bills and the maintenance of up-to-date tariff and classification files is, of course, highly essential in an industry which ships and receives such a large volume of freight as the Ford Motor Company. The thorough and painstaking manner in which the traffic department of the Ford company is performing these functions warrants admiration by the carriers and emulation by shippers and consignees.

THE TRANSPORTATION FACILITIES of the American Expeditionary Army are fully meeting the strain placed upon them in keeping the moving troops supplied and in bringing up heavy guns and ammunition, members of the House Military Committee were told on July 26 by Secretary of War Baker and General March, Chief of Staff.

General News Department

Director General McAdoo has selected a flag which will be flown by the 79 vessels operated by the Railroad Administration. The flag has the letters U. S. R. A. in blue on a white field with a red border.

On the Long Island Railroad, "club cars," used for suburban "commuters" desiring special facilities, have been ordered discontinued, and the federal manager thinks that parlor cars will also be discontinued, or will be converted into coaches so that they will accommodate a larger number of passengers.

Trackmen are working, at present, seven hours a day, on parts of the Baltimore & Ohio. Because of a scarcity of laborers, a special train is run from Cumberland, Md., in the morning, starting at 7 o'clock and returning at 6 p. m., carrying men to work on the Newburg grade. The trip occupies about two hours, so that the men are on the cars four hours each day.

The Baltimore & Ohio passenger station at Hagerstown, Md., has been closed and trains will run to and from the station of the Western Maryland. The Baltimore & Ohio reaches Hagerstown by a branch, 24 miles long, from Weverton, Md. A branch of the Baltimore & Ohio from Hagerstown eastward to Security, Md., two miles, built about two years ago, is to be taken up.

The use of anthracite by the railways of Canada must be reduced this coming winter by about 60 per cent. This is an order from the Canadian Railway War Board directing the roads to use no anthracite in stations or elsewhere, except in Baker heaters in passenger cars, when heat from the engine is unavailable. Ordinarily the Canadian roads would use nearly 100,000 tons of anthracite yearly.

At Main street crossing, Bloomington, Ill., according to the Safety Magazine of the New York Central Lines, there has been no accident to any person during the past ten years; and a large measure of the credit for this record is accorded to John Dillon, the flagman, who has served at this crossing throughout that time. Seven tracks cross the street at this place, two of them being the main tracks of two different railroads, and switching engines are at work there every day. The flagman, says the Magazine, "has not the shanty habit. He displays the stop sign in the middle of the street and he holds it high."

An automobile loaded with silk was stolen by highwaymen near Somerville, N. J., on the afternoon of Wednesday, August 21, and the driver was murdered. The silk, said to be worth \$40,000, had been shipped from Newark, N. J., to Allentown, Pa., this mode of transportation having been adopted, it is said, because of the congestion of freight traffic on the railroads. The driver's helper, riding on the rear of the load, was intimidated. The driver himself, who was armed, seems to have fought bravely before he was overcome. The load of silk was recovered, soon after, a few miles away, having been abandoned by the robbers who, evidently, became frightened.

Fires in the National forests have this year been so serious that President Wilson has authorized a loan of one million dollars to the Forest Service for fire-fighting expenses. This is to meet serious emergency conditions in the Northwest and the Pacific Coast States. The loan was made from the special defense fund of fifty million dollars placed at the disposal of the President by Congress. Early drouth, high winds, electrical storms, labor shortage, and depletion of the regular protective force as a result of the war have combined to make the fire conditions unprecedentedly bad. The Presidential fund was drawn upon because the appropriation bill for the Department of Agriculture for the current year has not yet been passed.

Landing fields for the accommodation of air pilots are being established at intervals of about 100 miles clear across the continent, and the War Department expects that before long these well-marked, safe landings will furnish for air pilots facilities analogous to those afforded by water tanks for transcontinental locomotives. Besides oil and gas, these fields will supply to the pilots shelter and limited machine shop facilities, maps, charts, and barometer and thermometer records. New York, Pennsylvania, Ohio, Illinois, Georgia, Texas and California have already established lines of such landing fields. Arkansas, Mississippi, Alabama, New Mexico and Nebraska will soon be equipped. Flying by compass has become an established practice but landing fields, like beacon lights, help the pilot to pick his course, even though he has his compass. Most of the landings today are on army fields, but local boards of trade and business men's associations have begun to compete for the location of sites.

Through Train from Washington to Atlanta for Express Shipments

Director General McAdoo has arranged to put on an exclusive train on the Southern Railroad for express shipments between Washington and Atlanta, September 1, which will result in a substantial improvement in the service and afford relief to several important passenger and mail trains. The Railroad Administration in announcing this new service says that, it was not possible to do this when the roads were operated separately, as there was not enough express business to warrant a special train for express shipments on any one line.

Extension of Sailing-Day Plan

A. H. Smith, regional director, Eastern Railroads, announces the appointment of G. C. Woodruff, New York City, as chairman of a committee to consolidate l. c. l. shipments throughout the eastern region, the committee working through the district directors. The "sailing-day" plan for the consolidation of shipments to save freight car space is to be established at all important points, wherever practicable; and at cities where there are two or more roads there will be members on the committee from each road so as to provide the largest measure of practical co-operation. The regional director has called for statements showing the volume of l. c. l. freight from all import points for the first ten days in August, these statements to be made the basis of plans for consolidating tonnage, not only on specific days, but on specific routes, wherever it is possible, thereby to effect economy and conservation while giving adequate service to the public.

National Safety Council

The meeting of the National Safety Council at St. Louis, September 16-20, will be addressed, on the evening of the first day, by Hon. Franklin K. Lane, secretary of the interior. Mr. Dow's motion picture, "The Rule of Reason," will be exhibited on the same evening. The Steam Railroad Section of the Congress holds sessions on Tuesday, afternoon, and both morning and afternoon of the two days following. Among the speakers are H. W. Belnap, manager of the safety section, Division of Transportation, United States Railroad Administration; L. Kramer, federal manager of the St. Louis-San Francisco; J. C. Clark, Oregon Short Line; T. H. Carrow, Pennsylvania; C. W. Hammond, New York Central; Robert Holland, St. Louis-San Francisco; J. A. Doyle, C. St. P. M. & O.; C. B. Floyd, N. Y. C.; E. M. Switzer, C. B. & Q.; W. J. Hills, N. C. & St. L. For Thursday the program calls for a "roundtable" meeting continuing throughout the day. The chairman will be Marcus A. Dow (N. Y. C.). On

Friday there will be a meeting of the Car Builders' Section, dealing principally with the hazards connected with the construction of steel cars.

Railway Signal Association

The principal business to be done at the annual meeting of the Railway Signal Association, at Hotel McAlpin, New York City, September 19 and 20, is that to be reported by committees 2, 3, 5, 6, 8, 10, 11 and 13. The following subjects are included: Specification for Saxby & Farmer interlocking; specification for painting; and for pipe compensation. Typical circuits for power interlocking; specification for impregnated fibre conduit; rules for maintenance of mechanical interlocking plants; and movement of trains by signal indications without train orders. Drawings of standard designs presented at the March and the June meetings and specification for signal roundels, lenses and glass slides. Report of committee No. 7 on direct current relays, and report of committee No. 8 on alternating current automatic block signaling. Application of aspects indicating that a train must take siding at a non-interlocked switch; directions for installation of lead type stationary storage battery; concrete battery box, and round jars.

Members are reminded that, for their own convenience, they should bring to the meeting their copies of the Journal for March, June and September.

Government Interested in "Carbocoal"

The United States Fuel Administration has issued press notices to the effect that the United States Government has become interested in the establishment of a plant for the manufacture of carbocoal at Clinchfield, Va. The plant, which is now in the preliminary stages of construction, will have a capacity of treating several hundred thousand tons of bituminous coal annually. The plans for the plant and the grounds allow for an eventual capacity of 1,500,000 tons per year. By a new process of low temperature distillation, invented by Charles H. Smith and described in the *Railway Age* of February 8, page 324, bituminous coal is treated in such a manner as to recover greater quantities of the valuable by-products, such as toluol, sulphate of ammonia and valuable oils. From the residue is made a valuable smokeless fuel, in the form of briquettes. Tests of "carbocoal" by the Navy disclose that it contains less than four per cent volatile matter, rendering it practically smokeless. The new plant, which is expected to be in operation early in 1919, is being built near the junction of the Carolina, Clinchfield & Ohio and Norfolk & Western. The Fuel Administration and the Ordnance Bureau of the War Department are co-operating in the construction of the plant.

British Railway Accident Record

The report of railroad accidents in Great Britain for the year 1917 shows only one passenger train accident which was fatal, but in that one the number of passengers killed was twelve. Only five employees were killed in train accidents; and striking decreases are shown in many items in the report. Fatal accidents to persons passing over highway grade crossings numbered 50, as compared with an average of 66 in the preceding ten years; and trespassers killed number 278, as against an average of 445. The employees killed in coupling and switching numbered 73, as compared with 98 in the last preceding year, and other accidents occurring to men while at work showed decreases. The diminution in the number of employees in service, on account of the war, has affected the accident figures both ways. At the end of the year, 11 principal railways reported 134,000 employees as having enlisted, and the places of these men were taken by 42,000 other men, generally less skilled and less able-bodied; and 41,000 women had been taken into the service. Freight traffic was 48 per cent heavier than in 1913, while passenger traffic, even independently of military traffic, was heavier than ever before. The totals of passengers and employees injured show such large reductions, in some departments, that the suspicion arises that, under the relaxed requirements of the Board of Trade, the railway companies are not reporting so many of the less important bodily injuries as formerly

was customary. Another observation, in connection with the reduced figures, is that the men who left the railway service to enter the army, men who have the fighting spirit, are the same men who, in working about freight trains, or in handling machinery, are the ones who will take chances.

Staff System for Track Repairers

A "Ganger's Occupation Train Staff"—in other words, a device by means of which a track foreman, repairing track, can protect against approaching trains without sending out flagmen, has been devised by the Railway Signal Company, London, and is described in a recent issue of the *Railway Gazette*. The line wire connecting the two signal stations at the two ends of the block section is run through a cabinet in the trackman's hut and there controls a special staff. The trackman who wishes to use a staff first speaks to the signalmen over the telephone, and if they are agreed, and close the proper circuit, the staff is released. The withdrawal of the track foreman's staff locks the staffs at the regular staff stations, making them inaccessible, for the use of trains, until the trackman's staff has been restored to its place.

The makers suggest also that this arrangement would be useful where there is in the line, between staff stations, a draw bridge which is not of sufficient importance to warrant the maintenance of regular signaling and interlocking.

Reserves of Bituminous Coal

The tremendously increasing demand for coal for special war purposes in the eastern part of the country, particularly for the Navy and Transport Service, is making it necessary to draw more heavily on the eastern coal fields than was originally contemplated. It has been found necessary, accordingly, to limit the amount of coal that industrial plants would be allowed to accumulate and to fix a uniform amount for each state.

The maximum limits decided upon are as follows:

SHELF COAL MAXIMUM NUMBER OF DAYS SUPPLY AVAILABLE			
	Railroads and other public utilities	Manufacturing industries	Non-manufacturing industries
Maine	1		30
Massachusetts, Vermont, New Hampshire, Northern New York			30
Connecticut, Rhode Island	75	45	20
Southern New York, New Jersey, Delaware, Eastern Pennsylvania	20		15
Maryland, District Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Western Ohio	30	30	15
Western Pennsylvania, West Virginia, Eastern Kentucky, Eastern Ohio	30	20	15
Lower Michigan		15	20

Western Pacific Stockholders Protest Against

Joint Operation with Southern Pacific

The joint operation of the Western Pacific and the Southern Pacific under one federal manager has resulted in the initiation of certain operating changes which have called forth strenuous opposition on the part of Western Pacific stockholders, members of the railroad brotherhoods, shippers and others. The proposed changes which have occasioned the most serious opposition are briefly as follows: The termination of all Western Pacific passenger runs at Sacramento, Cal., giving the Southern Pacific a monopoly of passenger traffic between that city and San Francisco; the abandonment of the Western Pacific track from Tracy, Cal., to Niles and the use of the Western Pacific line from Sacramento, Cal., to Wells, Nev., from Niles, Cal., to Oakland, and from Tracy to Sacramento, as double track with the Southern Pacific.

Attention was first called to the pending order by members of the railroad brotherhoods, who saw in the plans the elimination of Western Pacific passenger trains between San Francisco and Sacramento. Holders of Western Pacific stocks and securities saw in the order a move which would result not only in cutting down the Western Pacific's passenger revenue and destroying the "good will" of the passenger traveling public, but a step which would virtually make the Western Pacific a feeder of the Southern Pacific. As the result of numerous appeals to Director General McAdoo by Western Pacific

stockholders, the United States senators of California, members of the California Railroad Commission and others, the Railroad Administration has temporarily suspended the proposed order. It is proposed as an alternative measure that the Western Pacific and the Denver & Rio Grande be combined under one federal manager for purposes of operation so as to permit those roads to retain their identity as an independent route to San Francisco.

Meeting of the Metals Associations

The American Foundrymen's Association, the Iron and Steel Section of the American Institute of Mining Engineers, the Institute of Metals Division of the American Institute of Mining Engineers and the American Malleable Castings Association, will hold a joint meeting in Milwaukee, Wis., during the week of October 7, at which time an elaborate exhibition of metal working equipment will be made in the Milwaukee auditorium. The keynote of many of the addresses and papers that will be presented at this meeting will be acceleration of production for the prosecution and winning of the war. One of the notable features will be the large number of interesting moving pictures showing the use and manufacture of hand grenades, the civil re-establishment of wounded and crippled Canadian soldiers, the manufacture and launching of ships at the Hog Island yard, Philadelphia, the building of concrete ships, the manufacture of steel by the triplex process, and the causes and prevention of industrial accidents.

Sailing Day Plan in the Northwest

The committee recently appointed by the regional director of Northwestern roads to introduce the sailing day plan in terminals in that region, exclusive of Chicago, is making rapid progress in its work. The plan is now in operation at Minneapolis, St. Paul, and Duluth, Minn., Superior, Wis., La Crosse, Marinette and Green Bay, Wis., Menominee, Mich., Council Bluffs, Cedar Rapids and Ottumwa, Ia., Omaha, Neb., and about 90 smaller cities. Although the work is still in its early stages the committee estimates that the saving effected by the plan up to date approximates 2,500 cars a week for the region. Attention is not only being given to the sailing day plan but also to the consolidation of merchandise over certain routes for particular destinations in order to eliminate transfers as far as possible. A careful study is also being made of the possibilities of unifying freight house facilities and reducing the number of cars used in pick-up service. The committee consists of T. W. Proctor, assistant general freight agent of the Chicago, Milwaukee & St. Paul at Chicago, chairman; W. H. Smith, agent of the Northern Pacific at Minneapolis, Minn.; J. A. Lucey, train-master of the Minneapolis, & St. Louis at Fort Dodge, Iowa, and F. W. Robinson, traffic manager of the Oregon-Washington R. R. & Navigation Co., Portland, Ore. In addition C. W. Wilkinson, assistant freight claim agent of the St. Paul at Chicago, is on the western coast at present assisting Mr. Robinson in the introduction of the plan in the Puget Sound district. Mr. Proctor, as chairman, has general supervision over all the work being done in the Northwest region, while Messrs. Smith, Lucey and Robinson, have been assigned definite sections of the region to which they will devote particular attention.

CHINESE EASTERN RAILWAY.—A delayed press despatch from Harbin, Manchuria, dated July 24, says that American engineers have been ordered to proceed from Nagasaki, Japan, to Vladivostok, to make repairs to the Chinese Eastern Railway.

THE FOURTH LIBERTY LOAN campaign will begin Saturday, September 28, and close October 19. No American doubts its success; no good American will fail to contribute to its success. The blood of our men fallen in Europe calls to us; our answer must be and will be worthy of them and our country.

LONG AIR MAIL ROUTE.—A press dispatch from Amsterdam, Holland, says that an average of 1,000 packets of mail a day are being carried by airplane between Vienna, Austria and Kiev, Russia, a distance of 750 miles. The trip is made in four stages, the intermediate stops being Cracow, Lemberg and Proskurov. The trip is said to take about 10 to 12 hours.

Traffic News

Men to help in harvest work in western Canada, arriving in Winnipeg on August 17 and 18, numbered about 2,000, mostly from Ontario. Special trains with additional harvesters were expected to arrive on the 21st, the 23rd, the 28th and the 30th.

Toronto newspapers report the completion of arrangements for bringing 3,500 carloads of wood from Algonquin Park, over the Grand Trunk Railway. According to the map, Algonquin Park is about 150 miles north of Toronto. Apparently, however, not all of the wood is to be used at Toronto.

The University of Wisconsin in co-operation with the Chicago, Milwaukee & St. Paul, the Chicago & North Western, the Chicago, St. Paul, Minneapolis & Omaha and the Minneapolis, St. Paul & Sault Ste. Marie, is operating a land clearing special train through northern Wisconsin. The demonstration tour was authorized by the Railroad Administration and the Food Administration. The train consists of seven cars equipped by the university with the assistance of the E. I. du Pont de Nemours Company, Wilmington, Del., the A. J. Kirstin Company, Escanaba, Mich., and the LaPlant-Choate Manufacturing Company, Cedar Rapids, Iowa. The special is stopping an entire day at each demonstration point where trained men demonstrate labor saving machinery, explosives and the latest methods and practices in land clearing. The tour commenced on August 15, and will continue until September 24.

The Southwestern Traffic League

The Southwestern Industrial Traffic League, composed of traffic men of Texas, Louisiana, Oklahoma and Arkansas, was organized following a recent monthly meeting of the directors of the Texas league. Through the medium of the commercial organizations represented by its members the new league proposes to look after the shipping interests of all four states. U. S. Pawkett, of San Antonio, Tex., was elected president, and F. A. Leffingwell, of Houston, Tex., secretary and treasurer.

Coal Production

The decrease in coal production which began after the record week of July 13 not only continued during the week of August 17, according to the weekly bulletin of the United States Geological Survey, but the output during that week also fell below 12,000,000 net tons, for the first time since June 22. Preliminary estimates place production, including lignite and coal made into coke, during the week ending August 17 at 11,910,000 net tons, a decrease compared with the week of August 10 of 379,000 net tons or approximately 3 per cent, but an increase over the corresponding week of 1917 of 1,597,000 net tons or 15.4 per cent. Production necessary during the balance of the summer weeks to make up the past deficit now amounts to 14,270,000 net tons, 247,500 net tons, or approximately 21 per cent in excess of the average weekly production during the coal year to date.

The average production per working day is estimated at 1,985,000 net tons, a decrease compared with the average daily summer requirements of 92,000 net tons, or 4.5 per cent, but 266,000 net tons or 15.4 per cent in excess of the average daily production during the week of August 17, 1917.

The percentage of full time output lost on account of car shortage during the week ending August 10 was 9.8, representing the fifth successive increase in that number of weeks.

Anthracite production for the week ending August 17, as reported by the Fuel Administration, amounted to 1,538,416 gross tons. This was a decline as compared with the preceding week of 51,038 tons. The average production per working day during the week amounted to 256,403 gross tons, compared with 264,909 gross tons during the corresponding week of 1917. The total output of anthracite coal since April 1 aggregates 31,678,364 gross tons, compared with 31,099,765 gross tons for the corresponding period of 1917, a gain of 578,599 gross tons.

Commission and Court News

Interstate Commerce Commission

The Division of Valuation has announced further hearings relative to the protest of the Kansas City Southern against its tentative valuation. The hearing will be held before Examiner R. H. Kendall at Kansas City, September 9.

It having developed that the time assigned for hearings in the consolidated classification case was not sufficient, the commission has made new appointments as follows: At Chicago: petroleum, October 22 and 23; rubber, October 24; furniture, October 25 and 26; packers and poultry and dairy interests beginning October 28; stove and range interests November 4; miscellaneous subjects, November 5 to 8. At Washington—on November 12, for such interests as desire to be heard.

Court News

Acquiescence in Railroad's Occupation of Land

The Alabama Supreme Court holds that where a landowner acquiesces in an occupation for the construction of a railroad, equity will preclude him from afterwards recovering the land in ejectment. In such case there remains in the owner only a right of compensation.—*Boone v. Gulf, Florida & Alabama (Ala.)* 78 So. 956. Decided May 9, 1918.

Damage to Railroad By Construction of State Highway

Action was brought by the Great Northern against the state of Washington for damages to the plaintiff's track resulting from the construction of a state highway. In blasting out a shelf for the highway, slides were caused, which obstructed the track, bent rails, damaged ties, poles and wires and delayed trains. The Washington Supreme Court holds that the railroad was entitled to recover any increased expense incurred in operating its road during the time necessarily consumed in making repairs, such as additional labor and supplies used on account of trains delayed or annulled as a result of the damages to the track.—*G. N. v. State (Wash.)* 173 Pac. 40. Decided May 10, 1918.

Deeds to Rights of Way and Free Passes

The Illinois Supreme Court holds that the fact that performance of a condition subsequent in a deed conveying a right of way, (that the grantors shall have free passage on all passenger trains) was rendered impossible of performance by the Illinois Public Utilities Law regulating fares and prohibiting discrimination, did not divert the estate. The owner was held not entitled to recover possession of the land on the refusal of the railroad company to issue any more passes. The statute is not in conflict with the provision of the federal Constitution prohibiting states from passing laws impairing obligations of contracts, in preventing the performance of the condition.—*Hite v. Cincinnati, Indianapolis & Western (Ill.)* 119 U. E. 904. Decided June 20, 1918.

Safety Appliance Acts—Defective Cars

The Circuit Court of Appeals, Eighth Circuit, holds that under the federal safety appliance act, when a car is hauled past the nearest repair point where are adequate help and materials the law is violated, unless there is a showing of a special reason for the movement. It is not a sufficient explanation that main line and foreign line cars were repaired only at the company's terminals, and not at intermediate points where repair shops for branch line cars were maintained.

Under the provision of section 4 as to hauling by chains instead of drawbars a "revenue train" is one that is moved for the purpose of carrying freight or passengers for revenue,

and cars are "commercially used" either when they are loaded, or when, though empty, they are moving to points for the purpose of receiving traffic; therefore it is a violation of the act to move chained cars in a train made up of other defective cars, which cars, however, were used for making deliveries and were set out at various points, this being particularly true where the train, though called a hospital train, was composed of many cars.—*Denver & Rio Grande, 249 Fed. 822.* Decided February 18, 1918.

Exception from Surface Water Rule

A railroad built a track to a plant at the request of the owner and according to his desires, but under objection by the railroad that no drainage could be provided for. The South Carolina Supreme Court holds that the railroad was not liable when surface water flooded the plant. The principle that no one may accumulate storm water on his land so as to throw it on his neighbor in concentrated form and force, to the neighbor's injury, cannot be successfully invoked by one who contracts with his neighbor to do something from which injury results to him as an incidental, if not necessary, consequence of the act.—*Kirkland Distributing Co. v. S. A. L. (S. Car.)*, 96 S. E., 122. Decided March 18, 1918.

Lookout—Persons Asleep on Track

In an action for the death of a person struck by the defendant's train while seated asleep or unconscious on a track infrequently used by pedestrians within an incorporated town, at 10 o'clock at night, the Kentucky Court of Appeals holds that the failure of the engineman to keep a lookout did not make it error to direct a verdict for the defendant. The duty of keeping a lookout depends, not on the fact that the injury occurred in an incorporated town, but on whether the company's track was used by the public in such large numbers with the knowledge and acquiescence of the company that the presence of persons on the track should have been anticipated. One who sits down on a railroad track and goes to sleep is a trespasser, though at a point where persons are accustomed to cross the track.—*Cornett v. L. & N. (Ky.)* 203 S. W. 1054. Decided June 14, 1918.

Safety Appliance Act—Use of Hand Brakes

The Circuit Court of Appeals, Sixth Circuit, holds that, in view of the purpose of the safety appliance act to protect brakemen by obviating the necessity of their going on the top of trains to use hand brakes, the fact that it was necessary to manipulate levers on top of trains for retainers, which were part of the power brake mechanism, does not justify an order of the railroad company requiring freight brakemen to use hand brakes on the descent of a long grade; it appearing that the railroad company directed that all trains should be brought to a full stop before commencement of the descent of the grade, at which time the levers on the retainers could be set.—*G. R. & I. v. U. S.*, 249 Fed. 650. Decided February 16, 1918.

Hours of Service Act—Operators in Joint Service

In an action against the Denver & Rio Grande to recover a penalty for violation of the hours of service act it appeared that one of its operators performed duties and was subject to the orders of the Santa Fe, whose line intersected the defendant's at that point. The Santa Fe, through an accounting between the two companies, made contribution to the operator's salary. The operator was required by the Santa Fe to remain on duty longer than allowed by the act. The Circuit Court of Appeals, Eighth Circuit, holds that the Denver & Rio Grande is liable for the penalty prescribed whether the operator be treated as a joint employee or not, for in any event that company was bound to see that the operator did not remain on duty for an excess period, and if it failed, it "permitted" the operator to perform excess service in violation of the act.—*U. S. v. D. & R. G.*, 249 Fed. 464. Decided February 23, 1918.

Equipment and Supplies

Side Bearings for the Standard Locomotives

In the issue of the *Railway Age* for June 28 it was stated that the orders for side bearings for the tenders of all the standard locomotives ordered by the Railroad Administration had been awarded to A. Stucki & Company. This order has since been changed and the "Tip-roller" side bearings made by Edwin S. Woods & Company, Chicago, have been specified instead. The awards for side bearings for the cars remain unchanged.

Locomotives

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, is in the market for a standard gage saddle tank locomotive, 35 to 40 tons.

Freight Cars

TRUMBULL STEEL COMPANY, Warren, Ohio, is inquiring for 2 all-steel, 70-ton flat cars.

THE GENERAL CHEMICAL COMPANY, New York, is inquiring for general service box cars.

J. A. DELSUR, New York City, is inquiring for 10 to 20 flat cars for export to France.

THE CUMBERLAND & MANCHESTER, Barboursville, Ky., is inquiring for one low side gondola car.

THE AMERICAN STEEL & WIRE COMPANY, Cleveland, is inquiring for 15, 50 to 70-ton steel hopper cars.

THE NORTHWEST TRADING COMPANY, Chicago, is inquiring for 4,500 20-ton box cars for export to Belgium.

THE MONONGAHELA VALLEY TRACTION COMPANY, Fairmont, W. Va., is inquiring for 4 30-ton ballast cars.

Passenger Cars

THE SOUTHERN PACIFIC, New York, is inquiring for 25 interurban cars.

Iron and Steel

THE WABASH RAILWAY has ordered 4 100-ft. turntables weighing 369 tons from the American Bridge Company.

THE MINNEAPOLIS, ST. PAUL & SAULT SAINT MARIE has ordered 4 90-ft. standard turntables weighing 208 tons from the Milwaukee Bridge Company.

THE CHESAPEAKE & OHIO has ordered 803 tons of steel for new shops at Huntington, W. Va., and Richmond, Va., from the Richmond Structural Steel & Iron Works, the Fort Pitt Bridge Works, and the Central States Bridge Company.

Signaling

THE NEW YORK CENTRAL has awarded a contract to the Federal Signal Company for the installation of an electric interlocking plant at Rochester, N. Y. The interlocking machine will consist of a 72-lever frame, having 15 levers for 14 switches and 1 derail; 14 levers for dwarf signals and 15 levers for high signals. Concrete trunking will be installed. Another contract awarded by the New York Central to the Federal Signal Company calls for rebuilding and enlarging the mechanical interlocking plant at Jersey Shore, Pa., which will include a 20-lever, style A machine and type 4 electric home signals. The Federal Signal Company has also received an order from the New York Central for a 36-lever Saxby & Farmer machine to be installed at Yost's, N. Y.

Supply Trade News

The Q. & C. Company, New York, opened an office in the Claus Spreckels building, San Francisco, Cal., on August 21. This office is in charge of Latham McMullin.

R. S. Brown, who has been with the G. M. Basford Company, New York, since its establishment, two years ago, was made vice-president of that company August 26.

F. A. Poor, president of the P. & M. Company, Chicago, has gone to Washington, D. C., to enter the service of the American Red Cross, at its national headquarters.

B. A. Epperson, who for ten years represented the Stark Rolling Mill Company, Canton, Ohio, in Indiana, Illinois and the Southern states, has joined the Central Officers Training Camp at Camp Gordon, Ga.

The Cutler-Hammer Manufacturing Company, Milwaukee, manufacturers of electric controlling devices and allied apparatus, announces the opening on September 3 of a branch office in the Union Trust Building, 15th and H streets, N. W., Washington, D. C. This office will be in charge of H. W. Knowles and C. W. Yerger.

Wilberforce Eckels, who for five years has been assistant western sales manager of the Standard Coupler Company in Chicago, has been commissioned a second lieutenant of engineers. Mr. Eckels is a graduate of Pennsylvania State College, where he took a mechanical engineering course. Owing to the fact that George A. Post, Jr., formerly western sales manager, has been for several months a captain in the ordnance corps, and now Lieutenant Eckels is also in military service, the company has closed its Chicago office.

The Federal Signal Company, Albany, N. Y., announces that approximately 20 per cent of its forces have joined some branch of military service. Among those who have entered the service are: J. F. Kelly, general superintendent at Albany, lieutenant in the engineering branch of the service, at Camp Lee, Va.; J. W. Hackett, sales engineer at New York, who has been commissioned a lieutenant in the signal corps; Alfred Renshaw, engineer of tests at Albany, who has been commissioned a captain in the engineering branch of the army, and Paul Renshaw, assistant to the president, at Albany, who is in the navy and is located at Annapolis, Md.

Marshall E. Keig, secretary and treasurer of Harry Vissering & Co., secretary and treasurer of the Okadee Company, and third vice-president of the Charles R. Long, Jr., Com-

pany, with office at Chicago, has resigned from those positions and has been given a leave of absence for the period of the war. Mr. Keig has been accepted for service in the signal corps of the army after having been rejected from the artillery, infantry, marines, railroad regiments and navy on account of defective vision. Before entering the railway supply field, Mr. Keig was employed by the Atchison, Topeka & Santa Fe. From 1904 until 1907 he was in the construction and operating departments and



Marshall E. Keig.

in the ensuing five years was in the general purchasing department at Chicago. He has been with the supply companies which he now leaves ever since severing his connection with the Santa Fe.

ANNUAL REPORT

Brooklyn Rapid Transit System—For Year Ending June 30, 1918

85 CUNTON STREET,
BROOKLYN, N. Y., August 12, 1918.

The summary of financial operations for the year ending June 30, 1918, with comparison for the preceding fiscal year, is as follows:

COMPARATIVE STATEMENT OF THE RESULTS OF THE OPERATIONS OF THE BROOKLYN RAPID TRANSIT SYSTEM FOR YEARS ENDED JUNE 30, 1918 AND 1917

	1918	1917	Increase+ Decrease—
Gross Earnings from Operation.....	\$30,506,479.21	\$29,504,018.96	+\$1,002,478.25
Operating Expenses	18,111,804.86	16,741,417.19	+ 1,370,387.67
Net Earnings from Operation.....	12,394,602.35	12,762,601.77	— 367,909.42
Income from Other Sources.....	407,729.16	427,814.75	— 20,085.59
Total Income	12,802,331.51	13,190,416.52	— 387,995.01
Less Taxes and Fixed Charges.....	8,690,367.39	7,995,178.23	+ 695,189.16
Net Income	4,112,054.12	5,195,238.29	— 1,083,184.17
Surplus at Beginning of Year.....	11,967,272.96	11,562,654.04	+ 404,618.92
Total	16,079,327.08	16,757,892.33	— 678,565.25
Other Credits to Surplus during year	14,573.21	22,603.07	— 8,029.86
Total	16,093,900.29	16,780,495.40	— 686,595.11
Of this amount there has been appropriated:			
Accounts written off.....	*260.35	5,515.97	— 5,776.32
Adjustment of Expenses prior years	3,892.77	*1,088.36	+ 4,981.13
Supercession and Depreciation	935,761.43	289,022.50	+ 646,738.93
Loss from operation of Employees' Restaurants	8,362.24	5,631.86	+ 2,730.38
Adjustment of Special Franchise and Real Estate Taxes		135.37	— 135.37
Contingent Reserve	83,147.35		+ 83,147.35
Direct War Expense	16,755.96		+ 16,755.96
Allowance to Employees in Military Service		17,345.81	— 17,345.81
Christmas Gratuities to Employees		29,341.29	— 29,341.29
Dividend on B. R. T. Co.'s Stock outstanding	2,233,659.00	4,467,318.00	— 2,233,659.00
Total Appropriations	3,281,318.40	4,913,222.44	— 1,531,904.04
Balance Sheet Surplus.....	\$12,812,581.89	\$11,967,272.96	+ \$845,308.93

It is conceded that adequate and efficient street railroad operation is vitally essential to a vigorous prosecution of the war. No argument is needed to prove that a serious impairment of service would, in the large cities, cripple the activities related to war, or that a radical curtailment of service might almost paralyze war preparations.

Yet these results are already partial realities, or imminent, because

Government at Washington

under war necessity, has directly or indirectly
 Drafted tens of thousands of experienced street railroad men;
 Diverted additional thousands to war industries;
 Established competitive standards of wages which street railroads cannot meet with existing revenue;
 Doubled the price of coal, and made it difficult to get at any price;
 Increased the price of every commodity street railroads buy;
 Absorbed or withheld materials essential to street railroad construction and maintenance;
 Commandeered the supply of money;
 Increased the rates of interest; and
 Imposed millions of new taxes; while

Government at home

has in most cases
 Refused, or seems reluctant to grant, even the partial relief which it could give, namely, the right to increase fares, and the suspension of expensive and onerous exactions.

There can be but one result from a continuance of these opposite influences. Only the strongest companies can long furnish transportation at less than cost, and there are few of such companies. Whether the real finan-

cial losses, far reaching in their affliction, or merely impairment of facilities and service, or both, the adverse effects will be a public injury and a government handicap in our national struggle.

Street railroad companies and their investors will gladly bear their part of the burden of this war. Much sacrifice they must necessarily make, and of this they do not complain. Their problem is no longer one of reduced profits but of excessive losses. It has become with some a question even of preservation of corporate existence, and with all it is a question of continued ability to serve. In any aspect of the situation grave public interest is involved. If local transportation is not an essential industry, then it must accept conditions and reconcile itself to their consequences. If it be an essential undertaking, not only to the ordinary life of communities but to the extraordinary and righteous task to which our country has so splendidly devoted its energies and resources, then street railroad systems must not merely be permitted to live but they must be fully empowered to serve.

They cannot serve without men, materials and money.

Applied to our particular situation the figures presented above, covering the operations of the fiscal year, by no means reflect the measure of burdens to which our system will be subjected during the succeeding year. The renewal of our short term notes for subway financing will call for \$1,154,700 additional interest; our coal will cost at least \$1,000,000 more; our wages will increase much more than \$1,000,000; nobody knows how much larger our taxes will be; and our other costs will correspondingly reflect the higher standards of prices and the increasing difficulties of operation. Moreover, the delays on the part of the city in furnishing for operation the new rapid transit lines which it is constructing will postpone still further the larger volume of normal revenue which we should now be enjoying, and will, unfortunately, prolong the discomforts of existing means of transportation.

Our system has been conservatively and honestly financed and its fixed charges have been comparatively low because of this fact and because so large a part of its capital funds is represented by stock instead of bonds. This stock is now without dividends, and as a condition of financing the renewal of its \$57,735,000 of notes maturing July 1st last the directors were obliged to agree not to pay any dividends in cash during the life of the new notes. To the extent that surplus earnings are available they must be diverted temporarily to pay for improvements now under way or contracted for.

We need more revenue, therefore, not for dividends—just as such an appropriation would be—but for bare necessities, made abnormally severe by conditions for which we are not responsible. For many years we have charged lower fares than our franchisees permit. We can not continue so low a schedule, either in justice to our companies or to our patrons. The legal rates, however, if applied strictly, would impose undesirable hardships upon some localities at the expense of others, and we have requested, in lieu of them during these trying times, the right to charge a generally uniform rate, higher than we are now charging, and while higher in some cases yet lower in many other cases than we have the right to charge. In this increase of fare the City, as a partner in the results of rapid transit operation, has more to gain for the relief of its taxpayers than have we. Nearly half our patrons are now being carried on rapid transit lines, built with public and private capital, and of these it may be said, as well as of those carried by the surface lines, that they are receiving their transportation for less than its cost. Certainly there is neither justice nor wisdom in such a situation.

RENEWAL OF MATURING NOTE ISSUE.

It became evident months before the maturity, on July 1st last, of the Company's \$57,735,000 of Six Year 5 per cent Gold Notes (issued for rapid transit purposes) that with the prevailing financial conditions caused by the war it would be impossible to pay off those notes with the proceeds of the sale of long term bonds, or to renew them except with the co-operation of the Federal Government and at a considerably higher rate of interest. The War Finance Corporation, created by Act of Congress, furnished the medium for Government assistance, and negotiations with the Board of Directors of that Corporation and with the bankers who purchased the original issue of notes resulted in an offer to noteholders of the following options:

A—To accept for their holdings 30 per cent in cash and 70 per cent in new Three Year Seven Per Cent Secured Gold Notes.

B—One hundred per cent of their holdings in an equal face amount of new Three Year Seven Per Cent Secured Gold Notes.

The money necessary to enable the company to make partial payment upon the maturing notes is to be advanced by the War Finance Corporation to Brooklyn Rapid Transit Co., and for such advance the company will deliver to the War Finance Corporation its new Three Year Seven Per Cent Secured Gold Notes (of the same issue as are those delivered to assenting note-holders) to the amount of the advance.

The response from note-holders has been prompt and favorable. Up to August 12th holders of 97.39 per cent of the maturing notes had accepted the plan of renewal—holders of \$54,262,009 of notes choosing Option A and holders of \$1,967,000 Option B.

With the approval of the War Finance Corporation the plan was declared operative on July 16, 1918.

ties attached to the new note issue require the pledge of additional collateral (referred to below) and an agreement that while the new notes are outstanding

"The Company will pay no dividends upon its capital stock in cash or in any other form, unless such security or scrip shall by its terms rank subordinate to the rights of the holders of such notes as against any of the assets of the Company."

The new mortgage will be limited to \$57,735,000 face value, under an indenture to be Central Union Trust Company of New York, as Trustee, dated July 1, 1919. The notes will mature July 1, 1921, but may be redeemed, as to all or part, at the option of the Company on any interest date on thirty days' previous notice at a premium of one-half per cent for each six months which the notes may still have to run at the date of redemption. The new issue of notes will be secured by the collateral now deposited with the Trustees to secure the retired notes, to wit:

\$57,735,000 New York Municipal Railway Corporation's First Mortgage 5 per cent Sinking Fund Gold Bonds, and
\$10,000,000 Brooklyn Rapid Transit Co.'s Refunding Mortgage 4 per cent Gold Bonds.

and additionally by \$29,000,000 face amount of Brooklyn Rapid Transit Company Consolidated and Refunding Mortgage Ten Year 6 per cent Gold Bonds (for a description of which see below). It is expected that the Bonds (for a description of which see below) will be exchanged for the \$10,000,000 Brooklyn Rapid Transit Refunding Mortgage 4 per cent Gold Bonds will subsequently be exchanged for a similar face amount of Consolidated and Refunding Mortgage Ten Year 6 per cent Gold Bonds—making total amount of such latter bonds deposited as collateral \$39,000,000.

The indenture further provides that the company will cause to be pledged thereunder any additional Consolidated and Refunding Mortgage Gold Bonds to an amount equal at face value to expenditures made by the Company out of its current surplus earnings for capital purposes and for which the Company may be or become entitled to draw bonds from the Trustee, as well as any New York Municipal Railway Corporation First Mortgage 5 per cent Sinking Fund Gold Bonds acquired by the Company with such current surplus earnings.

COMPANY'S NEW MORTGAGE.

Pursuant to authority conferred by stockholders at the special meeting held May 23, 1918, the Company has since the close of the fiscal year ended and delivered, to the Central Union Trust Company of New York, as Trustee, its Consolidated and Refunding Mortgage, dated June 1, 1918. As previously explained to stockholders this mortgage is intended to take the place of the Refunding Mortgage of July 1, 1902, under which no bonds bearing interest in excess of 4 per cent could be issued. The new mortgage is for the same maximum amount, \$150,000,000, but is elastic in its provisions in respect to rate of interest, convertibility into stock, maturities and redemption privileges these being determinable by the board of directors at the time of issue of any series of bonds. The bonds of any series may, by action of the board of directors, be exchanged, after issue date and before sale, for bonds of another series, bearing a different rate of interest, of different maturity and with different redemption clauses. Likewise, any bonds which may have been disposed of and which contain redemption privilege may by redemption be refunded into other bonds of the same mortgage bearing a lower rate of interest.

Thus the Company is provided with a mortgage under which bonds may be issued as capital expenditures are made and occasion requires, and disposed of from time to time according to the varying conditions of market, and under which bonds sold in times of high interest rates may be able to be replaced later with bonds carrying lower interest. The weakness of the old mortgage was in its limitation of the interest rate to 4 per cent, and as a result the Company has received from the Trustee for capital expenditures made \$29,000,000 of Refunding 4 per cent bonds, which it has been unable to sell except at considerable discount because there has been for many years no market for 4 per cent bonds at prices approaching par, and which therefore it has not sold.

It is expected that in due time these treasury 4 per cent bonds will be exchanged for bonds issued under the new mortgage and bearing a higher rate of interest.

Of the \$39,000,000 Ten-year Six Per Cent Bonds to be issued under the new mortgage and deposited as collateral to the Company's Three-Year Seven Per Cent Secured Gold Notes, \$29,000,000 will be returned to the Trustee when no longer needed for that purpose. The remaining \$10,000,000 will, when released, be returned to the Company and may, before sale, be exchanged, if thought desirable, for bonds of later maturity and bearing a lower rate of interest.

The Refunding Mortgage of July 1, 1902, is now closed and no more bonds may be issued under its provisions. All bonds heretofore issued under that mortgage and now outstanding will, as they are exchanged or acquired, be deposited with the Trustee of the new Consolidated and Refunding Mortgage as further protection to the holders of the latter mortgage. The amount of Refunding Mortgage 4 per cent bonds now outstanding is \$27,621,000, of which \$24,182,000 are in the possession of companies of the Brooklyn Rapid Transit System, and \$3,439,000 are in the hands of the Public.

The bonds issuable under the new Consolidated and Refunding Mortgage of June 1, 1918, may be used as follows:

\$7,000,000	for acquiring and retiring a like amount of bonds issued under the B. R. T. Mortgage of October 1, 1895.
27,621,000	for acquiring and retiring a like amount of First Refunding Mortgage Gold Bonds issued under the B. R. T. Mortgage of July 1, 1902.
\$3,033,000	for acquiring or retiring bonds of constituent companies.
29,619,000	as collateral for loans (to be returned to the Trustee when no longer required for such purpose, but reissuable for the purposes for which remaining bonds may be issued under Section 6 of Article 2 of the Mortgage).
1,350,000	to reimburse the company for the cost of \$625,000 Coney Island and Brooklyn Railroad Co. Consolidated Mortgage bonds, \$650,000 Sea Beach Railway Co. Consolidated

Mortgage bonds, and \$200,000 Brooklyn City Railroad Co. 1st and Refunding Mortgage Bonds.

31,377,000 for new properties, additions and improvements.

Total, \$150,000,000

RAPID TRANSIT PROGRESS UNDER CITY CONTRACTS.

Two of the tracks in that portion of the Broadway Subway between Canal Street and Union Square, together with the connecting tracks over the Manhattan Bridge and through the Canal Street Subway, were placed in operation on September 4, 1917, and on January 5, 1918, operation was begun on all four tracks between Rector Street and Times Square. The result of this operation has been satisfactory in respect to additional revenue, but unsatisfactory in respect to our ability to care properly for the traffic offered. This latter result is due partly to the incomplete stations and inadequate switching facilities as the subway was turned over to us, but chiefly to the great volume of transfer traffic from the Williamsburg Bridge Elevated lines on account of passengers desiring to take advantage of the longer ride in Manhattan without the payment of additional fare. This condition has brought to the Broadway Subway through the single Canal Street gateway a volume of traffic beyond the proper capacity of such gateway—resulting in tremendous congestion, considerable confusion and much discomfort, besides unduly crowding the cars operated in the Broadway Subway. The Dual System plans do not contemplate any such concentration of traffic. They require the construction by the city of:

- 1—The 14th Street-Eastern Subway, providing a direct approach to Manhattan for traffic originating in the northern and eastern sections of our Brooklyn and adjacent Queens territory;
- 2—The Montague Street-East River Tunnel, affording a direct connection from the southerly and Flatbush sections of Brooklyn with the Broadway Subway at the Battery;
- 3—An extension of the Centre Street Loop through Nassau and Broad Streets, Manhattan, to the Battery (thus relieving the Broadway Subway south of Canal Street of southbound Brooklyn transfer passengers reaching Manhattan via the Williamsburg Bridge, and furnishing, with the Montague Street tunnel, a convenient downtown loop in Manhattan for our Brooklyn patrons);
- 4—A direct tunnel connection between the Broadway Subway and Elevated lines in Queens.

Until these connecting lines are in operation our inability to care properly for the business in the Broadway Subway or on the existing tributary lines will continue. It now seems reasonable to expect that the Queens Borough Tunnel and the Montague Street Tunnel will be ready for operation early in 1919, but the completion of the 14th Street-Eastern Line is still remote, and no contract has yet been let for the extension of the Centre Street Loop Subway southerly through Nassau and Broad Streets.

Operation over the city's new West End elevated line was extended to Coney Island on July 21, 1917.

New steel cars were placed in operation on the Broadway Elevated, Brooklyn, on January 9, 1918.

The Jamaica Avenue Elevated Line was substantially completed and operation thereover was extended from Richmond Hill to Jamaica on July 2, 1918.

The new yard at East 105th Street, Canarsie Line, was placed in operation October 26, 1917.

The elevated Culver Line (under construction by the city) will probably be open for operation as far south as Avenue X, within the present fiscal year.

The connection of the Brighton Beach Line with the city subway will not be available until the connecting subways are completed, and this will probably not be until the spring of 1919.

The remaining 100 subway cars, to complete the total of 600 originally contemplated, were contracted for during the fiscal year.

The Coney Island Terminal work, Myrtle Avenue third tracking and the East New York construction have been delayed owing to prevailing labor and material conditions, but will probably be substantially completed during the present calendar year.

In connection with the equipment of rapid transit lines a temporary substation at Canal Street and Broadway has been completely installed and placed in operation (the capacity of station being 8,000 K.W.); equipment has been installed in the new South Sixth Street Substation and placed in operation (the capacity being 12,000 K.W.); the new Ridgewood Substation building was completed and equipment is now being installed therein; and the electric work on rapid transit lines has progressed satisfactorily.

Contracts remaining to be let to complete the equipment of construction program, as required of the New York Municipal Railway Corporation under Contract No. 4 and the Related Certificates, consist substantially of the following:

Completion of Fulton Street third-tracking from Nostrand Avenue to Brooklyn Bridge (except a portion of the steel which has been ordered)—all of which is awaiting decision of the Public Service Commission;

Line equipment and signals on the 14th Street-Eastern Line, Queens Borough Tunnel, Montague Street Tunnel and Brighton Beach Connection (awaiting further progress in construction by the city);

The connection between the Culver Line and Coney Island Terminal; Reconstruction of Broadway Elevated Line between East New York and Jamaica Avenue;

Increase in Yard and Shop facilities at 36th Street;

An additional Sub-station.

RESULTS OF OPERATIONS UNDER JOINT ARRANGEMENT WITH CITY.

The results of operations of rapid transit lines under contract with the city continue to be satisfactory, considering that only a portion of the Broadway Subway has been completed, and that as yet it has no through

track connections with Brooklyn and Queens, except in the Canal Street Subway. For the fiscal year the passenger revenue from the rapid transit lines increased \$1,584,970; operating expenses, maintenance, depreciation, taxes and rentals increased \$1,284,124, and net revenue (applicable to interest on new investment) increased \$400,000.

Since the beginning of the pooling arrangement with the city on August 4, 1913, the operating company has earned in full its first preferential of \$3,500,000 per annum, and \$2,104,296 towards its second preferential, leaving \$1,443,027 to be made up out of future earnings.

The table of joint operation is as follows:

RESULT OF OPERATIONS OF NEW YORK CONSOLIDATED RAILROAD COMPANY, LESSEE, UNDER THE PROVISIONS OF CONTRACT NO. 4, DATED MARCH 19, 1913, BETWEEN THE NEW YORK MUNICIPAL RAILWAY CORPORATION AND THE CITY OF NEW YORK

REVENUE:	Year ending June 30, 1918	For the period August 4, 1913, to June 30, 1918
Passenger Revenue	\$12,685,497.35	\$49,513,168.93
Chartered Cars and Misc. Transp. Revenue	680.35	4,766.07
Advertising	167,665.58	496,541.35
Other Car and Station Privileges	145,242.03	374,132.49
Rent of Buildings and Other Property	20,287.97	120,663.53
Rent of Tracks and Terminals	10,428.99	142,564.80
Miscellaneous	27,603.82	71,918.59
Total	\$13,057,406.09	\$50,723,755.76
DEDUCTIONS:		
Rentals	\$67,400.00	\$374,206.66
Taxes	777,325.20	2,993,139.37
Operating Expenses, exclusive of Maintenance	5,497,760.12	20,472,959.27
Maintenance Fund	1,563,576.27	6,079,237.55
Depreciation Fund	390,894.07	1,519,809.34
Company's First Preferential	3,500,000.00	17,180,107.51
Total	\$11,796,955.66	\$48,619,459.70
Net over First Preferential	\$1,260,450.43	\$2,104,296.06
Company's Second Preferential as per Engineer's Determination of Cost	\$981,726.47	\$2,723,130.70
Reserve in respect of lines in operation—anticipating Chief Engineer's Determination of Cost	684,474.93	824,193.11
Total Second Preferential	\$1,666,201.40	\$3,547,323.81
DEFICIT* IN COMPANY'S PREFERENTIAL:	\$405,750.97	\$1,443,027.75
INTEREST PAID BY CITY ON ITS COST OF CONSTRUCTION OF PROPERTY PLACED IN OPERATION PLUS SINKING FUND AT RATE OF 1 PER CENT PER ANNUM	\$1,428,609.98	\$4,985,854.37
TOTAL DEFICIT	\$1,834,360.95	\$6,428,882.12

* To be made good from future net income before payment of City's interest and Sinking Fund charges.

† Deficit in City's charges during temporary operation to be added to the Cost of Construction of City Owned Lines, but after "initial" operation is chargeable to the Tax Budget.

SURFACE LINE RECEIPTS.

The passenger earnings on the surface lines fell off during the year, as compared with the preceding year, \$565,851. While part of this decrease may be attributed to the competition of new rapid transit lines, any influence in this direction should have been overcome by the normal increase in traffic. It is quite evident from an analysis of the receipts that the principal cause of diminishing revenue was the inability, on account of the shortage of men, to operate the full complement of cars. The reduction in service would have been greater had it not been for the employment of women as conductors. Moreover, the great number of men leaving the service of the system on account of the war lessened materially the employment of many new men whose qualifications for their duties have been below the standard previously set, and either in fares not collected, or, if collected, not accounted for, or in transfer funds, the operating companies have not received the revenue to which they were entitled. This evil can be overcome to the extent possible under prevailing conditions by attractive better men to our service through the offering of higher wages, by more effective methods of inspection (such as lately have been applied), and (with official

approval) by more stringent regulations covering the issue and use of transfers.

ADDITIONS, IMPROVEMENTS AND MAINTENANCE.

The net capital expenditures for additions and improvements aggregated for the fiscal year \$8,669,393.78, of which \$8,518,566.05 was expended by the New York Municipal Railway Corporation on rapid transit lines pursuant to the provisions of its contract with the city, the total of such expenditures to June 30, 1918, being \$58,499,877.37, divided, subject to redistribution as to certain classifications, as follows:

On account of Contribution to City Owned Lines	\$11,160,501.82
On account of Equipment of City Owned Lines	11,245,213.43
On account of Additions, Extensions and Improvement of Existing Railroads	36,094,162.12

Less than half of this expenditure represented property in operation during the year.

The expenditures for maintenance of way and structure and of equipment aggregated \$5,113,323.97—an increase of \$111,686.64 over the preceding year.

WOMEN IN STREET RAILROAD WORK.

In common with other railroad systems our companies have found it necessary to employ large numbers of women to do work formerly undertaken by men. While some mistakes have been made in selection, such as would naturally occur at the inception of any experiment so radical, it must be said for the great majority of women who have sought these new occupations that they have shown themselves to be efficient, faithful and above reproach. There are approximately 57% women now employed as guards on the subway and elevated trains; 252 as conductors on surface lines; 120 in light shop work, and 173 as car cleaners and porters. For a great many years women have been employed as ticket agents, and we have 1,150 now acting in that capacity. The employment of women has presented some new problems, particularly with reference to suitable accommodations at depots and shops, and in respect to medical and moral supervision, and these problems, requiring necessarily some experience and time, are being satisfactorily solved. In no class of work in which women are engaged do the duties require unusual physical effort. There is no discrimination against them in the matter of compensation, and the wages paid are considerably in excess of what similar women have heretofore received or been able to get in their previous occupations. To many of them such occupation has been a great boon, for it enables them to support themselves and their families, while husbands or other family wage earners are fighting for our country across the Atlantic. Had it not been for the readiness of women to fill these places street railroad service would have been much more seriously handicapped during the past year.

INCREASE IN EMPLOYEES' WAGES.

At various times during the year it has been necessary, in order to retain the services of experienced employees and to meet prevailing conditions, to increase wages in the various departments of the system. The increase involving the greatest amount of money was made after the close of the fiscal year (effective August 2, 1918) to the employees of the transportation departments, and will cost in excess of a million dollars a year. Until normal conditions were upset by the war a million dollars in its employ a larger proportion of men tried by years of experience than most railroad systems. The men have been generally satisfied with the conditions of employment, have continuously shared the prosperity of the company, and the opportunity of steady jobs, promotion from time to time based upon merit and fair treatment, have given us an unusually loyal and capable lot of men. Street railroads cannot expect to compete in wage payments with the temporary conditions attaching to war industries, but they can expect, by offering permanency of occupation and opportunity for advancement, to hold and invite the employment of those who are thinking further ahead for their welfare than the period of this war. In granting the increase the directors felt it to be their duty both to the public and to the property to make every effort possible to preserve the valuable asset which both the company and the public possess in the large proportion of tried men in its service. They also believe that the public is fair-minded enough to appreciate that in order to pay these higher rates of wages the company must have more revenue and while they would have preferred to postpone a further increase in wages until a higher average unit of fare should be established, they felt that they could rely on the assistance of both public officials and patrons in maintaining this higher standard of wage by assenting to a higher rate of fare.

RESERVE ACCOUNTS.

Reserve accounts have been increased during the year as follows:

Fire Insurance	\$62,581.14
Amortization of Capital, etc.	786,293.56
Employer's Liability	55,952.35

As against these increases the following charges have been made:

Retired Property Adjustments, etc., to the extent of \$120,549.99	
And Payments on account of Employer's Liability,	
in the sum of	16,320.95
leaving a net increase in Reserves for the year of ..	\$767,956.11

Respectfully submitted,

T. S. WILLIAMS, President.

Financial and Construction

Railway Financial News

ATCHISON, TOPEKA & SANTA FE.—See editorial comments elsewhere in this issue.

BROOKLYN RAPID TRANSIT.—See editorial comments elsewhere in this issue.

DENVER & SALT LAKE.—The Railroad Administration has agreed to take over the operation of this road and to pay the standard basis of compensation. One-half of the cost of increased wages since January 1 is to be met by the government and one-half by the railroad.

LEHIGH VALLEY.—The First National Bank and Drexel & Co., of Philadelphia, have purchased \$15,000,000 ten-year 6 per cent collateral trust bonds of the Lehigh Valley. This is the first financing done by this road since April, 1916, when Drexel & Co. bought an issue of \$10,697,000 of its 4½ per cent general consolidated mortgage bonds.

MISSOURI, KANSAS & TEXAS.—Receiver's certificates to the amount of \$2,241,000 matured on August 15, but Receiver C. E. Schaff was able only to meet the interest and was obliged to ask holders of the certificates for an extension of six months. The receiver's certificates which were due are the balance of an issue of \$3,000,000 bearing interest at the rate of 5 per cent, and having a maturity of 18 months. At the office of the M. K. & T. it was said that a large majority of the holders of receiver's certificates had agreed to the six months' extension at 6 per cent. The funds required to meet the interest payment were the proceeds of the rental payments made by the Federal Railroad Administration. A month ago there matured \$34,000 of 5 per cent equipment trust certificates of the Missouri, Kansas & Texas of Texas. The receiver of the road did not have funds at the time, but no permanent default was entered inasmuch as a belated payment by the Railroad Administration made it possible for the road to meet its obligations on August 8.

RHODE ISLAND COMPANY.—See New York, New Haven & Hartford.

Railway Construction

CENTRAL NEW ENGLAND.—This company is building at Maybrook, N. Y., a ten-stall brick enginehouse to cost about \$85,000. The contractor is the H. Wales Lines Company of Meriden, Conn.

CHICAGO, BURLINGTON & QUINCY.—Under-passes are now under construction at Forty-eighth and Sixtieth avenues, Chicago. At the former point a single track, 50-ft. steel girder span is being erected by the Wells Brothers Construction Company, Chicago. The Sixtieth avenue viaduct, a double track, 80-ft. reinforced concrete structure, is being constructed by the Stresenreuter-Cotton Company, Chicago.

ELGIN, JOLIET & EASTERN.—This company has awarded a contract to the Wm. Graver Tank Works, Chicago, for the installation of Graver type "K" water treating plants with quartz filters and with a capacity of 15,000 gals. per hour, at Spaulding, Ill., and Frankfort.

THE PENNSYLVANIA EASTERN LINES has awarded a contract to the Roberts & Schaefer Company, Chicago, for the construction of a 1,000-ton reinforced concrete automatic electric locomotive coaling plant and an R & S gravity sand plant at Youngwood, Pa.; also a similar plant of 300-ton capacity at Perryville, Md.

ACCIDENTS TO WORKMEN in the use of grinding wheels and while working on scaffolds are the subjects of the two latest "Safe Practices" pamphlets of the National Safety Council.

Railway Officers

Railroad Administration

Regional

H. R. Safford, chief engineer of the Grand Trunk, has been appointed engineering assistant, under the United States Railroad Administration, Central Western Region, with office at Chicago.

Frank J. Whiteman, superintendent of safety of the St. Louis-San Francisco, has resigned and has been appointed supervisor of safety for the Southwestern Region, with headquarters at St. Louis.

E. C. Keenan, general superintendent of telegraph of the New York Central Lines, has been appointed general superintendent of telegraph and telephone of the Eastern Region, with office at New York City.

E. A. Chenery, superintendent of telegraph of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed superintendent of telegraph for all lines under federal control in the Southwestern region, effective August 22.

H. E. Mack, manager of mail traffic for the Missouri Pacific, the International & Great Northern, the St. Louis-Southwestern and the St. Louis-Southwestern of Texas, with headquarters at St. Louis, Mo., has been appointed general supervisor of mail traffic for all lines under federal control in the Southwestern region, effective August 22.

T. T. Maxey, advertising agent of the Chicago, Burlington & Quincy for the past eight years, with headquarters at Chicago, has been appointed representative of the Central Western region on the Bureau of Suggestions, Complaints and Public Relations, of the Railroad Administration, which is now in the process of organization. Mr. Maxey's new headquarters will be in Washington, D. C.

Federal and General Managers

A. DeBernardi, general manager of the Kansas City, Mexico & Orient, has been appointed general manager, under the Federal Administration, with office at Wichita, Kan.

H. S. Garrett, second vice-president and general attorney of the Kansas City, Mexico & Orient Railway of Texas, has been appointed general attorney under the Federal Administration, with office at San Angelo, Texas.

D. F. Kirkland, general manager of the Georgia & Florida, has been appointed terminal manager at Atlanta, Ga., with authority over the terminals of all lines (except the Atlanta Terminal Company) effective September 1.

B. R. Pollock, federal manager of the Boston & Maine, the Montpelier & Wells River, the Barre & Chelsea and the St. Johnsbury & Lake Champlain, announces that beginning August 22, all general officers of the Boston & Maine will have their authority extended over the three smaller roads.

Neal S. Doran, auditor of the Kansas City, Mexico & Orient, with office at Kansas City, Mo., has been appointed auditor under the Federal Administration, with office at Wichita, Kan. **E. H. Rowley** has been appointed acting federal treasurer of the same road, with office at Wichita, Kan.

E. T. Lamb, federal manager of the Atlanta, Birmingham & Atlantic, the Atlanta & West Point, the Western Railway of Alabama, the Charleston & Western Carolina and the Frisco lines east of the Mississippi river, with headquarters at Atlanta, Ga., has been appointed federal manager also of the Atlanta Terminal Company.

J. A. Edson, federal manager of the Kansas City Southern and other lines, has had his authority extended over the Kansas City, Mexico & Orient, and announces that **J. F. Holden**, traffic manager; **J. M. Weir**, chief engineer, and **W. S.**

Atkinson, purchasing agent, have also had their authority similarly extended, with headquarters at Kansas City, Mo.

Operating

C. M. Scott, superintendent of the Phoenix division of the Arizona Eastern, at Phoenix, Ariz., has been appointed general manager, with office at Tucson, Ariz.

E. B. McClure, division superintendent of the Chicago & North Western, at Sioux City, Ia., has been appointed terminal manager, in charge of operation of the Sioux City Terminals.

J. J. Corcoran, superintendent on the Pere Marquette, at Detroit, has been appointed general superintendent of the Grand Trunk, Western Lines, with headquarters at Chicago, effective August 26.

T. J. Foley, vice-president of the Illinois Central at Chicago, has been appointed general manager. **A. E. Clift**, general manager at Chicago, has been appointed assistant general manager with the same headquarters, effective August 20.

J. J. Mantell, general superintendent of the Erie, with office at New York, has been appointed terminal manager in charge of all railroad terminals, on the west side of the harbor from Greenville (Pennsylvania terminal) on the south to Edgewater (New York, Susquehanna & Western) on the north.

W. S. Martin, vice-president of the Memphis Union Station Company, with office at Memphis, Tenn., has been appointed general superintendent for the Arkansas & Memphis Railroad Bridge and Terminal, the Memphis Union Station and the Union Railroad of Memphis, with authority over all departments and reporting to the regional director.

E. L. Mackenroth has been appointed assistant superintendent of telegraph of the Northern Pacific, at Tacoma, Wash., succeeding **E. E. Dildine**, promoted, effective August 1. **J. F. Coleman** has been appointed acting assistant to the general superintendent of the western district at Tacoma, Wash., succeeding **L. F. Newton**, who has been granted a leave of absence to enter the service of the United States Railroad Administration.

Joseph C. Peters, whose appointment as superintendent of the Philadelphia division of the Philadelphia & Reading, was noticed in the *Railway Age* of August 2, has been in the service of the Reading 38 years, having begun as a messenger at Philadelphia in November, 1880. He became a telegraph operator in 1881, a signalman in 1885 and was promoted to yardmaster at Wayne Junction in October, 1887. After successive promotions in this service he became train dispatcher in March 1890, and on January 1, 1902, he was promoted to trainmaster at Philadelphia. This position he held until his appointment as superintendent on June 1, last.

E. E. Lillie, superintendent of the Spokane & Inland Empire, at Spokane, Wash., has been appointed assistant general manager of the Spokane, Portland & Seattle, the Oregon Trunk and the Oregon Electric, with headquarters at Portland, Oregon. Mr. Lillie entered the railroad service on the Great Northern in 1888 and was continuously with that company until 1907, as operator, dispatcher, chief dispatcher and assistant superintendent, except for a period of one year, between 1902 and 1903, when he went to the Choctaw, Oklahoma & Gulf, now a part of the Chicago, Rock Island & Pacific, as trainmaster at Little Rock, Ark. From 1908 to 1911, he was superintendent of car service and telegraph of the Spokane, Portland & Seattle, at Portland, Ore., and in 1911, he was appointed superintendent of the Spokane & Inland Empire, which position he held until his appointment as assistant general manager, as mentioned above.

Financial, Legal and Accounting

F. C. Marshall, treasurer of the Duluth & Iron Range, has been appointed acting federal treasurer, with office at Duluth, Minn.

Joseph Seifert, assistant auditor of the Duluth, Missabe & Northern, has been appointed federal auditor, with office at Duluth, Minn.

J. W. Kempton, second assistant treasurer of the Duluth,

Missabe & Northern, has been appointed acting federal treasurer, with office at Duluth, Minn.

J. A. Quinn has been appointed auditor of the St. Joseph & Grand Island, with headquarters at St. Joseph, Mo., succeeding **F. W. Meyer**, transferred.

G. H. Steinberg, treasurer of the Terminal Railroad Association of St. Louis, has also been appointed acting federal treasurer of the Alton & Southern, the St. Louis & O'Fallon, the St. Louis National Stock Yards, the East St. Louis National Stock Yards, the St. Louis & Belleville Electric and the St. Louis, Troy & Eastern, effective August 22.

W. S. Horton, general attorney on the Illinois Central, with headquarters at Chicago, has been appointed general solicitor with the same headquarters. **W. D. Beymer**, controller, with headquarters at Chicago, has been appointed federal auditor with the same headquarters. **O. F. Nau**, local treasurer, at Chicago, has been appointed acting federal treasurer with the same headquarters, effective August 20.

Harry D. Foster, whose appointment as general auditor of the Chicago, Burlington & Quincy, and the Quincy, Omaha & Kansas City, with headquarters at Chicago, succeeding **C. I. Sturgis**, was announced in the *Railway Age* of August 16, was born at Downer's Grove, Ill., on October 24, 1866. Mr. Foster began railway work with the Chicago, Burlington & Quincy, on June 8, 1882, and has since been employed continuously in the auditing department of that system. From July 2, 1892, to January 1, 1896, he was ticket auditor on the lines in Missouri. On the latter date he was promoted to auditor of freight and ticket accounts of the same lines at St. Joseph, Mo., where he remained for the next seven years, when he became auditor of expenditures of the lines east of the Missouri river, with headquarters at Chicago. From May 7, 1906, to March 1, 1910, he was assistant auditor of the lines west of the Missouri river, with headquarters at Omaha, Neb. On the latter date he was promoted to assistant general auditor of the system at Chicago, which position he held until his appointment as general auditor under the United States Railroad Administration.

Traffic

G. F. Stump has been appointed assistant general freight agent of the Long Island Railroad, with office at New York City.

C. P. Morse has been appointed a member of the committee of freight traffic control, Ohio River Gateways, with headquarters at Cincinnati, in place of **George Krause**, transferred.

F. B. Bowes, vice-president in charge of traffic on the Illinois Central, with headquarters at Chicago, has been appointed traffic manager, with the same headquarters, effective August 20.

C. W. Kieswetter, assistant general freight agent of the Duluth, Missabe & Northern, has been appointed general freight and passenger agent in place of **J. B. Hanson**, with office at Duluth, Minn.

T. Thompson, secretary of the Western Passenger Association, which recently went out of existence, has been appointed secretary of the Western Passenger Traffic Committee, with headquarters at Chicago.

Engineering and Rolling Stock

W. J. Tapp has been appointed chief supervisor of the Denver & Rio Grande, with headquarters at Denver, Colo., effective August 19.

R. B. Shepard, Jr., office engineer of the Atlantic Coast Line, with office at Wilmington, N. C., has been appointed valuation engineer, vice **D. W. Gross**, resigned.

Maurice Coburn, principal assistant engineer on the Pennsylvania Lines West, with office at St. Louis, has been appointed supervising engineer, with office at Indianapolis, Ind. The headquarters of the St. Louis system of the Pennsylvania has been moved to Indianapolis, and to this system the Administration has added the Indianapolis Terminal and the Louisville divisions.

A. E. Calkins, assistant superintendent of rolling stock of the New York Central Lines East, has been appointed engineer of rolling stock of the New York Central Lines, with office at New York.

C. N. Bainbridge has been appointed assistant engineer in charge of bridge inspection and bridge erection on the Chicago, Milwaukee & St. Paul, lines east of Moberg, S. D., succeeding **E. S. Meloy**, deceased.

D. M. Case, signal and electrical engineer of the Southern, lines west, with headquarters at Cincinnati, Ohio, has had his jurisdiction extended to include the Georgia Southern & Florida and the Alabama & Vicksburg.

A. R. Cook, principal assistant engineer of the Northern Pacific, with office at Tacoma, Wash., has been appointed engineer of maintenance of way, for the lines west of Paradise, in place of **L. M. Perkins**, transferred.

W. A. Clark, chief engineer of the Duluth & Iron Range, has been appointed chief engineer of that road and the Duluth, Missabe & Northern, succeeding **H. L. Dresser** on the last named road; office at Duluth, Minn.

A. B. Himes, assistant engineer in the signal department of the Baltimore & Ohio, at Baltimore, Md., has been appointed assistant engineer of signals, with office at Cincinnati, Ohio. **G. A. Motry**, signal inspector at Baltimore, Md., succeeds Mr. Himes, and **Thomas L. Cannon**, signal inspector, at Cumberland, Md., succeeds Mr. Motry.

F. L. Thompson, whose appointment as chief engineer of the Illinois Central was noticed last week, was educated at the University of Illinois, graduating from the civil engineering course in 1896. He entered the service of the Illinois Central on June 18 of the same year, as a chainman on the reconstruction and lowering of the tracks along the lake front at Chicago, and later was rodman and inspector on concrete work. In the early part of the following year he was engaged as a rodman at Vicksburg, Miss., on the work of changing a 700-ft. tunnel to an open cut. He also had charge of the building of a concrete arch and large freight house at the same place. After the completion of that work he was rodman and assistant engineer on surveys and on grade reduction work from Fulton, Ky., to Memphis, Tenn. From January, 1900, to August of the following year, he was assistant engineer in charge of grade reduction and double track work between Wickliffe, Ky., and Fulton. For the next six months, Mr. Thompson was in charge of the double track and grade reduction work from Irvington, Ill., to Carbondale. From February, 1902, to February, 1903, he was assistant engineer in the chief engineer's office at Chicago. The following eight months he was acting roadmaster of the Chicago division, and was then transferred to the Louisville division, as roadmaster, where he remained until January, 1907, at which time he was appointed assistant engineer of bridges. On July 1, 1910, he was promoted to engineer of bridges and buildings, and on April 1, 1913, was appointed engineer of construction, and served in this capacity for the following two years. On April 1, 1914, he became assistant chief engineer, which position he held until his promotion to chief engineer as mentioned above.

Oscar E. Wolden, assistant fuel supervisor of the Minneapolis, St. Paul & Sault Ste. Marie, at Minneapolis, Minn., has been appointed acting fuel supervisor, succeeding **L. R. Pyle**, whose appointment as supervisor of the fuel conserva-

tion section for the Central Western region was announced in the *Railway Age* on August 9. **Harry W. Maurer** has been appointed assistant superintendent of the car department, with headquarters at Minneapolis, Minn.

J. M. Sills, district engineer on the St. Louis-San Francisco, at Springfield, Mo., has been appointed assistant chief engineer, with headquarters at St. Louis, Mo. **H. B. Barry**, district engineer at Memphis, Tenn., has been transferred to Springfield. **D. E. Gelwix**, assistant engineer, with headquarters at Springfield, Mo., has been appointed district engineer at the same place.

E. T. Irving, division engineer on the Grand Trunk, Western lines, with headquarters at Chicago, has been promoted to chief engineer of the Western lines, with headquarters at Detroit, Mich. **W. H. Sample**, superintendent of motive power of the Grand Trunk, at Montreal, Que., has been transferred to the western lines, with headquarters at Detroit, Mich., effective August 26.

Purchasing

Ralph P. Moore, purchasing agent of the Duluth & Iron Range, has been appointed purchasing agent of that road and the Duluth, Missabe & Northern, succeeding on the latter road **H. Greenfield**; office at Duluth, Minn.

Corporate

Operating

H. H. Hill, auditor of the Ocilla Southern, with office at Ocilla, Ga., has been appointed general manager for receivers in place of **J. F. Gray**, resigned. Mr. Hill will continue to serve as auditor.

William Harry Bunney, whose appointment as general superintendent of the Montana, Wyoming & Southern, with headquarters at Belfry, Mont., was announced in the *Railway Age* on July 26, was previously employed by the Northern Pacific as chief clerk to the general superintendent at Livingston, Mont. Mr. Bunney entered the service of the Northern Pacific on June 28, 1899 as engine wiper and call boy. Later he was promoted to stenographer, chief clerk to the assistant general superintendent, assistant chief clerk to the general manager and chief clerk to the general superintendent, at Livingston, which position he held until he resigned to become general superintendent of the Montana, Wyoming & Southern, as mentioned above.

Traffic

W. B. Lanigan, assistant freight traffic manager of the Canadian Pacific, western lines, with office at Winnipeg, has been promoted to freight traffic manager, with office at Montreal, in charge of freight traffic on all the company's lines, succeeding **W. R. MacInnes**, promoted to vice-president.

George C. Martin, whose appointment as general traffic manager of the Toronto, Hamilton & Buffalo, was noticed in the *Railway Age* of August 23, was born at Creemore, Ont., on January 2, 1866, and entered the railway service in 1882 on the Northern & Northwestern Railway. His first position was assistant to the agent, at Thornbury, Ont. A year later he went to the Canadian Pacific and was a telegraph operator on construction, between Calgary and Medicine Hat. In 1884 he went to the Grand Trunk and was station agent at Caldwell Junction, and later at other places. In December, 1897, he went to the Toronto, Hamilton & Buffalo as chief clerk in the traffic department. On December 1, 1909, he was appointed assistant general freight and passenger agent, and three years later was promoted to general freight and passenger agent, which position he held until his promotion in the present month.

Engineering and Rolling Stock

F. T. Hatch, chief engineer maintenance of way of the Pennsylvania Lines, St. Louis System, with headquarters at St. Louis, remains with the corporation as consulting engineer and he will have charge of valuation, with office at St. Louis.



F. L. Thompson

EDITORIAL

Railway Age

EDITORIAL

Every man in this country between the ages of 18 and 20, inclusive, and 32 and 45, inclusive, must register on Thursday, September 12, in accordance with the provisions of the new Man Power bill. The registration and classification of 13,000,000 men is a tremendous task. The increased rate at

which we have been sending men abroad has nearly depleted the reservoir of Class I men now available for full military service. Stern necessity requires the immediate enrollment of the additional men, leaving very little time for a far-reaching publicity campaign to advise and awaken every man interested as to his duty. It therefore devolves upon every loyal citizen not only to co-operate cheerfully in doing his duty, but to go far beyond this, and whether he is of draft age or not, to see that his associates and those in his employ are fully informed as to the requirements of the law. Every influence should be brought to bear to have a maximum registration. "It is the call to duty," said President Wilson in his proclamation, "to which every true man in the country will respond with pride and with the consciousness that in doing so he plays his part in vindication of a great cause at whose summons every true heart offers its supreme service."

The Fourth Liberty Loan Campaign will begin on September 28 and will undoubtedly be for a larger sum than any of the preceding loans. Real sacrifices will have to be made to insure its success and thus back up the remarkable progress that is now being made on the Western front. The war will be shortened and lives of our boys will be saved by getting the entire nation squarely behind the war program and supporting it enthusiastically, intelligently and thoroughly. While the money will be needed badly it is even more necessary that there be increased activity on the part of all of those who are engaged in occupations that are essential to the winning of the war—and this should mean practically everybody. To cultivate a "Win-the-War" spirit and "arouse serious enthusiasm for the loan," it is suggested that every employer or organization hold preliminary meetings for employees or members before the beginning of the campaign. The Liberty Loan Bureau has prepared suggestions for the programs for these proposed meetings; more complete information as to these programs with directions for securing copies of the Liberty Loan Committee booklet will be found on pages 36 and 37 of the advertising section of this issue.

The most significant action of the National Industrial Traffic League, at its convention in Buffalo last week, was the resolution adopted in the last five minutes of the meeting, telling Mr. McAdoo that he ought to have an industrial traffic man on his board of advisers. This meeting lacked nothing in intense feeling, though it was very decorous. Nothing like

harshness or unfriendliness toward the railroads was even suggested by anything that was said or done; yet, the loudest applause of the day was that which followed Mr. Walter's pledge that no local committee would be allowed to settle any change in freight rates unless there were a shipper on the committee. At the same time there was very specific mention of innumerable faults in the operation of the freight (and passenger) service since the government took the job, and the officers and committees of the association went home with their portfolios full of things to be attended to. A visitor from Canada speaking at the close of the meeting, referring to the sentiment in the Dominion in favor of government operation of railroads, thought that this two-day exhibit of grievances could not be called very encouraging to such sentiment.

The statistics of the Railroad Administration for June and the six months ended June 30 make clear that in June,

The Decline in Freight Movement

and, also in the entire first six months that the railways were operated by the government, there were declines in the amount of freight traffic handled by them. In another column, under the heading "Efficiency Under Government and Private Management," we have commented upon the attempt of Theodore H. Price, actuary of the Railroad Administration, to demonstrate by the freight operating statistics for the first five months of the year that there had been a "striking increase in efficiency" under government control. Our conclusion is that the statistics for these five months do not show any increase of efficiency. The same conclusion must be drawn from the statistics for June, for in that month there were declines, as compared with June, 1917, in the total freight handled, in the average miles traveled per locomotive and per car per day, and in the average number of tons hauled one mile by each car and each locomotive. There was an increase in the average number of tons carried per loaded car, but the average number of tons per train was the same as it was in June, 1917. While there was a decrease in loaded freight car miles, there was an increase in empty freight car miles, and therefore an increase in the percentage of empty car miles to total car miles. There were increases in the proportion of freight locomotives and of cars in or awaiting shop. The statistics for June are given in detail elsewhere in this issue. One question which they raise is as to whether the decline shown in the total traffic handled was due to the fact that there actually was less traffic offered to the railways, or to the fact that they were unable to handle as much traffic as they did the year before. If the statistics of car shortages and surpluses were still being compiled and published they would throw light on this question, but the Railroad Administration discontinued them early in the year. If there has been an actual decline in the total amount of traffic available, this would largely explain the apparent decline in efficiency and might show that it was nominal rather than real. If, on the other hand, it be assumed that the amount of traffic offered to the roads was as great in June, 1918, as in June, 1917, the inference the statistics suggest is that there has been some decline in the general efficiency of freight train operation.

An Opportunity for Engineers

SINCE THE UNITED STATES RAILROAD ADMINISTRATION decided to substitute government operation for federal control of the railways it has become necessary to build up corporate organizations to represent the stockholders of the individual properties and to protect their interests in negotiations with the Railroad Administration. In consequence many experienced railway men have withdrawn from active participation in the operation of the properties in order that they may serve in corporate positions. As a result the railways have lost the services of such men as E. P. Ripley, Daniel Willard, Samuel Rea and Julius Kruttschnitt, who have long been regarded as among the leaders in the development of our transportation systems. In the building up of these duplicate organizations for the corporations no branch has been affected more directly than the engineering department. The considerations which will form the basis for a large part of the negotiations between the government and the carriers will center in large measure about the changes made in the physical properties and the standards to which the roads are maintained. The government has agreed to return the roads to their owners at the termination of the period of federal control in the same condition as when taken over or to make proper compensation for any deficiencies. Every change in the physical plant must, therefore, be made a matter of record. Under the conditions now existing it is not to be expected that the government will be able to maintain many of the roads to the high standards formerly prevailing and the consequent depreciation will become a very important factor in the final negotiations.

These problems are essentially engineering in nature and recognition of this fact has already resulted in the selection of engineers for executive positions with the corporations on several roads; thus on the Burlington a former chief engineer of another Hill line has been made chairman of the board of directors, on the North Western the chief engineer has been elected president of the corporation and on the Illinois Central the chief engineer has been made vice-president. On the other roads which have started to perfect corporate organizations, chief engineers have been among the first officers to be appointed, these men being selected in nearly all cases from among the higher engineering officers of the operating organizations. The war has created many vacancies in the engineering departments of the roads, particularly among the men in the lower ranks. The formation of these duplicate organizations is making equally serious inroads among the engineers in executive positions.

Politics and the Railways Under Government Control

DIRECTOR GENERAL of Railroads McAdoo on August 31 issued a statement regarding the participation of railway officers and employees in politics which has been read with much interest, and some feeling, by those to whom it was addressed. The director general said that "it was a matter of common report that railroads under private control were frequently used for partisan political purposes; that railroad corporations were frequently adjuncts of political machines, and that even sovereign states had been at times dominated by them." He added, "Now that the government controls and operates the railroads there is no selfish or private interest to serve, and the incentive to political activity no longer exists." He therefore ordered that no railroad officer or employee shall become a candidate for office, or otherwise take an active part in politics. Many of the men active in the management of the railways under private control are now serving the Railroad Administration in very im-

portant positions. They could tell Mr. McAdoo that the domination of politics by the railways long ago ceased, and that the main trouble within recent years has been the domination of the railways by politics. Furthermore, they could tell him that within recent years lobbyists representing the organized employees of the railways have been very active and influential in politics in various states and also at Washington, and they might be disposed to ask him why he referred so pointedly to the ancient domination of politics by the railways and did not refer at all to the more recent political activities of the railroad brotherhoods—those, for instance, in connection with the "basic eight-hour day"?

Mr. McAdoo is receiving faithful and efficient support from many former managers of railway companies, and it is difficult to understand how it can be necessary, as a means to helping win the war, for him to refer to the former relations between the railways and politics in a way which seems directly to slap men of this class in the face. The number of statements issued by persons connected with the Railroad Administration in which very direct reflections are cast upon the former private management of the railways is increasing. Government operation itself has not thus far proved either impeccable or invulnerable, and the Railroad Administration may not, in the long run, find it to its advantage to cast slurs upon private management which directly challenge comparisons between the past and the present.

Efficiency Under Government and Private Management

WHETHER THIS SHOULD be done or not, everybody knows that in the discussion of government ownership comparisons will be made between the efficiency with which the railways were operated under private management and the efficiency with which they are operated under government control. It is, therefore, of present and future national importance that any such comparisons which may be made shall be correct and fair. Certainly, any comparisons emanating from official sources which are incorrect or unfair should not be allowed to pass unchallenged.

Theodore H. Price, actuary of the Railroad Administration, recently has sent to the press a statement comparing the results of the operation of the freight service of the railways during the first five months of government control with the results of the operation of that service under private management during the first five months of 1917 which in essential respects is neither fair nor correct. His statement was presented in the *Railway Age* for August 30, pages 382-3. A New York newspaper recently published an editorial contending that the statistics of freight operation for the five months ending with May did not show that there had been any increase in efficiency under government management. Mr. Price, on the basis of these same statistics, tries to demonstrate that there has been a "striking increase" of efficiency. After having more than once, by implication, reflected on the efficiency with which the railways were operated under private management, he concludes, "I can only add that two months' close study of what has been done and may be done under a unified management toward increasing the serviceable efficiency of the American railways convinces me that the wisdom of the President's action in taking over the transportation facilities of the country will be cumulatively demonstrated as the years roll by."

The implication of these words appears to be that he expects, if not actually desires, to see the government permanently retain possession of the roads. If Mr. Price, instead of giving "two months' close study" to railway matters, had given two years' close study to it, or, better still, ten years', he would hardly have drawn from the statistics

he uses the conclusions he does. His effort to make the press and public believe they show what, in fact, they do not show, renders it necessary, in the interest of intelligent public consideration of the railway question, to make clear just what they do show.

The statistics of freight operation in question were compiled by the Railroad Administration itself. They are for the five months, January to May, 1917, inclusive, and for the same months of 1918. They show that the number of tons of freight moved one mile was six-tenths of one per cent less in these months of 1918 under government control than in the same months of 1917 under private management. Mr. Price contends that this does not necessarily demonstrate any decline in efficiency, for, as he points out, there was an increase in the average trainload, and the number of miles which freight cars traveled under load in 1918 was 8.6 per cent less than the number of miles they traveled in 1917 to handle an approximately equal traffic. He continues:

"A reduction in the average daily mileage of locomotives and freight cars will also be noticed. This is * * * due to the heavier trainload and carload. It is not economically practicable to haul heavy trains as fast as light ones and the Railroad Administration has adopted the policy of loading trains to capacity and moving them on schedules that are not too fast to be maintained. * * * The showing indicates, not inefficiency, but a striking increase in the efficiency with which the railroads are being operated, and that it is directly due to the heavier loading of the freight cars and the greater trainload now pulled by each engine. * * * Instead of proving the inefficiency of government management, the newspaper referred to seems to have adduced the strongest possible proof of its efficiency and wisdom in demonstrating that the old cars and engines are being made to do more work than they performed under private management."

Now, what are the facts? Let us first examine those relating to car efficiency. The statistics show that the number of tons moved per loaded car increased from 26.2 to 28.5, or 8.8 per cent. But they also show that the average miles traveled by each car daily declined from 26.4 to 23.7, or 10 per cent. Mr. Price says that "the old cars are being made to do more work than they performed under private management." But the work a car does depends not only on how many tons it carries when loaded, but on how many miles a day it moves, and the decline in the average number of miles traveled by each car daily was so much greater in proportion than the increase in the number of tons handled per loaded car that, as shown in the very statistics Mr. Price quotes, the number of revenue tons hauled one mile monthly by each car actually declined from 13,586 to 12,960, or 4.6 per cent. It is not true that the "old cars were made to do more work." Mr. Price's own figures show that on the average each car did less work.

Next, as to locomotive efficiency. The statistics show, as Mr. Price says, that there was an advance in the trainload, the average number of tons handled per train in the five months of 1917 being 629 and in 1918 646, an increase of 17 tons, or 2.7 per cent. But they also show that the average miles traveled by each locomotive daily declined from 69.1 to 65.7, or 4.9 per cent. Mr. Price implies that this decline in daily locomotive mileage was due to the fact that the locomotives pulled heavier trains. Let us see about that. The increase in the average trainload having been 2.7 per cent, while the increase in the average tons per loaded car was 8.8 per cent, one is at once led to suspect that there was a decline in the average number of cars moved in each train. A few calculations demonstrate that this was the case. The average number of cars handled per train in the first five months of 1917 was 33.8 and in the first five months of 1918 only 32.6, a decline of 1.2 cars. Now, the average freight car weighs over 20 tons. Since the increase in the average amount of freight handled per train was only 17 tons, while the reduction in the weight of the cars pulled in the average train was at least 24 tons, it necessarily follows that the average gross weight of each train moved in the first five months of 1918 was at least seven tons less

than the average gross weight of each train moved in the first five months of 1917. Therefore, on Mr. Price's own theory, the average mileage traveled by each locomotive daily should have been increased, not diminished.

But, as these statistics show, instead of being increased, the average mileage traveled by each locomotive daily was diminished. What effect did this have on the average amount of work done by each locomotive? The increase in the average trainload was only 2.7 per cent, while the reduction in the average mileage made by each locomotive daily was 4.9 per cent. In consequence, as is shown by the very table on which Mr. Price bases his argument, in the first five months of 1917 the average number of revenue tons moved one mile by each locomotive monthly was 1,024,754, while in 1918 it was only 1,006,007, a decline of 1.8 per cent. In other words, contrary to his conclusion, not only did each car do less work than when the railways were under private management, but each locomotive also did less work.

Mr. Price says that the increase of 8.8 per cent in the average carload was equivalent to an addition of 211,200 freight cars, and that the increase of 2.7 per cent in the average trainload was equivalent to the addition of 1,750 locomotives. He adds: "Surely this is better than buying new cars and locomotives at a time when they can only be had at extravagant prices when the manufacturing energies of the country are overtaxed." He bases his calculation upon the assumption that there are 2,400,000 freight cars and 65,000 freight locomotives in service. But his own table (*Railway Age*, August 9, 1918, page 258) shows that there are only 30,655 freight locomotives in service. Furthermore, he apparently forgets that the average mileage made by each car and each locomotive as well as the average load it transports determines how much business it handles. The decline of 4.6 per cent in the number of tons of freight moved one mile by each car was, according to his own method of calculating, equivalent to a reduction of 110,400 in the number of cars in service; and the decline of 1.8 per cent in the number of tons moved one mile per locomotive was equivalent to a reduction of 552 in the number of freight locomotives in service. Therefore, on his theory, government operation increased, instead of reducing, the need of additional cars and locomotives.

So much for the "striking increase in the efficiency with which the railroads are being operated" of which Mr. Price proclaims himself the discoverer. Taken at their face value, as he takes them, the statistics he uses show, not an increase, but a decrease of efficiency. But they should not be taken at exactly their face value, and Mr. Price has rendered the Railroad Administration a very poor service in discussing them as if they should be. The statistics themselves are interesting and instructive; but, like other statistics, they yield no useful information unless analyzed and interpreted in the light of the conditions under which the operations they reflect were carried on. Among the reasons why these particular statistics cannot be taken at exactly their face value are the following:

First, the average miles made per car and per locomotive per day are determined only to a minor extent by the speed with which they are moved when in train, since, on the average, locomotives are in train only about 30 per cent and cars only about 10 per cent of the time. Therefore, the declines in the average mileage of cars and locomotives per day undoubtedly are due to causes having little or no relationship to train operation.

Second, the severe weather of last January caused serious reductions in the amount of traffic handled with each car and locomotive, and the effect of these reductions is still reflected in all operating statistics which include those for the month of January.

Third, the operating department of the Railroad Administration has been concentrating its efforts on moving, not more

Chicago, Milwaukee & St. Paul and the Northern Pacific

IT IS RATHER SURPRISING that the Chicago, Milwaukee & St. Paul carried less freight in 1917 than in 1916 and had it not been for a somewhat longer average haul and an increased rate received per ton per mile, combined with an average passenger journey considerably longer in 1917 than in 1916, the company would have actually had lower operating revenues last year than in the previous year. As it was, total operating revenues amounted to \$113,739,000, an increase over 1916 of only \$3,130,000. This is in contrast with the Northern Pacific operating in the same territory. Total operating revenues of the Northern Pacific amounted to \$88,226,000, an increase of \$7,944,000. This is an increase of 9.9 per cent comparing with an increase of 2.8 per cent for the St. Paul. Freight revenue for the Northern Pacific amounted to \$65,259,000 in 1917, an increase of 9.60 per cent. Passenger revenues amounted to \$15,647,000, an increase of 12.09 per cent. The freight revenue on the St. Paul amounted to \$79,957,000, an increase of 0.38 per cent and the passenger revenue amounted to \$21,330,000, an increase of 7.96 per cent.

The number of tons of freight carried on the Northern Pacific totaled 22,842,000 in 1917, an increase of 4.33 per cent, while on the St. Paul the total number of tons carried was 38,444,000, a decrease of 3.86 per cent. The average

7.09 per cent. On the St. Paul the number of passengers carried was 15,484,000, a decrease of 3 per cent, and the average passenger journey was 63 miles, an increase of 9.87 per cent. The average receipts per passenger per mile for the Northern Pacific was 2.368 cents, an increase of a fraction of one per cent, and for the St. Paul 2.174 cents, an increase of about one and a half per cent.

Both the Northern Pacific and the St. Paul were hard hit in increased costs of operation; in fact, harder hit proportionately than was either the Southern Pacific or the Atchafalaya, Topeka & Santa Fe. Total operating expenses on the Northern Pacific amounted to \$53,298,000, an increase over 1916 of \$10,066,000. Total operating expenses on the St. Paul amounted to \$85,196,000, an increase of \$11,431,000. The Northern Pacific spent more for maintenance in 1917 compared with 1916 than did the St. Paul and was not apparently able to hold transportation expense down as effectively as the St. Paul did. Transportation expenses amounted to \$28,531,000 on the Northern Pacific, an increase of 26.63 per cent, while transportation expenses on the St. Paul amounted to \$48,083,000, an increase of only 16 per cent. It must be remembered that the Northern Pacific's business handled was quite a little larger in 1917 than in 1916 while the St. Paul's business was almost the same.

Maintenance of way and structures on the Northern Pacific cost \$10,782,000, an increase of 15.70 per cent. On the St. Paul, maintenance of way and structures cost \$10,953,000,



The Chicago, Milwaukee & St. Paul and the Northern Pacific

length of haul on the Northern Pacific was 386 miles, or 9.39 per cent longer than in 1916, and on the St. Paul 274 miles, or 2.05 per cent longer than in 1916. The average rate received on the Northern Pacific was 7.41 mills per ton mile, a decrease of 3.89 per cent, while on the St. Paul the average revenue per ton per mile was 7.82 mills, an increase of 2.31 per cent.

The following table shows the tonnage of each of the general classes of commodities carried by the Northern Pacific and the St. Paul in 1917 and 1916:

	1917		1916	
	St. Paul	Northern Pacific	St. Paul	Northern Pacific
Products of agriculture.....	7,009,902	4,138,537	7,999,920	4,090,962
Products of animals.....	2,169,679	533,610	2,336,303	474,491
Products of mines.....	11,715,375	7,606,976	11,406,398	6,782,025
Products of forests.....	6,430,457	6,751,001	6,404,783	6,672,025
Manufactures.....	6,965,688	2,415,451	7,401,425	1,955,501
Miscellaneous.....	4,153,382	1,406,573	4,541,005	1,322,301
Totals.....	38,444,353	22,842,151	39,986,136	21,893,980

The total number of passengers carried by the Northern Pacific was 8,418,000, or 4.32 per cent less than in 1916, and the average passenger journey was 75 miles, an increase of

a decrease of 12.5 per cent. The expenditure per mile on the St. Paul looks rather low. It is quite probable that the management found it exceedingly difficult, if not practically impossible, to get all of the track labor that it needed. There is another thing also to be taken into consideration. The St. Paul operates 440 miles of road which has recently been electrified. In the course of the work of electrification, the roadbed and structures on this 440 miles were put into such shape as to require comparatively little renewal expenditures for a number of years.

Both companies spent considerably more for maintenance of equipment. The Northern Pacific spent \$11,245,000 on this account in 1917, an increase over 1916 of 33.55 per cent. The St. Paul spent \$22,015,000, an increase of \$4,482,000, or 25.6 per cent. At the end of the year 84.35 per cent of the Northern Pacific's locomotives were in good order as compared with 82.67 per cent in good order at the beginning of the year. Of the remainder, 121 locomotives or 8.89 per cent of the total, were in fair order and 92, or 6.76 per cent, were at shops. The St. Paul does not give figures showing the condition of its equipment. It is rather interesting to note, however, that the St. Paul spent \$221,000 for repairs of

electric locomotives. The company had in service in 1917 45 of these locomotives so that the average expenditure per locomotive was about \$5,000.

The Northern Pacific spent \$5,211,000 on additions and betterments, the largest items being for terminal yards, bridges and shops, engine houses and turntables. There was also \$3,399,000 spent for branch lines, grade revision and second main track. This included \$773,000 spent for construction of the Lake Basin branch and \$791,000 for the Flathead Valley branch, both in Montana. The company spent \$4,260,000 for new equipment, charging \$1,986,000 of this amount to reserves and the remainder to capital account. The St. Paul spent \$7,269,000 for additions and betterments which included \$1,573,000 for power stations, transmission system, etc. In addition to the 440 miles previously mentioned as being already operated by electricity, there is 217 miles from Othello, Wash., to Seattle and Tacoma on the western end of the line which is now being equipped for electric operation.

It will be particularly interesting to see what effect the elimination of competition will have on the net earnings of two roads situated like the Chicago, Milwaukee & St. Paul and the Northern Pacific. Competition between these roads and between each of them and other roads in the northwest was keen to an extent that is hard to realize. It entered into the adoption of every policy great or small. It was taken into consideration in all questions of operation as well as in questions relating to rates. The Northern Pacific, being a Hill road, naturally gave a greater relative importance to train loading as compared with securing additional competitive traffic than did the St. Paul. The St. Paul, under the management of A. J. Earling, had certain traditions of service which rank high in the history of American railroading. On the other hand, possibly the newer theories of scientific railroad operation were not as thoroughly understood or at least applied in quite so thorough-going a manner on the St. Paul as on the Hill roads.

Before the government took over the railroads, H. E. Byram had been elected president of the St. Paul, succeeding A. J. Earling, who became chairman of the board of directors. Mr. Byram stayed with the property as federal manager and J. M. Hannaford, who had been president of the Northern Pacific, stayed with that property also as federal manager. In the six months, January to June, 1918, the Northern Pacific earned gross \$42,023,000, comparing with \$42,148,323 gross earned in the first six months of 1917. Operating income amounted to \$6,027,000 or \$8,310,000 less than in the first six months of 1917. The Chicago, Milwaukee & St. Paul earned gross in the first six months of 1918 \$55,072,130, comparing with \$52,282,357 for 1917, and it had an operating deficit of \$1,879,017, comparing with operating income of \$12,713,606 in 1917. The following table shows the principal figures of operation for the two roads in the calendar years 1917 and in 1916:

	1917	1916	St. Paul	N. P.
Average mileage operated	10,253,300	10,282,178	12,516,338	9,310,432
Maintenance of equipment	25,018,201	11,245,130	17,533,448	8,419,939
Freight revenue	\$21,329,946	\$15,646,778	\$19,756,835	13,959,370
Passenger revenue	8,195,964	53,297,861	73,765,051	43,232,278
Total operating revenue	29,525,910	69,102,738	93,521,886	57,191,648
Operating expenses	23,026,026	28,007,999	31,327,241	31,532,181
Gross income	23,845,379	42,790,502	34,442,982	40,204,288
Net income	1,468,632	29,502,686	16,209,842	26,948,011
St. Paul				
N. P.				

*The Northern Pacific received a 10 per cent extra dividend in 1917 of \$1,813,343. Chicago, Milwaukee & St. Paul stock which it was 75 per cent of this stock is reported under the outstanding Northern Pacific stock.

Notes: The gross income and following figures for the St. Paul are taken from Interstate Commerce Commission records.

Letters to the Editor

Women as Railroad Clerks

CHICAGO.

TO THE EDITOR:

The *Railway Age* of August 16, contains an article entitled "Give a Man a Man's Work," which states that a great many young men in railroad offices are still engaged in clerical work which, in the opinion of the writer of the article, could be done as well, if not better, by girls. This again brings home forcibly the fact that the railroad clerk is not understood or appreciated in a general way. The impression exists in the minds of too many that a clerk just means some one to copy reports, work out details as outlined in forms, adding a column of figures or two, etc. The sooner this impression is changed, the better for all concerned.

It is true that certain positions can be filled by girls; give our officials credit for being broad enough to see it. In fact, for several years there has been a tendency to fill clerical positions with girls to a great extent and with success. However, I find from my own personal experience that a great many clerical positions can not and should not be filled by girls. These are positions which require from two to three years' education to handle them correctly and efficiently. Grant that girls could be trained to fill them, we would still be confronted with a big problem. Usually about the time they are educated to the useful stage, they get temperamental or try matrimony, with the result that more must be trained—the same procedure over again and again.

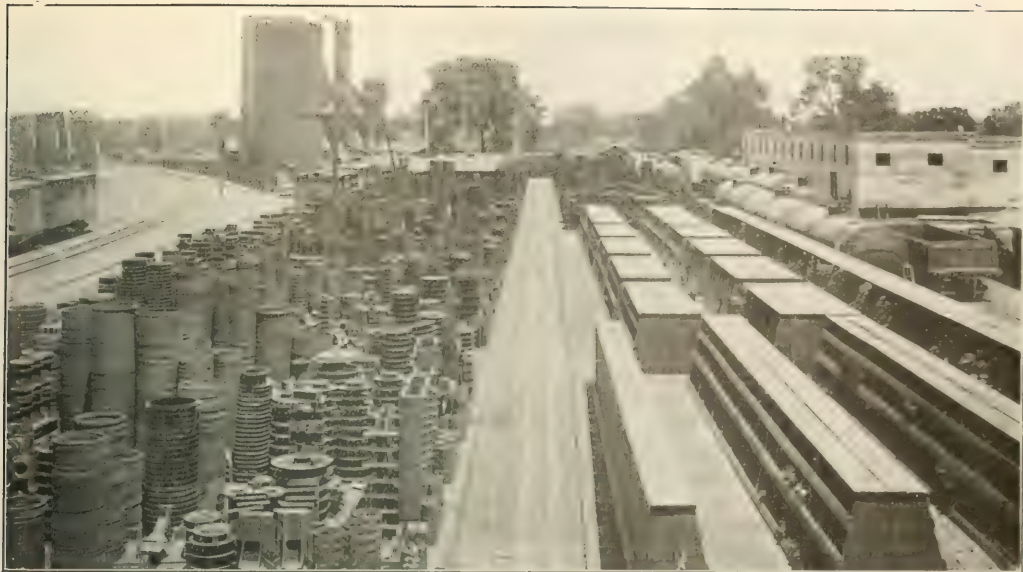
To educate girls as well as men, along clerical lines is a problem that is costing railroads a lot of money, and should be given some consideration. There are classes of railroad clerks, who are indispensable, and they are not old men either. The sooner we wake up and attach some importance to the railroad clerk the better it will be for the entire railroad organization. I know of several offices which would be seriously crippled if more girls were employed; in fact, their lack of proper clerical knowledge would tend to tie up important terminals. I gladly give due credit to the women of our country who are surely doing some wonderful work.

N. H. GREENBERG,

Chief Clerk to Assistant Agents, Chicago and Eastern Illinois.

GOVERNMENT CONTROL IN GREECE.—The Greek Government has decided that under present conditions it is necessary to bring all means of transport strictly under government control as has been done in other countries at war including the United States. As a result of this decision the government has taken over the Piraeus-Peloponnesus Railway.

INCREASED TRAFFIC ON DOMINICAN CENTRAL RAILROAD.—The traffic on the Dominican Central Railroad for the fiscal year ended June 30, 1918, greatly exceeded that of the year previous. During the past year 45,000 tons of freight were carried from Puerto Plata to the interior, and from the interior to Puerto Plata and between intermediate stations, against 24,800 tons in 1916-17, a gain of 50.9 per cent. Freight receipts increased 63.8 per cent, and passenger income 43.5 per cent. An arrangement has recently been concluded between the Dominican Central and the Samana & Santiago railroads whereby no charge is made shippers for transferring cargo from one road to another at the Moca Terminals.



A Typical Storage Platform for Castings

Efficiency In the Handling of Railway Supplies

Methods Employed by the Santa Fe in Storing, Handling,
Distributing and Accounting for Material

By Charles E. Parks

Assistant Editor, The Santa Fe Magazine, Chicago

RAILROAD STOREKEEPING is in a state of continuous evolution. The efficient handling of railway supplies is a comparatively late development of the transportation industry. The growth of rail transportation has been so rapid that certain elements have lagged behind in the general development, employing the methods and practices of the eighties in an endeavor to cope with present-day conditions and problems. This has been true of the supply department perhaps to a greater extent than any other.

During the early construction period the work of securing, handling and accounting for supplies was undertaken in a very haphazard manner, each department endeavoring to meet its own needs, but as the question of maintenance and operation became paramount, it was evident that a department especially organized for this purpose was a necessity. Even then the store department was looked upon as a necessary evil, and it is only within recent years that it has been regarded as a definite source of assistance to the operating branches and a means of effecting real economies.

The Atchison, Topeka & Santa Fe was among the first, if not the first railroad in the United States, to recognize the definite possibilities of the store department, and very early set about to develop it into a valuable tool in the economical maintenance and operation of its property. The establishment of an efficient system of handling supplies on the Santa Fe was impelled by necessity. It was a stupendous task even under ordinary conditions properly to handle, distribute and account for the material needed for the operation and maintenance of nearly 12,000 miles of line, stretching from Chi-

cago to the Pacific southwest and to the Gulf Coast, with its numerous connecting and branch lines. The task became complicated when in addition it was necessary to handle the supplies for from five to twenty million dollars' worth of addition and betterment and construction work undertaken annually, 50 per cent of which amount was invested in material. To handle this vast stock efficiently and distribute it without waste to dozens of widely separated jobs, many of them undertaken at the same time, required a system that would give the desired result with the least output of labor and expense and at the same time produce the necessary efficiency and accuracy.

To begin with the Santa Fe discarded all theory relating to the problem of material handling and the store department was given authority to take such progressive steps as might be necessary for its proper solution. It based its system on a common-sense diagnosis of existing conditions. If this analysis sustained an efficiency theory, the theory was retained. The opinion was once held by all operating officers that the functions of the store department were merely those of a warehouse. The authority over material ended when the material was delivered. The Santa Fe discarded this theory. A little investigation disclosed the enormous loss resulting from its practical application due to the lack of co-operation between the store department and the actual users of the supplies. When new work was undertaken it had been customary to order, purchase and deliver all the material needed before any construction work was done, with the result that much

of the material was badly damaged and some of it actually destroyed or stolen when the time came to use it. Sometimes the reverse was true and important work was impeded and often entirely postponed because of the lack of needed supplies. Faulty specifications and incorrect requisitions were another source of untold delay and expense and no attempts were made to prevent the scrapping of serviceable material.

In order to remedy this inefficiency, the store department undertook to secure the co-operation of the operating and mechanical officers, with the result that material was delivered only as needed, the expense and delay due to faulty specifications and incorrect requisitions were greatly reduced, serviceable material was reclaimed and the investment in material reduced to actual necessities. This co-operative spirit has been the real foundation stone upon which the success of the Santa Fe store department is based.

Organization

The chart illustrates the store department organization on the Santa Fe. At the head of the department is a general storekeeper who reports directly to the vice-president in charge of purchases and stores. In this way the purchasing and store departments are closely united under one head, although at the same time maintaining separate and independent organizations. The general storekeeper has jurisdiction over the custody, distribution and accounting of all the material used on the entire system, including the Santa Fe proper and numerous subsidiary companies. Each of these lines has its own general store located at some central point and managed by a storekeeper who reports directly to the general storekeeper. Under them are 35 division storekeepers, under whose direction the supplies are issued from the same number of division storehouses, located at all division headquarters and some division terminals.

In addition, the store department has direct jurisdiction over the fuel department and the stationery department, and exercises concurrent jurisdiction with the purchasing department over the work of reclaiming material. The fuel and stationery departments are operated as independent organizations under the general storekeeper, and, while the reclamation plants are operated also as separate organizations under the purchasing department, much of the reclamation work, such as collecting the scrap, preliminary sorting, etc., is performed by the store department and all reclaimed material is returned to stock and issued as new material. The importance of the supply car has grown to such an extent on the Santa Fe as to make necessary a general supply car storekeeper who reports directly to the general storekeeper.

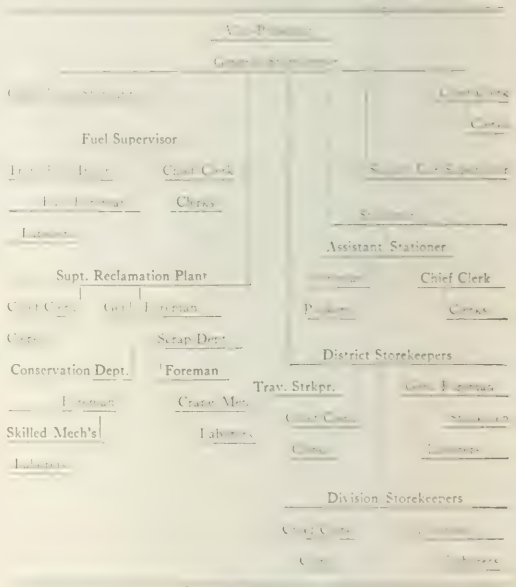
A singular feature connected with the Santa Fe store department is its closely knit organization and the close co-operation it maintains with the other departments of the system. The principal means adopted to secure this result are the regular informal meetings of all storekeepers affiliated with each general store and the annual system meeting of all store department heads. The storekeepers' meeting is sometimes attended by chief clerks and general foremen and an exchange of views covering all matters of material handling is had. In addition to the store department officers who are obliged to attend the annual system meeting, certain representatives of the purchasing, accounting, operating and mechanical departments are delegated to attend in order to work out in conjunction with the storekeepers such material problems as arise during the course of the year.

Material in Stock

The Santa Fe has some 40,000 items valued at approximately \$23,000,000 subject to call and approximately one hundred points of distribution. To have on hand at each of these points the proper supply of each item in their enormous variety and at the same time no greater quantity than is necessary is one of the principal problems of the department.

On the one hand the material is required to be delivered promptly when needed and on the other the investment in stock must not be out of proportion to the needs of the operating branches. These two functions are diametrically opposed to each other and so to handle them as not to sacrifice the one for the other is an end toward which the department works.

Material Classification. One of the means adopted to accomplish this purpose is the system of standards now in use. Every item of material is so classified that information as to size, grade, quality, quantity on hand and quantity ordered is available at all times. Experience has shown that railroad material readily resolves itself into a comparatively few



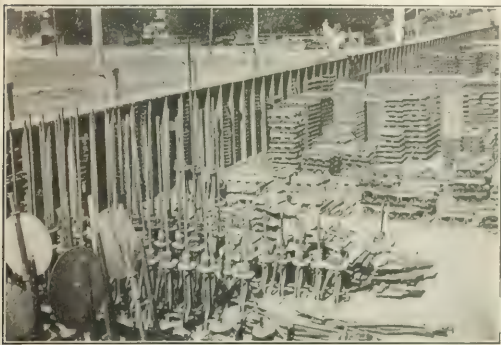
Santa Fe Store Department Organization

distinct classes. The Santa Fe has developed 31 different classes, based almost entirely on a physical classification, as follows:

- STOCK "A"—FUEL, LUBRICANTS, AND OTHERS
- STOCK "B"—STATIONERY
- STOCK "C"—MISCELLANEOUS
- (A) Fuel.
 - (B) Stationery.
 - (C) Miscellaneous.
 - (D) Bolts, chains, nails, set screws, studs, nuts, washers, etc.
 - (E) Brackets, hinges, pins and rivets.
 - (F) Oils, paints, varnishes, acids, waste, etc.
 - (G) Bar iron, sheet steel and metals, tool steel, I-beams, channels, etc.
 - (H) Locomotive forgings, springs, brake beams, flues, links, etc.
 - (I) Couplers, brake shoes, etc.
 - (J) Locomotive grey iron, malleable and steel castings, holsters, frames, cylinders, couplers, brake shoes, etc.
 - (K) Machinery, fire boxes, cabs, rods, pistons, superheaters, valve gears, coal pushers, stoves, etc.
 - (L) All wheels, axles and tires.
 - (M) Shop tools.
 - (N) Electrical material.
 - (O) Signal material.
 - (P) Telegraph material.

- (T) Lumber of all classes.
 (X) Ice.
 (Y) Material in process of manufacture.
 (S. A.) Suspense account.
 (W. S.) Mechanical department working stock.
RAIL AND TIES
 (U) New steel rail.
 (V) Old rail.
 (W) New cross ties.
 (Z) Miscellaneous scrap.

This classification is standard on the entire system. It is maintained in all accounting work, physical arrangements in the storerooms, platforms and yards, and on the inventories. It not only assists the storekeeper in knowing what he has on hand, but it is a very necessary factor in keeping his stock



Track Material Arranged to Facilitate Counting and Handling

down to a minimum. It also encourages a systematic method of handling and caring for material whereby a proper check may be made at any time with the least possible delay and expense. Physical appearances of the storage facilities are greatly improved thereby and surplus and shortages in stock can be determined easily.

Storehouses. All Santa Fe storehouses are standardized. They are built according to standard plans and the interior arrangements are fixed by the standard material classification. A general system store is maintained at Topeka, general line stores are located at a central point on each of the system lines and one or more division stores at convenient points on each division. The various storehouses differ only in their size and in the quantity of stock carried.

The new storehouses are one-story structures of the latest type of concrete and pillar design with steel reinforcement. Foundation piers are of the same material. The interior walls are 18 ft. high and are painted white with the windows located 11 ft. above the floor. This gives an unbroken wall space for shelving and at the same time solves the internal lighting problem, the height of the windows permitting an almost continuous line of glass. The light is also increased from continuous lines of sash in the roof monitor, which runs the entire length of the building and by these means four lines of light flow into the building from an elevated angle. The large storehouses enclose about 350,000 cu. ft. of air space and nearly 5,000 sq. ft. of window glass. Material shelving and cases are in no instance over 7 ft. high, permitting of easy access by workmen. Ample aisle spaces are provided and all parts of the storehouse can be reached by trucks.

Stock Maintenance. The problem of stock maintenance is complicated by present conditions. It is required that a three or four months' supply of miscellaneous material be maintained at all general stores. Larger division stores that obtain most of their supplies from the general stores, run with a two or three months' supply on hand; smaller stores usually have only one month's supply. To accomplish this

and prevent a shortage it is necessary for every storekeeper to keep in close touch with conditions in his territory. It requires the closest possible co-operation between the store department and operating and mechanical officers. Storekeepers must consult frequently with superintendents and master mechanics as to future material requirements and make a careful study of past issues and comparison with stock on hand and on order. The present chaotic condition of the markets has complicated the problem of stock maintenance.

Stock Books. The first essential in maintaining stock and analyzing future requirements is a stock book so designed that a concise list of material, correctly specified as to size, grade, quality, etc., with information as to the amount on hand and the amount ordered always available. The stock book in use on the Santa Fe covers only standard items, which are printed in the books according to the standard classification in the column provided for a description of the articles. Additional and obsolete items are written on blank pages with the exception of castings; obsolete patterns are listed with a notation showing the new pattern numbers. The result of this is that the Santa Fe has a stock book for the items of material in general use and the storekeeper is not hampered by thousands of unnecessary items. This stock



Interior of a Santa Fe Standard Storehouse

book is maintained at all storehouses and a consolidated stock book for the entire system is kept at the general system store.

The advantage of the printed books now in use over the written books is that they save clerical labor. It was necessary formerly to write the names of from 1 to 40,000 different items each year in the stock books, the amount depending upon the size of the storehouse. Printed books give a clear and uniform classification of material, as compared with the often illegible appearance of the written books. They also form a comprehensive material catalogue and insure uniformity in keeping stock and stock records at all storehouses.

Santa Fe stock books are of the loose-leaf form, making

it unnecessary for small stores to carry pages of material items on which they have no stock. Stockmen having charge of the various sections in a large store are also furnished with that portion of the stock book covering material carried in their section. As used on this road, the stock book is one of the principal protections against nearly all the problems that occur in connection with material handling.

Relations with the Mechanical Department

Excluding rail and ties, 70 per cent of all miscellaneous material is issued to the mechanical department. This in itself makes the relations between the two departments very close. During the past two years the vastly increased business has called into service practically every unit of power that the road possessed, with the result that new and more difficult problems have been created. As new equipment could not be obtained locomotives and cars have been utilized to the fullest extent possible which has meant a more rapid turning of power through the backshops and roundhouses. This condition has made the material question a vital one and a call for material usually represented an absolute necessity to keep the traffic moving rather than simply a desire to keep the power in shape. Normally from 10 to 15 per cent of the power allotted to a division is held for repairs. Thanks to the efficient methods of handling on the Santa Fe, this figure has shown only a slight increase during the past two years, only part of which can be ascribed to lack of material.

Under the conditions prevailing now the entire problem of supplying material resolves itself into a question of arriving at a proper working stock to be carried at a given point, and next, to accumulate that stock in the storehouse and then maintain it.

Stock Lists. An important factor in the prompt furnishing of shop material is the locomotive stock list. Future material requirements once were based almost entirely on past issues, but this method was found to be a very unsatisfactory one. The mechanical department was requested to outline what was considered a sufficient amount of material to carry in stock to take care of locomotive repairs on each division. The result was the Santa Fe locomotive stock list.

The amount of material specified to be carried in stock at each locality is based on the number of locomotives of each different class in service on the division, the size of the terminal, the facilities for handling the work and the distance from the market or general store. The stock list also includes such information as the interchangeability of castings and other parts and describes the substitution of new parts for old. While the operation of the stock list has been handicapped by market conditions, at those places where it has been followed closely and handled in a systematic manner it has reduced the stock balance, afforded better protection against shortages and given a definite idea of what material must be used up before introducing new standards. Except for emergency calls the stock list has proved invaluable on the Santa Fe.

Advance Information. The furnishing of advance information as to mechanical needs is another factor in maintaining an adequate stock. A system of inspection has been introduced in the shops which is intended to give advance information as to when an engine is ready to be shopped and what material will be needed for repairing it. Such information can usually be supplied from three to five months in advance. Also information as to changes in standards, the introduction of new and reinforced parts, and changes due to federal and state laws can be had in advance. This helps to reduce the material on hand and insures it being delivered promptly when needed. When new standards and changes in equipment occur, the general storekeeper sends out to all storekeepers a numbered bulletin showing in detail patterns, prints, and other information. They immediately take steps to see that the material is placed on order.

Schedules. A third factor is the compiling of a monthly schedule showing the material on order and the date of delivery. This is used in connection with the advance information mentioned. The schedule is arranged showing on what dates each piece of required material will be on hand.

For example: A certain class of engines on the Santa Fe was changed from compound to simple expansion. The mechanical department gave the approximate date the engines would be shopped and the purchasing department showed the approximate date each piece of material was to be delivered. A schedule was then made covering the delivery of the material and the routing of the engines through the shops. To further insure all material being available when work was begun on any locomotive, the material was assembled at the general store in sets and none of it was sent out until it had been thoroughly checked by a man well informed on the requirements. The same kind of schedule is made covering repairs to cars and other important work.

Standardization. A fourth factor is the standardization of locomotive, car and shop equipment. Standardization of parts does more to reduce the stock on hand than any other feature connected with material handling. For this reason the storekeeper is continually aiming to bring this about. Before standardization was brought to the point that it now is on the Santa Fe it was found almost impossible to keep the right kind of cylinder packing rings in stock on account of the large number of different kinds, there being a total of 181. By making a standard section for each bore this number was reduced to 82. This had an immediate effect on the quantity in stock. A large number of locomotive parts have been standardized, including rod keys, oil cups, hub liners, steam pipe rings, eccentrics, cab valves, gage cock drippers, blow-off cocks, pop valves and numerous others. This list is continually being extended with the co-operation of the store department.

Transferring Material. Still another factor is the transferring of material to protect certain locomotives when the locomotives are transferred. Each storekeeper has furnished him a list of engines which he is to protect with various kinds of material, and when that certain class of engines, or a majority of them, are transferred to another division, the material is also transferred and replaced by material that is applicable to the new assignment of power.

Shop Delivery

An investigation developed the fact that the methods formerly employed on the Santa Fe in delivering material from the storehouses to the shops were costly. It was the custom for the individual workmen to make a number of trips each day to the storehouse for supplies needed, resulting in a charge of from \$15 to \$50 daily, depending upon the size of the shop. To stop this practice sub-stores have been installed at all the larger shops and placed in charge of a material supervisor. These sub-stores carry all small items that are issued daily and a small quantity of some of the larger material which is delivered by laborers instead of high-priced mechanics. All requisitions are written by the material supervisor, the shop gang foreman merely writing an order. At the smaller shops that do not require a sub-store a messenger service is in use that delivers the material from the storehouse to the shops as needed.

Working Stock. Delivery of material for car repair work is simplified by carrying what is termed a "mechanical department working stock." This is a stock of material for current and convenient use to make repairs to freight, passenger and work cars and is available without a requisition. It is accounted for under the term "mechanical department working stock" and the value of the material is carried in this section only. It is maintained for the convenience of car repairers and is stored in the car repair sheds. This stock remains substantially constant, a three-weeks' supply being

always on hand. This represents about four per cent of the stock on hand at each storehouse.

Working stock has been the subject of much inquiry on the Santa Fe. At first it was not accounted for but owing to its value it was decided by the auditing department to keep a record of it, but still permit it to remain on the ground to avoid delay and the time spent by workmen in securing it. An inventory of all car repair material on hand was taken and all material over a 30-days' supply taken back into stock. This supply is maintained by car foremen furnishing a requisition at the close of each month to replenish the stock to its original quantity. A stock book of the material is maintained and it is put in charge of a supplyman at the large shops, where suitable facilities have been arranged to store it.

Relation with the Operating Department

The same principles that are applicable to the supply problems of the mechanical department can be applied to the relations between the store and operating departments. It requires the same amount of co-operation, the same advance information of future requirements and the same accuracy in references to obtain material promptly. However, the conditions under which they are applied are different.

Division storekeepers are required to keep in close touch with superintendents. They are kept advised of anticipated improvements and all other work where material will be required. On their frequent trips over the division they keep a lookout for surplus and obsolete material and advise the superintendent if any is discovered. They call attention to any wasteful, improper or extravagant use of material which may come to their notice.

Securing advance information for material needed in operating and construction work is difficult. No requisitions can be made until the authority for the work is granted and then immediate shipments are expected. Because of present conditions this is usually impossible. To overcome this, storekeepers are given copies of estimates with advice as to the prospects of the estimates being approved. A copy of the annual budget also is furnished the store department which is used as a guide for standard articles needed. However, it is not reliable as advance information for special material for the reason that many of the undertakings carried in the budget are postponed.

Distribution. On small jobs undertaken by operating forces, it is aimed to ship all the material required in one lot, or, if this is not possible, to advise superintendents when the bill of material has been filled. This is done by sending the consignee a copy of the waybill on which the material is detailed and he in turn checks it against his requisition copy. The Santa Fe has discovered that this is the most economical method of material distribution. Under the old system, for instance, when a bridge was being built, the crossotated material would come from one point, the bridge bolts from another, the T-rails from another, and often as many as eight separate shipments would be made. When the bridge gang arrived it sometimes found some essential material lacking, making it necessary to put the bridge into service incomplete, or abandon the work until the material arrived. It is estimated that the saving effected by shipping the material ordered for this class of work in one lot is 20 per cent of the former cost. This figure includes the cost of transporting men, material and outfit cars from the division headquarters to the point of work.

Supply Car

For the ordinary distribution of material to section foremen, agents, operators, pumpers and other operating units, the Santa Fe relies mainly on the supply car. This method

has been developed to its maximum efficiency on this road and has resulted in enormous saving, both in the cost of distributing supplies and in the prevention of loss and delay to the material itself.

Eight supply cars are operated on the system, each car taking care of the needs of from 1,000 to 1,500 miles of road. These cars make their rounds monthly and are in charge of a supply car storekeeper, assisted by two or three helpers. The supply car man in turn reports to a general supply car storekeeper, who is directly responsible to the general storekeeper.

(To be continued; the second part of the article will discuss Line Stock and Its Accounting; Ordering Material; Supplies and Obsolete Material; Material Returned to Stock, and Inventories.)

Win the War by "Staying at Home"

By Theodore H. Price

Actuary U. S. Railroad Administration.

DIRECTOR GENERAL McADOO'S recent statement in which he appealed to the public to forgo traveling that was unnecessary is given point by a recently published letter from the Associated Press correspondent in London which reads as follows:

"The recent curtailment of London travel has been increasingly felt at the big London stations, where, during the weekend, long lines of travelers form at the booking office hours before trains are scheduled to start.

"No extra trains are being run to meet the demand, and the trains are closed as soon as the seating capacity of the train is full, hundreds are left waiting.

"On one Lancashire railway tickets for the next two weeks have been purchased two weeks in advance."

If it be true that misery loves company that portion of the American public who are complaining at the crowded condition of the passenger trains here may find some consolation in the fact that similar conditions prevail in England.

The truth is that it is not possible to put a quart in a pint bottle either in England or in the United States, and although the passenger traffic officials there, as here, are doing all they can to cope with the situation the effective remedy is in the hands of the public itself. It is very simple and may be described in the sentence "Stay at home unless travel is unavoidable."

During the month of July the railroads were called upon to move 1,100,000 troops for the government, as well as those soldiers and sailors who were traveling on their own account.

The workers in the service of the government who must be moved about from place to place impose a further tax upon the transportation facilities of the railroads. It is important that these men should travel in comfort and that they should be supplied with sleeping cars on long journeys. New cars cannot be built in a night and as a matter of fact they are at present unobtainable because the labor and material required in their construction is not to be had.

The passenger equipment of the railroads when they were taken over by the government was barely equal to the demands then made upon it. It cannot be enlarged at present without restricting some necessary war activity. Those who travel unnecessarily are therefore needlessly over-taxing the railway service, are making themselves and others who must travel uncomfortable, and are really impeding the prosecution of the war. To "Stay at home" has now become a patriotic duty and every one who feels disposed to "take a trip" these days ought to seriously ask himself whether it is necessary or cannot be postponed before he buys his ticket.

If this habit of self-examination becomes general the congestion of passenger traffic will disappear, for there are lots of journeys that are a waste of both money and time, and

"Home Sweet Home" is a pretty good and restful place after all. Those who feel an irresistible desire to roam may be able to control themselves if they will re-read "Prue and I," the charming story in which George William Curtis describes the imaginary journeys of an old book-keeper and his wife who, being unable to afford the cost of travel, found exquisite pleasure in imagining that they were visiting the places described in the books of celebrated travelers.

Railroad Men's Mountain Home Association

THE RAILROAD MEN'S MOUNTAIN HOME ASSOCIATION, the activities of which were described in the *Railway Age* of May 24, has selected a representative board of governors, composed of the following men prominent in transportation circles:

Hon. Simon Bamberger, governor of Utah.

H. W. Belnap, manager Safety Section, Railroad Administration.

B. E. Chapin, editor, *The Railroad Employee*, Newark, N. J.

G. P. Conard, secretary, Ass'n of Transportation & Car Accounting Officers, New York.

E. H. DeGroot, assistant manager, Car Service Section, Railroad Administration.

Samuel O. Dunn, editor, *Railway Age*, Chicago.

J. E. Duval, general superintendent transportation, Grand Trunk System, Montreal.

Carl R. Gray, director, Div. of Operation, Railroad Administration.

Hon. Otto Mears, president, Silverton Railway.

Frank Nay, comptroller, Rock Island System, Chicago.

others have taken similar action, affording their men the opportunity to remit either direct to the First National Bank of Denver or to contribute small amounts through the treasurer of the company.

The Rock Island Lines are now giving consideration to the erection of a "Rock Island Hut" through contributions of employees, with prospects of immediate success which will add to their record of achievement and provide a cottage where the Rock Island boys will always feel at home.

Actual work on the buildings and grounds is proceeding very satisfactorily. The Wyoming Shovel Works of Wyoming, Pennsylvania, anticipating the needs of the home, has donated a supply of shovels to meet all requirements.

The opportunities afforded by the Railroad Men's Mountain Home for rest and recuperation have been thoroughly enjoyed for the past six weeks by a man who was engaged in war work in France for about a year. He and his family enthusiastically endorse the enterprise and the ideal conditions under which the returning railroad soldiers may regain health and strength.

The plans for the home have been submitted to Lieutenant-Colonel Harry E. Mock of the War Department, and after due consideration he has endorsed the project in a letter to the directors from which the following is an extract:

"As president of the American Association of Industrial Physicians and taking."

One of the officers of the Railroad Administration has suggested that a life membership in the association be created, payable at the rate of \$100 per annum for five years, which would entitle the member to all the benefits of the home and provide health insurance at a comparatively nominal cost.



One of the Cottages



Looking South from Railroad Men's Mountain Home

J. P. O'Brien, federal manager, Oregon-Washington R. R. & Navigation Company.

W. L. Park, general manager, Chicago Great Western

J. S. Pyeatt, federal manager, Railroad Administration, Dallas, Tex.

D. H. Rawson, general manager, American Railway Express Company, Omaha, Neb.

H. E. Remington, editor, *Rock Island Employees' Magazine*, Chicago, Ill.

Marshall B. Smith, State Board of Capitol Managers and Former Receiver, Denver, Laramie & Northwestern, Denver, Colo.

B. L. Winchell, southern regional director, Railroad Administration, Atlanta, Ga.

In addition to the roads mentioned in the article of May 24 as having issued circulars to their employees, several

national cost, as the Railroad Men's Mountain Home is a non-profit organization and will afford every privilege at the minimum cost.

The board of trustees is giving consideration to this feature, and will at all times welcome suggestions from railroad men in the interests of the home.

ARE YOU PREPARING to subscribe to the Fourth Liberty Loan, the campaign for which begins on September 28 and closes October 19?

DIRECT FRENCH MAIL TRAINS—Press despatches state that French mail trains were operated on September 2 between Paris, Calais, and Dunkirk, by way of the direct line through Amiens, instead of the roundabout route forced by the German drive of last March and April.

Doings of the United States Railroad Administration

Railroad Employees Ordered to Keep Out of Politics; Director General Meeting With Eastern Officers

WASHINGTON, D. C.

IN ACCORDANCE WITH HIS POLICY of gaining a first-hand knowledge of railroad conditions, Director General McAdoo left Washington on Wednesday for New York to meet on Thursday with the regional director, the district directors and federal managers of the Eastern region for the purpose of discussing questions connected with the railroads under federal control in that region. Afterwards the director general will go to New England for an inspection of terminal facilities at Boston and railroads in New England and also the Cape Cod Canal, recently taken under federal control. After leaving New England he will go to Pittsburgh for a meeting with principal officers of railroads in the Allegheny region and later probably will visit roads in the Pocahontas region.

He has already met with the officers of roads in the Northwestern and Central Western regions and has inspected a number of the lines in those regions. The director general will devote himself to railroad affairs during the trip and because of the pressure of official business has been forced to decline all invitations of a social nature.

Railroad Men to Abstain from Politics

Specific orders that railroad men are to keep out of politics were given by Director General McAdoo to all officers and employees in the railroad service of the United States, in a statement issued on September 1. Mr. McAdoo said:

The approaching federal and state elections, including the primary contests connected therewith make it both timely and necessary that the attitude of the director general towards political activity on the part of officers and employees in the railroad service should be clearly stated.

It was a matter of common report that railroads under private control were frequently used for partisan political purposes; that railroad corporations were frequently adjuncts of political machines and that even sovereign states had been at times dominated by them. Contributions to campaign funds and the skillful and effective coercion of employees were some of the means by which it was believed that many railroads exerted their power and influence in politics. Scandals resulted from such practices, the public interest was prejudiced and hostility to railroad managements were engendered.

Now that the government controls and operates the railroads, there is no selfish or private interest to serve, and the incentive to political activity on the part of the railroads no longer exists.

Under government control there is no inducement to officers and employees to engage in politics. On the contrary, they owe a high duty to the public scrupulously to abstain therefrom. It is therefore announced as a definite policy of the United States Railroad Administration that no officer, attorney or employee shall

1. Hold a position as a member or officer of any political committee or organization that solicits funds for political purposes.

2. Be a delegate to or chairman or officer of any political convention.

3. Solicit or receive funds for any political purpose or contribute to any political fund collected by an official or employee of any railroad or any official or employee of the United States or of any state.

4. Assume the conduct of any political campaign.

5. Attempt to coerce or intimidate another officer or employee in the exercise of his right of suffrage. Violation of this will result in immediate dismissal from the service.

6. Become a candidate for any political office. Membership on a local school or park board will not be construed as a political office. Those desiring to run for political office or to manage a political campaign must immediately sever their connection with the United States Railroad Service.

I am sure that I can count on the loyal co-operation of all officers, attorneys and employees engaged in the operation of the railroads under federal control, to carry out in letter and spirit the policy here announced. This policy is intended to secure to all of them freedom of action in the exercise of their individual political rights, and, at the same time, to prevent any form of hurtful or pernicious political activity.

Let us demonstrate to the American people that under federal control, railroad officers, attorneys and employees cannot be made a part of any political machine nor be used for any organized partisan or selfish purpose.

Let us set such a high standard of public duty and service that it will be worthy of general emulation.

The director general has received many inquiries as to the scope of the new order from railroad men who are now candidates for office, and in reply to one who is running for nomination as lieutenant governor of a western state. Mr. McAdoo telegraphed that he might take part in the primary election, but that if he were nominated he would be required to resign his railroad position.

Advances to Railroads

Director General McAdoo on September 1 issued a statement giving an accounting in part of the disbursements of the Railroad Administration above current expenses of operation, out of earnings of railroad properties, from current balances taken over and from the Treasury's revolving fund, amounting to between \$800,000,000 and \$900,000,000, from January 1 to September 1, and also of the advances made by the Railroad Administration to railroad companies from April 1 to September 1. The director general also took occasion to deny that the Railroad Administration has been withholding standard rentals pending the execution of the contracts between the railroads and the government, and says that the equivalent of the standard rentals, which for the first eight months of the year amounted to approximately \$650,000,000, has already very largely been paid to the railroads under governmental control.

The total amount of money which the United States Railroad Administration has advanced since April 1, 1918, to all railroad companies (exclusive of the current earnings of the roads, applied directly by the individual roads to their current expenses and corporate needs) was \$241,851,420 to 64 different roads or systems, of which the amount advanced during the month of August was \$38,137,370.

Of the total amount advanced from April 1 to September 1, \$202,297,660, was taken from the \$500,000,000 revolving fund and \$39,553,760 was taken from the surplus earnings turned over to the director general by the limited number of roads whose receipts for the period exceeded their needs.

The total amount of money turned over to the director general April 1 to September 1 by roads reporting surplus earnings was \$62,845,699, but of the amount thus turned

Rules for Submission of New Devices

The Division of Operation has issued a circular prescribing the following rules to be observed in submitting new devices or inventions to the Railroad Administration for investigation:

Any person desiring to submit any apparatus or device to the United States Railroad Administration at Washington, for the purpose of having it passed upon and investigated, should forward complete specifications and detail drawings, showing fully and clearly the construction, application, and method of operation of said apparatus or device. The drawings should be made of convenient size for handling and filing, and drawings not larger than 8 in. by 10½ in. are preferred. Large drawings or prints must be multiples of this size.

The specifications and plans should be accompanied by a statement showing the following:

1. Name of appliance or device.
2. Name and address of proprietor.
3. Number and date of United States patent or patents.
4. Purpose of the appliance or device.
5. Brief statement of how the purpose is carried out.
6. General description.
7. Statement of relation to other appliances or devices.
8. Name of railroad or railroads on which used or tried and length of time in use.
9. Name of town, district, or railroad division where used or tried.
10. Name of railroad officers of whom inquiry may be made.

All plans, specifications, drawings, and other descriptions which are furnished for examination become a part of the United States Railroad Administration's records and may be retained in its files.

When examination has been completed the papers furnished for such examination will not be returned; for that reason original patents, tracings, or other papers of that nature, which may be of particular value to inventors or proprietors, should not be furnished; instead, copies of patents, blueprints, or other descriptive papers of which duplicates can be obtained by the proprietor should be sent. The United States Railroad Administration can furnish no protection of the inventor's or proprietor's rights in any device submitted; therefore, plans should not be submitted until the rights of the inventor or proprietor are fully protected by patent or otherwise.

It is not necessary to submit models of devices. If for any reason it is desired to do so, however, models may be furnished, provided the proprietor pays all transportation charges. After examination models will be returned if the proprietor so requests, but this will also be done at the proprietor's risk and expense; otherwise models will be destroyed. In every case, however, whether or not models are supplied, complete detailed plans and specifications must be furnished; no report will be based on examination of a model alone.

When complete plans of any appliance or device have been furnished they will be placed under examination; after this examination has been completed the person submitting the device will be informed of the results thereof and the conclusions reached.

Arrangements for tests will not be made until an examination of plans discloses the necessity or desirability of conducting a test under service conditions. In case a test is to be made the apparatus must be furnished, installed, and operated without expense to the government.

Correspondence regarding matters of this nature should be addressed to United States Railroad Administration, Frank McManamy, assistant director, division of operation, Washington, D. C.

Nothing in the foregoing is intended to prohibit any rail-

road from testing and developing devices invented by its employees, or testing other devices which, in the opinion of the officers of the railroad, have sufficient merit to warrant it.

The Director General's Labor Day Message to Employees

The director general on Sunday last sent a Labor Day message to all regional directors, in which he asked them, insofar as possible, to permit as many railroad employees to participate in the Labor Day celebrations throughout the country as would not hamper essential railroad operations.

"In view of the colossal war in which America is a party combatant and of the gravity of the issues involved, concerning as they do the lives and liberties of the people of the world, the celebration of Labor Day, 1918, possesses a special significance," he said.

"Not only is the welfare of labor concerned in this war, but the welfare of every class of people in America and throughout the world. The millions of America's splendid sons we are sending to Europe to settle these issues in our favor cannot do their part of this great job unless we, each and every one of us who stay at home, do our part equally well and on time. Any failure to produce at home the things our men must have if they are to fight successfully would mean disaster. Such a disaster would be less appalling in the injury to, or destruction of, our material interests than in the subjugation, if not the destruction of the noble ideals for which America stands and sheds her blood. These ideals are the very foundation of Christ's doctrines and of modern Christian civilization. It is inconceivable that such a calamity as a German victory can befall the world since America entered the conflict unless we at home fail to do our duty and our full share. I have no doubt about America's performance of her duty, and that means that I have no doubt of the patriotism and willingness of every class of our people, including labor, to strive and sacrifice and fight on until the glorious victory is won.

"The railroadmen of the United States have a duty of transcendent importance—the duty of keeping alive and efficient the transportation system of the country. Without adequate and uninterrupted railroad service, delivered on time all the time, the essential war industries of the nation will be helpless and the sacrifices of blood and treasure will be of no avail. The railroads of the United States are the most vital organ of our entire industrial and economic life. They must function at the highest point of efficiency, and I know that I can count on the loyalty and patriotic co-operation of the railroad employees of the United States in rendering to our beloved country the best service of which they are capable.

"Let us on Labor Day, 1918, rededicate ourselves to the noble cause for which we fight. Let us resolve never to stop until military oppression and all that it represents is wiped from the face of the earth. Let us stand shoulder to shoulder with our splendid sons, whose unbroken ranks in France have stopped the Kaiser and given him a new conception of our fighting power. America's triumph in this war will then be inevitable. America's victory will give a new meaning to liberty and democracy throughout the world."

Tank Car Situation Continues Good

The director general continues to receive favorable reports concerning the tank car situation. On August 29 he received one saying that the surplus of tank cars in the Mid-Continent and Texas-Louisiana fields continues to remain in a condition whereby all demands for equipment can be promptly met. The daily movement from these two fields averages about 1,300 cars per day. This may be increased slightly during the next few weeks on account of the large demands of the West and Northwest for agricultural activities, but no ab-

normal movement from the Western field to the Eastern seaboard is anticipated for the immediate future.

Third Class for War Department Shipments

For a period of three years or more prior to federal control the railroads of the country, on the one hand, and the war department on the other, were in dispute as to the proper freight rates to apply on military impedimenta, the roads contending for a second class rate, and the government for a fourth class rate. Neither side being willing to concede the reasonableness of the claim of the other, it was agreed by the two parties early in November, 1917, to submit briefs to the Interstate Commerce Commission as a referee. This procedure would have necessitated a more or less exhaustive and expensive investigation on the part of the commission.

However, before the briefs had been prepared the matter was brought to the attention of the Division of Traffic. After weighing the arguments carefully the Railroad Administration recognized merit in the positions of both the carriers and the war department and suggested to the war department, for account of the carriers under federal control, a compromise basis of third class, minimum weight 24,000 lb. per shipment, which the war department readily accepted.

This disposition of the case makes for uniformity of practice by all carriers, and a simplified method of accounting both with the carriers and with the war department.

Maintenance of Air Brakes

The regional directors are now giving special attention to the proper maintenance of air brakes and are addressing letters to their federal and general managers as follows:

The proper maintenance of air brakes on all classes of freight cars is an important matter from many points of view and is a subject that is not given the careful attention it should be given. In addition to the impossibility of properly handling and controlling trains with poorly maintained brakes and brake pipes, and other air brake troubles, the causes are startling. It is estimated that there is a waste of more than 6,000,000 tons of coal annually due to train pipe and other air leakage. The shortage of coal makes it necessary now, more than ever before, to bring about greater efficiency. The proper maintenance of air brake equipment will not only contribute to a large extent in fuel saving, but will also reduce maintenance costs and improve your train operation.

The following should be rigidly enforced:
Ample time allowed for inspection of air brakes.
All leaks and defects properly repaired.
Air brakes should be thoroughly gone over, cleaned and tested on all cars on shop or repair tracks and all leaks eliminated.
Train pipes, cylinders and all parts should be securely clamped. This is a matter that is given little attention.

Careful inspection of hose should be made to detect porous hose and to see that hose fittings are securely clamped. Poorly clamped fittings often result in hose being blown off, resulting in wrecks or serious damage to equipment.

Wherever possible train yards and shop tracks should be equipped with yard testing plants to enable inspectors to test cars and trains standing in the yards and make repairs often before trains are made up, resulting in reducing of terminal delays and overtime.

The leakage on outbound trains after a service reduction of 15 lb. has been made and valve placed on lap, should not exceed 8 lb. per minute. If leakage exceeds that amount the trouble should be corrected.

M. C. B. Rules covering the inspection and maintenance of air brakes should be rigidly enforced.

8052 Cars of Georgia Peaches

Director General McAdoo last Friday received through the Division of Operation a report on the handling of the Georgia peach crop during the season now nearing a close, in the form of the following letter sent by B. J. Christman, general manager of the Georgia Fruit Exchange, to B. L. Winchell, Southern regional director:

The crop was unprecedented in this country for the past several states, and very largely exceeds any previous crop in Georgia. Roughly estimated, the returns to the growers will approximate \$7,950,000. A comparison of the carload shipments from this territory for the past several years will perhaps interest you. It is as follows:

1910.....	6,765 cars	1915.....	1,165 cars
1911.....	11,145 cars	1916.....	3,190 cars
1912.....	7,360 cars	1917.....	580 cars
1913.....	11,219 cars	1918.....	8,052 cars
1914.....	10,000 cars		

The fact that the large crop of the season just closing was marketed with such satisfactory results, is largely due to the splendid service rendered by the railroads under your direction, and it is with the approval of the

Division of Capital Expenditures Securing 1919 Figures

R. S. Lovett, director of the division of capital expenditures, on August 27 sent out D. C. E. circular No. 12 asking for detailed information concerning the capital stock, funded debt, amounts chargeable to capital account over the last three years, estimates for 1918 expenditures, etc., as well as other pertinent information which might be of value in arriving at a complete understanding of the capital expenditures necessary in 1918 and 1919 and the means of paying for them. The items concerning which information is wanted are in detail as follows:

1. Capital stock authorized and outstanding.
2. Amount of funded debt authorized.
3. Amount of funded debt outstanding.
4. Rate or rates of interest.
5. Dates of issue and of maturity.
6. If principal or interest, or both principal and interest, are guaranteed, state full particulars, giving the names of the guarantors.
7. State from what source interest on payment of funded debt is obtained.
8. State the aggregate amount expended chargeable to capital account, during the calendar years 1915, 1916 and 1917 respectively.
9. What expenditures do you estimate will be made for capital account during the calendar year 1918.
10. If no bonds are available for the purpose, state how you propose to finance capital expenditures.
11. If proprietary or tenant companies are liable under their agreements or contracts to furnish funds for capital expenditures give full particulars.
12. Furnish condensed balance sheet as of June 30, 1918.
13. State basis upon which operating expenses are distributed between the tenant lines and the approximate annual percentage each assumed in last calendar year.
14. Furnish such operating statistics, if any, as you may have compiled as of June 30, 1918, as will afford a clear and comprehensive understanding of the business transacted.
15. Any other pertinent information which you believe will be of value in arriving at a complete understanding of the capital expenditures necessary in 1918 and 1919 and the means of paying for the same.

Trial Balances of Federal Books Wanted Promptly

In P. S. & A. Circular No. 27 the director of the division of public service and accounting has admonished the chief accounting officers to be more prompt about reporting information respecting cash and other transactions and about submitting trial balances of the federal books as of June 30, 1918, and has made certain suggestions that may help in getting at these figures to best advantage. The circular says:

Many chief accounting officers have failed to comply with the provisions of P. S. & A. Circular No. 18, dated July 15, 1918, which requires carriers to report certain information respecting cash and other transactions, and the submission of a trial balance of the federal books taken as of June 30, 1918, all of which was to be forwarded on or before August 1, 1918.

Accounting officers, apparently, have failed to fully appreciate the importance of immediately interpreting and complying with the provisions of General Order No. 17. Failure promptly to separate the accounts, as provided in that order, has prevented the furnishing of the required information, as well as the trial balance of the accounts on the federal books. It has, also, prevented the furnishing of answers to questions 28 and 29, and it is desired that answers to questions 28 and 29, if they cannot be reported at this time, be later submitted.

It is recognized that a considerable amount of detail work is involved in the ascertainment of all lap-over items, and that unless they have already been ascertained, some time must elapse before all of the lap-over items can be properly spread upon the federal books. To the end that the spreading of lap-over items may not delay the rendition of the return to P. S. & A. Circular No. 18, it is herein suggested that the chief accounting officer have the accounts separated in accordance with the provisions of General Order No. 17, except that the ascertainment of the detail of lap-over items may be deferred until the other accounts are completely stated on federal books and a trial balance as of June 30, 1918, submitted.

When the amounts of lap-over items by months have been ascertained, the total thereof shall be stated in the accounts in the months subsequent to June, supported by a detail record thereof, which shall show separately the amounts of lap-over items for each month, and the amounts of corporation expenses prior to January 1, 1918, and (name of corporation) revenues prior to January 1, 1918, as the case may be. Upon stating the accounts as provided herein, a report of lap-over revenues and expenses as of June 30, 1918, shall be submitted to the undersigned.

This modification of P. S. & A. Circular No. 18 should enable accounting officers to very promptly comply with the provisions thereof, and the date for reporting the information is hereby extended to September 15, 1918.

Inter-Road Freight Claims for Loss and Damage

The director general in order No. 41 has issued the following regulations relative to the investigation, payment and accounting for freight claims for loss and damage arising during federal control. These regulations will not affect the distribution of settlements involving any road not under federal control nor the distribution of claims clearly applicable to the period prior to federal control.

1. *Presentation of claims:* Effective September 1, 1918, claims for loss of or damage to freight shall, except as modified in this paragraph, be presented to and settled by the destination or the initial carrier. Claims filed with an intermediate carrier, through error, shall be immediately transmitted to the destination carrier and claimant so advised. An intermediate carrier clearly at fault may invite and adjust claims direct. Claims for fire or marine losses shall be referred for adjustment to the carrier responsible, and claimant so advised.

2. *Papers necessary to support claims:* Claims for loss of or damage to freight shall be made on the standard forms approved by the Interstate Commerce Commission. In the case of loss or damage, they shall be supported by original bill of lading, if not previously surrendered to carrier, original paid freight receipt, if issued, original or certified copy of invoice of value and all obtainable facts in proof of such loss or damage and the value thereof. If any necessary document is lost or destroyed, claimant shall file a bond of indemnity to cover.

3. *Method of adjustment:* The foregoing provisions having been complied with, loss and damage claims shall be adjusted with the claimant in accordance with the established legal liability, bill of lading, tariff provisions and federal regulations, by the carrier to which presented for the account of and without reference to the other carriers interested in the haul, before the completion of other investigations necessary for the purpose of locating responsibility or apportioning the amount to be paid.

4. *Car load records:* Investigation for development of car seal records in connection with the apportionment of claims between carriers shall be discontinued.

5. *Loss or damage definitely located:* Claims for loss or damage definitely located, the legal liability for which has been established and payment made, shall be charged direct to carrier or carriers responsible therefor.

6. *Loss or Damage Unlocated:* Claims for unlocated loss or damage, the legal liability for which has been established and payment made, shall be apportioned to interested carriers on mileage basis, with minimum of ten miles for any carrier.

7. *Claims Involving Litigation:* Law expenses, including court costs, incurred in connection with the defense of an action where recovery is had, shall be apportioned among the carriers involved on the same basis as the claim. In the event there is no recovery, the law expenses shall be apportioned between the carriers interested on a mileage basis, minimum ten miles for any carrier, and subject to Paragraph 8, Minimum Debits.

8. *Minimum Debits:* Except as provided in Paragraph 5 hereof, the entire amount of any individual loss and damage claim shall be absorbed by the settling carrier, unless the amount chargeable against all other carriers under federal control in interest exceeds five dollars. Proportions less than one dollar against any one carrier shall, however, be absorbed by the settling carrier.

9. *Settlement Between Carriers:* On or before the tenth day of each month, paying carrier shall render a statement of amount due from each debtor carrier showing thereon the claim number, points between which shipment moved over debtor line, waybill reference and date, commodity, nature of claim and amount. The total amount of such statement shall be accepted by debtor carrier as final, except if it be found that an amount was included in statement in error, or a manifest clerical error, adjustment shall be made therefor in the subsequent statement, as prescribed in General Order No. 30. Manifest errors in claim payments should be brought to the attention of the debiting carrier.

10. *Monthly Statements:* Separate monthly statements shall be rendered for liabilities, which were incurred prior to January 1, 1918, and for liabilities, which were incurred subsequent to December 31, 1917. In no case shall a single statement include both prior and subsequent liabilities. Such statements rendered against debit carriers should be forwarded through the proper accounting officers of the carrier by whom they are prepared.

11. *Method of Payment:* Loss and damage freight claims shall be audited and paid on regularly audited vouchers in same manner as other operating expenses are vouchered. Such vouchers shall be approved for audit by the freight claim agent, and for payment by or under the direction of the officer designated to approve vouchers for payment. Provided, however, loss and damage freight claims may be paid by drafts drawn upon the federal or local federal treasurer having jurisdiction within the same limitations which are now in effect and authorized by the officer in charge of such authorization.

12. *Custody of Claim Papers:* Claim papers shall remain in possession of paying carrier, except that when individual claims are charged in full to another carrier, the papers may be sent to such carrier upon request. When documents supporting either paid or unpaid claims leave possession of carrier, they shall be plainly stamped with carrier's name and claim number.

13. *Notations of Exceptions on Waybills:* Loss or damage discovered at any point in transit shall be specifically noted on face of waybill, dated and signed in name of agent, conductor or other authorized employee, giving name of carrier responsible, or point where discovered if responsibility is located.

14. *Noting exceptions on paid freight receipts:* Agents delivering freight to consignee, when shortage or damage is known to exist, shall make

specific notation of extent and nature of the loss or damage on face of original paid freight bill and sign and date such notation in ink. When freight bears external evidence of pilferage or damage at time of delivery, a joint inspection with consignee or his representative shall, when practicable, be made at the delivery station and receipt taken in accordance therewith. Claim for value of freight checking short at destination shall not be paid until inquiry has been made of delivering agent and consignee to ascertain if shortage has since arrived or reached consignee through any source.

15. *Delivery of stray freight:* Stray freight (freight marked with name and address of consignee, but separated from regular revenue waybill) shall be immediately forwarded to marked destination on standard form of waybill, without charges (copy by mail to destination agent) and such waybill shall bear the notation "Stray Freight—Deliver only on presentation of original bill of lading or original paid freight receipt or other proof of ownership." Destination agent receiving stray freight shall immediately notify consignee to whom marked, and if regular revenue waybill is not received, delivery shall be made on presentation of proof of ownership prescribed and collection of tariff charges from point where shipment originated. Special efforts should be made to establish the ownership of perishable freight, in order to insure prompt delivery.

16. *Freight Claim Association rules:* Rules prescribed by the Freight Claim Association, except such as conflict with the regulations herein provided, shall govern all carriers under federal control until otherwise ordered.

Women's Service Section

Announcement has been made of the establishment of a Women's Service Section of the Division of Labor in charge of Miss Pauline Goldmark, as manager, with office at Washington. The manager of the new section will give consideration to conditions of employment of women on railroads under federal control. Miss Goldmark until recently was secretary of the Committee on Women in Industry of the Council of National Defense, New York. She was for five years secretary of the New York City Consumers' League and later secretary of the National Consumers' League.

Manager of Coastwise Steamship Lines Appointed

Director General McAdoo has announced the appointment, effective September 1, of H. B. Walker as federal manager of coastwise steamship lines, with office at Southern Pacific Pier 49, North River, New York, reporting to the Director, Division of Operation, and with jurisdiction over all departments of the following coastwise steamship lines now under federal control: Old Dominion Steamship Company, Ocean Steamship Company, Southern Steamship Company, Merchants' and Miners' Transportation Company, Mallory Steamship Company, Clyde Steamship Company, Southern Pacific Company—Atlantic Steamship Lines.

The director general also expressed his appreciation of the services of the Steamship Advisory Committee, which, with L. J. Spence as chairman, has been handling the coastwise service under a temporary organization up to this time, stating that Mr. Spence particularly, who remains with the Southern Pacific Company, has rendered excellent service.

C. A. Morse in Charge of Engineering and Maintenance

Announcement was made this week of the establishment of an engineering and maintenance department in the Division of Operation. Charles A. Morse, heretofore chief engineer of the Chicago, Rock Island & Pacific, with office at Chicago, has been appointed assistant director, Division of Operation, in charge of engineering and maintenance, effective September 1, and has assumed his new duties, with office in Washington.

500-Mile Mileage Book

There will be placed on sale on September 15 at the different ticket offices throughout the country a \$15 mileage scrip book to be sold for \$16.20, including the war tax. This book is identical in all features except size and price with the \$30 book that went on sale on August 20.

Light Loading of Flour

The Car Service Section has asked the railroads to report to it any cases of loading of flour shipments coming to their attention which do not follow the instructions for inspection or preparation of cars for flour shipments recently issued in

a circular of the cereal division of the milling section of the United States Food Administration. These rules are in accordance with loading rules of the American Railway Association. The railroads are instructed to give special attention to shipments of flour that must be transferred en route to insure proper loading in accordance with loading rules.

Organization of Bureau of Suggestions and Complaints

The Bureau of Suggestions and Complaints, which is being organized by Ballard Dunn as assistant actuary of the Railroad Administration, is rapidly getting started with its work and has received hundreds of letters in response to the announcement of its organization as published in the newspapers. Mr. Dunn is organizing a staff to handle the work, which now includes, in addition to T. T. Maxey, heretofore advertising agent of the Chicago, Burlington & Quincy, whose appointment was noted in last week's issue, J. F. Jarrell, publicity agent of the Atchison, Topeka & Santa Fe, and Eugene Howard Lamb, formerly general agent of the

hitherto manager of the property protection section, becomes counsel for the property protection work and Charles H. Patterson of Pittsburgh has received the title of counsel for claims.

Freight Train Operations for June

THE FIGURES FOR FREIGHT train operations on the Class 1 roads in June compiled by the Operating Statistics Section of the Railroad Administration show a considerable improvement over the figures for May and are comparable with those for April. The revenue ton miles handled in June totaled 34,336,702,777, a considerable increase over May, a less increase over April, but 3.2 per cent less than in June of last year. The freight train miles totaled 53,102,470 in June of this year, a decrease of 3.6 from June of last year. Tons per train, averaging 698, were the same as last year, but tons per loaded car totaling 28.3 represented an increase of 1.8 per cent.

FREIGHT TRAIN OPERATION
Class 1 Roads, United States, by District

	1917	Increase	Decrease	Per cent	1918	1917	Increase	Decrease	Per cent
Average train miles per day	235,264.88	348.01		0.2	226,956.52	226,767.88	188.64		0.1
Freight train miles	33,722,170		1,992,503	d 3.6	317,974,949	328,042,178			d 3.1
Loaded freight car-miles	1,310,237,891		74,517,546	d 5.4	7,302,643,871	7,921,743,019			d 7.8
Empty freight car-miles	631,671,964	632,304,360	19,367,604	3.1	3,313,610,858	3,329,373,112			0.5
Total freight car-miles loaded and empty	1,941,909,855	2,017,059,797	55,149,942	d 2.8	10,616,254,729	11,251,116,131			d 5.9
Freight locomotive-miles	61,655,544	63,312,767	1,657,223	d 2.6	370,489,316	383,019,067			d 3.3
Revenue ton-miles	27,572,722,738	35,454,238,696	1,117,535,919	d 2.2	190,395,270,819	192,130,113,987			d 0.9
Non-revenue ton-miles	2,752,722,738	3,023,624,077	270,901,339	d 0.0	17,235,542,127	17,575,774,177			d 1.9
Average number of freight locomotives in service	4,073	31,366		1.0	31,197	30,805	392		1.3
Average number of freight locomotives in or awaiting shop	4,517	4,307		4.9	4,727	4,494	233		5.2
Average number of freight cars in service	148,756	2,363,821	74,935	3.2	2,410,907	2,315,233	95,684		4.1
Average number of freight cars in or awaiting shop	143,343	141,906	11,353	d 8.6	126,782	129,109	2,327		d 1.8
Home	76,844	100,113	23,269	d 23.3	66,952	79,404	12,452		d 15.7
Foreign	66,499	31,797	34,702	109.1	59,830	49,705	10,125		20.4
Tons per train	698	698		1.0	686	686	14		2.2
Tons per loaded car	28.3	27.8	0.5	1.8	28.4	26.5			7.2
Average miles per locomotive per day	64.9	67.3	2.4	d 3.6	65.6	68.7	3.1		d 4.5
Average miles per car per day	26.8	28.4	1.6	d 5.6	24.3	26.8	2.5		d 4.9
Per cent of empty car-miles	33.2	31.3	1.9	6.1	31.2	29.6	1.6		5.4
Per cent of freight locomotives in or awaiting shop	14.3	13.7	0.6	4.4	15.2	14.6	0.6		4.1
Per cent of freight cars in or awaiting shop	9.6	9.6	0	5.4	5.3	5.6	0.3		d 5.4
Total ton-miles	71,101	1,226,738	55,637	d 4.5	1,109,246	1,134,534	25,288		d 2.2
Per freight loco per month	15,208	16,278	1,070	d 6.6	14,354	14,354	741		d 4.9
Per freight car per month									

d Represents decreases. * Less than one-tenth of one per cent.

Chicago & North Western at Sacramento, and for the past four months in the office of Regional Director R. H. Ashton at Chicago. They have headquarters at Washington, D. C.

The First Standard Eight-Wheel Switcher Delivered

The American Locomotive Company delivered this week the first of the standard eight wheel switching locomotives which it has on order for the United States Railroad Administration. The locomotive was built at the Pittsburgh works and will be placed in service on the Toledo & Ohio Central.

Claims and Property Protection Section

The announcement of the establishment of the new Freight Claim Section noted in last week's issue has been supplemented by the announcement of another new section of the Division of Law, to be known as the Claims and Property Protection Section. This section will have jurisdiction over freight claims and prevention, property protection, now under the jurisdiction of the property protection section, and personal injury claims. John H. Howard, whose appointment as manager of the freight claim section was announced in last week's issue, has now been appointed manager of the new claims and property protection section. Philip J. Doherty,

For the six months ended June 30 there is shown a decrease of 0.9 per cent in revenue ton miles this year as compared with last. There was, however, a decrease of 3.1 per cent in freight train miles, an increase of 2.2 per cent in tons per train, of 7.2 per cent in tons per loaded car.

Increases in the number of locomotives both in service and awaiting shop are shown for both June and the six months including June as compared with the same periods for last year.

The decrease in revenue ton miles in June this year as compared with June last year is understood to be largely on the western and to some extent on the Southern roads. The Eastern roads showed increases and New England, in particular, made a good showing, both in increases in revenue ton miles handled and in increased load per car and per train mile.

It will be noted that the table gives only the totals for the entire country, the separation between the three districts, Eastern, Southern and Western as designated by the Interstate Commerce Commission, having been discontinued. It is understood that a separation has been made by regions but the totals for the regions have not been made public.

Director General Approves Compensation Contract

Also Issues Statement Outlining Reasons for Rejecting Certain Requests for Modifications

DIRECTOR GENERAL McADOO approved on Wednesday and announced on Thursday the form of a contract which the government is willing to make with the railroad companies covering federal control of the railroads and the compensation therefor. The form as announced was for companies without subsidiaries and was in the shape of standard clauses for use in the ordinary case, subject to the government's reserved right to insist on different provisions in cases obviously requiring a different treatment and to any changes of detail or phraseology that may prove necessary. There are certain questions relating to subsidiaries, terminals, industrial leases and other matters which are left for further treatment in the agreements with the individual companies.

The final draft includes several concessions made by Mr. McAdoo after hearing the objections offered by the representatives of the companies and of the Security Owners' Association to the drafts as prepared by the representatives of the Railroad Administration, and it is understood to be in such form as to be accepted by a majority of the roads, although it does not meet the most important objections advanced by the National Association of Owners of Railroad Securities which it has been intimated may attempt to enjoin some of the companies from accepting it. The final draft was discussed at a meeting attended by many railway counsel and executives at Washington on Wednesday and was to be further considered at a meeting of the railway executives' advisory committee at New York on Friday, after which the law committee, headed by Alfred P. Thom, which has represented the railroads in the negotiations was to give an opinion as to its acceptance by the various companies. While Mr. McAdoo acceded to some of the contentions submitted for his consideration by counsel representing the railroads and the security owners, he rejected their most important requests for modifications, particularly those of the security owners, and in a supplementary statement gave his reasons for doing so. The contention for a modification of the acceptance clause which waives the right of a railroad to litigate for loss of good will, diversion of traffic, etc., was rejected, as well as the contention that no deduction should be made from the compensation to pay for deferred maintenance, additions and betterments and road extensions, but it is provided that the power of deduction shall not be so exercised as to prevent the payment of interest regularly paid during the test period. Payments for the support of the corporate organization, contributions to sinking funds, taxes and necessary rentals for subsidiary properties. The request for the protection of regularly paid dividends was denied, but it is declared that it will be the policy not to so use the power of deduction as to interrupt unnecessarily the regular payment of dividends.

Director General McAdoo outlined the scope of the contract in the following statement:

Director General McAdoo's Statement

I am announcing today the form of contract which the government is willing to make with the railroad companies covering federal control of the railroads and the compensation therefor.

The formulation of these contract provisions has been in progress since the approval of the Federal Control Act on March 21, last. The length of time consumed in this work has been due to the difficulties and intricacies of the subject, the absence of precedent for a contract of this nature, the great variety of railroad conditions and practices which had to be carefully considered and discussed before finally adopting a uniform plan, and the necessity of giving to the great number and variety of inter-

ests affected the fullest opportunity for hearing and discussion upon every aspect of the many-sided problems.

In order that no phase of the public interest might be unrepresented, I arranged at the outset for, and have continuously had, the benefit of the advice and assistance in this matter, of a committee of the Interstate Commerce Commission, consisting of Messrs. Clark, Hall, Anderson and Meyer.

The railroad companies and the railroad security holders have been represented by committees as well as by counsel. In addition to the various formal hearings and discussions, there have been repeated interviews at which a great many special problems affecting particular railroad companies have been fully represented.

The draft of contract adopted is the outcome of all these hearings, discussions and considerations and represents in my judgment a form of contract which conforms to the law, protects the public interest, and accords to railroad companies and their stockholders and bondholders the just protection which was contemplated by the government when it took possession and control of the railroads.

Aside from recitals, definitions, and description of property, the draft of contract covers only twelve pages. The principal features are as follows:

The railroad company accepts the contract and the compensation therein provided for in full satisfaction of all claims on account of federal possession and control.

Provision is made for the numerous features of operation and accounting during federal control, for the allocation of revenues on traffic in transit at midnight, December 31, 1917, for the handling of "over-lapping" items of expense, etc.

Provision is made for the maintenance of the property during federal control, of course at the expense of the government, on substantially the same basis as during the three-year test period ending June 30, 1917, and for the return of the property at the end of federal control in substantially as good repair and substantially as complete in equipment as on January 1, 1918; it is provided in effect that if during the test period the maintenance expenses were not sufficient to put the property in condition for safe operation, the additional maintenance necessary for safe operation may be provided at the expense of the company with the limitation that the cost of maintenance shall not be increased at the expense of the company over the normal standard of maintenance of railroads of like character and business during the test period.

Provision is made for the payment of taxes in accordance with the Federal Control Act.

Provision is made for the annual compensation (which will be fixed in each case in accordance with the provisions of the Federal Control Act) to be paid to the company in quarterly installments. This compensation will not be subject to any deductions which would prevent the company from supporting its corporate organization, keeping up its sinking funds, paying taxes and rents, and interest heretofore regularly paid, and interest on loans issued during federal control. These requirements of the company for corporate expenses and fixed charges being thus provided for, the government has the right to make deductions from the remaining compensation to satisfy indebtedness which the railroad company may owe to the government; however, the contract declares the power of deduction to be an emergency power, to be used only when no other reasonable means is provided by the company to reimburse the United States, and not to be used so as to interrupt unnecessarily the regular payment of dividends made by the company during the test period.

Provision is made for the orderly presentation and disposition of claims on the part of the railroad company for amounts expended by the Railroad Administration for additions to its property which, in the opinion of the railroad company, are not for its advantage and for which it believes it should not be charged.

Provisions are also made for final accounting at the end of federal control.

In a comparatively few instances, considering the opportunity for differences of opinion, there appear to remain some objections, on the part of some of the interests which have been heard, but these objections are, in my opinion, without foundation.

One of these objections is that the contract ought to leave open for litigation at the end of federal control the question whether the railroad has been damaged by diversion of its business during federal control. This claim is not tenable because the railroads

have been taken over for war purposes which necessitate diversion of traffic, hence there can be no escape from the view that Congress intended the compensation which it authorized to cover this element. This demand of certain interests is, in effect, for an opportunity to litigate and is a demand which need not be urged if the railroad company, instead of making the contract offered, should, instead, go to the Court of Claims to get its compensation. In this event the railroad company would get only a single compensation, covering its entire claim, including any damages for alleged diversion, and would not be allowed to litigate at the end of federal control the question of diversion of business. The contract ought not, in this respect, to put the railroad company in any better position than it would occupy if it made no contract. This demand is not only unreasonable but the director general has no lawful authority to grant it as I have been advised by the solicitor general of the United States to whom I submitted the question and who has considered and approved the legal aspects of the contract.

Objection has also been made that the contract ought not to require a railroad company to pay out of its compensation such additional amount as may be necessary to bring a railroad, which at the beginning of federal control was in unsafe condition, up to a condition of safe operation. This objection really means that the government ought to accept and continue such a property in an unsafe condition (which would be clearly contrary to the public interest and ultimately contrary to the interest of the owners of the property), or should itself repair at its own cost the fault of the owners and put the property in a better condition than the owners kept it, thus giving the owners not only compensation, but besides, at the end of federal control the advantage of having, without cost, an improved property, while this advantage would be denied to railroad owners who had properly maintained their property. I have not been able to accede to this view. I have felt that railroad owners had no right to make any such demand, nor do I believe that railroad owners generally do make any such demand. Under the contract, however, this right to bring the property up to a condition of safe operation is not to be exercised so as to interfere with the railroad company's payment of its fixed charges, including interest heretofore regularly paid.

Some objection has also been made that no part of a railroad company's compensation should be used to pay its debts to the government except such part as might remain after the company's payment of its customary dividends. This objection has no bearing where a company has paid dividends on a provident basis and has retained, as it is recognized all well regulated companies should retain, a substantial surplus of its income to provide a margin of credit and cover unproductive improvements. In every case the company can, in accordance with the contract, make other reasonable provision for reimbursing the United States and there need be no interference with its dividends as regularly paid during the test period. The objection only applies where a railroad company has paid improvident dividends. As to such a case the argument is that the contract should put the company in a far better position than it would occupy if it made no contract, and in a far better position than it would occupy if it continued in private control and enjoyed an income equal to the compensation guaranteed by the government. Without a contract, the right of deduction in such cases would be clear. Under private management, and with a corresponding income, the company would have to pay the penalty of improvident dividends through the loss of its credit and, ultimately, the breaking down of its property. The proposition is baldly that the government shall protect the company in paying improvident dividends, and then lend it money to cover all its indebtedness arising since federal control, and render it immune from the consequences of its own improvidence. All of these objections are unreasonable. It is not possible to believe that they express the views of the railroad companies generally, or the owners of railroad securities generally. The points are mentioned, however, because they appear to have been made the subject of very considerable publicity.

Frequently the arguments urged in opposition to certain features of the proposed contract have suggested the idea that under any such contract the railroads would be in a much worse position than if they had remained in private management. It may be well, therefore, to look at the situation which confronted the railroads last December and to consider what would probably be their present status if still in private management.

Last December the expenses of the railroads were increasing with great rapidity. They were hedged about in their efforts to obtain increased rates by the numerous and various restrictions imposed by the states, and also by the limitations imposed by the Interstate Commerce Act. They were confronted by imperative demands for greatly increased wages and were without machinery to insure an amicable settlement of those demands. They were finding it almost impossible to borrow money on any terms to make the improvements which were indispensable to enable them to perform their public service. The operating

results for the first four months of 1918 indicate that if the railroads had been under private control during that period they would have lost in operating income, as compared with the corresponding period of the preceding year, \$136,116,533; and, as compared with an average of the corresponding period for the three-year test period, \$96,064,356. This takes no account of the wage increase subsequently made, which nevertheless was retroactive to January 1.

*Under federal control the railroads have been able to contract with the government for a guaranteed income on a just basis, which relieves them of the formidable anxieties which confronted them in December and which would still be confronting them under private control. They are able to borrow money from the government on reasonable terms for necessary improvements, and these are fundamental things which impress the great body of railroad investors and should make them satisfied with the status as it now exists.

In another statement Mr. McAdoo explained his decisions on the points raised by the objections of the railway counsel and the Security Owners' Association as follows:

Concerning Objections Which Have Been Raised

A number of questions involved in the negotiations for a standard form of contract have been submitted for my personal decision by counsel representing the railroads, and also counsel for the National Association of Owners of Railroad Securities. I have given careful consideration to the oral and printed arguments made in support of these contentions.

(1) It is insisted that Section 1 of the contract should be amended so as to give an appeal from the Interstate Commerce Commission to the Court of Claims as to all of the matters which by the terms of the contract are referred to the Commission for decision. There are a number of matters purely administrative as to which an appeal ought not to be considered, and as to which the contention of counsel cannot be sustained.

It is provided in the Federal Control Act (Section 6) that any loss claimed by reason of additions, betterments, or road extensions, or constructed pursuant to said section, may be determined by agreement between the President and such carrier failing such agreement, the amount of such loss shall be ascertained as provided in section three hereof.

As to all such matters, the contention of counsel is sustained, and provision will be made in the contract providing for an appeal to the Court of Claims. As to the other matters in the contract referred to the Interstate Commerce Commission for decision, the contention is disallowed.

(2) The contract as drawn, provided that each carrier should turn over to the director general a working capital which had been tentatively agreed upon as representing the expenses of the carrier for one month without interest. It was insisted that this provision should be stricken out; and that no working capital as such should be insisted upon, and that such balances as came over to the Railroad Administration from any carrier should bear interest at the average rate received by the company during the year 1917, or its daily cash balances in bank.

There is great force in the contention that the carriers should provide a working capital; but I have decided to waive this, and sustain the contention of counsel, and the contract has been directed changed accordingly.

(3) *The Acceptance Clause:* Counsel have insisted, especially the counsel representing the Association of Security Holders, that the Acceptance Clause of the contract whereby it required that all loss and damage to the business or traffic by reason of the diversion thereof or otherwise which has been or may be caused by the taking over or the possession, use, control, or operation of the carriers, was unjust to the carriers, and should be stricken out; that the carriers should have the right, now or at the end of federal control:

(a) To sue for the loss of good-will, loss of business, diversion of traffic, or loss of corporate organization; or,

(b) That, if the road should not be returned to the carriers as now contemplated by the Federal Control Act, the effect of the Acceptance Clause as now written, would be to deprive the carriers of the right to claim damages by reason of said items.

This presents the question as to whether the compensation provided to be paid by the Federal Control Act is intended to be inclusive and exclusive. By the terms of the Act of 1916, the President was authorized to take over the railroads for war purposes, to use the same as a unified system of transportation, to divert traffic, and to make such use of the railroads as the war situation required.

*This paragraph reads slightly different from Mr. McAdoo's statement; a small part of it was misquoting, and it became necessary to secure the sense of the paragraph from other sources.—(Editor.)

The Federal Control Act not only contemplates the same use, but definitely contemplates a unified control and use of the railroads as one great system of transportation. There can, in my judgment, be no doubt but that the methods provided in said Act for compensation; that is, by agreement if an agreement can be made, if not by the decision of the Court of Claims—was intended to embrace all of the damage which the owners have a right to claim. This was the view of the General Counsel of the Railroad Administration and of all of my advisers; but the question was pressed upon me so strenuously that it seemed wise to refer it to the attorney general for an opinion, and an opinion was received, written by the solicitor general as follows:

"The contention made by counsel for the security holders as to Paragraph (a), Section 3 should be rejected. They are not entitled to have the contract so framed as to leave them after the acceptance of the agreed compensation with a right of action for further damages based upon the loss of good-will and the diversion or diversion of traffic.

"Unquestionably the just compensation which the statute provides, is intended to cover these as well as all other elements of loss and damage."

The contention, therefore, must be rejected.

(4) It was also contended that the director general should pay to the carriers a sufficient sum from operating expenses during federal control to pay the corporate expenses of the carriers. I gave careful consideration to this subject some months ago and reached the conclusion to which I still adhere that this contention is unsound and must be rejected.

(5) It was insisted that paragraph (b) of Section 5 should be stricken out. This provides that the director general may expend and charge to the carriers a sufficient sum to make such deferred maintenance as may be necessary to make the operation of the carrier safe, assuming a use of the road similar to the use during the test period, and not substantially enhancing the cost of maintenance over the normal standard of maintenance of railroads of like character and business during said period.

It does not seem to me open to dispute that the power to make deferred maintenance, is a necessary power, and is one which the statute contemplates may be exercised; and the contention should, therefore, be rejected.

(6) It was contended that Section 7, providing for compensation, should be so amended that the power to deduct from the amount of compensation provided in the contract to be paid the carrier, should not be exercised for deferred maintenance, additions, and betterments, or road extensions.

I have given very careful consideration to the arguments and have decided to provide in the contract that the power of deduction will not be exercised so as to prevent the payment of interest where interest was regularly paid during the three-year period, or to provide sum sufficient to support the corporate organization, to keep up the sinking funds of the carriers required by contracts in force December 31, 1917, to pay taxes and other sums necessary for the payment of rents for leased, operated, or controlled roads; nor shall such deduction be made in respect of additions and betterments which are for war purposes and not for the normal development of the company; nor in respect of road extensions.

This substantially grants the contention of the carriers and the security holders except to the extent that they request that such power of deduction be not insisted upon when its exercise would interfere with the payment of dividends regularly paid during the three-year period. I must deny this portion of the request because if I should accede to it the result would be that railroad companies would be permitted to pay improvident dividends when the funds so used ought to be employed in taking care of deferred maintenance and in payment of their just debts to the government. This ruling need not operate to embarrass any company which has paid dividends on a provident basis and has retained and does retain, as it is recognized all well regulated companies should retain, a substantial surplus of its income to provide a margin of credit and cover unproductive improvements. In every such case the company will be in position to provide for deferred maintenance if any, and to make reasonable provision for reimbursing the government, and there need be no interference with the company's dividends as regularly paid during the test period.

(7) It was also insisted that in determining the amount to be added to the compensation of the carriers upon the cost of any additions and betterments less retirements provided for by Section 4 of the Federal Control Act, the rate of interest to be allowed should be at least sufficient to offset the cost to the carrier of money borrowed where the moneys advanced by the company had to be secured from outside loans.

It has seemed to me that this contention should be granted to the extent of providing that the rate of interest to be allowed where the money was advanced by the director general should be the same rate which the director general charged the carrier for the money loaned. The contract may be charged accordingly.

Other matters of less moment were discussed. These have been passed upon and the contract as now drafted reflects my final view as to these several matters.

The Final Contract

SECTION 1.—PRIVITY, ALTERATIONS, DEFINITIONS, ETC.

(a) This agreement shall be binding upon the United States, the director general and his successors, and upon the company, its successors, and assigns.

This agreement shall not be construed as creating any right, claim, privilege, or benefit against either party hereto in favor of any state or any subdivision thereof, or of any individual or corporation other than the parties hereto.

(b) The provisions of this agreement may be altered, amended, or added to by and only by mutual consent signified by instruments in writing signed by the director general and by some officer of the company thereto duly authorized by the board of directors of the company.

(c) Wherever in this agreement the word "Commission" is used it shall be understood as meaning the Interstate Commerce Commission, acting by divisions or otherwise as authorized by law; but either party shall have the right to have the decision of any division of the Commission reviewed by the Commission sitting as a whole.

(d) Wherever in this agreement the words "Federal control" are used to indicate a period of time, they shall be understood as meaning the period from 12 o'clock midnight of December 31, 1917, to and including the day and hour on which said control shall cease.

(e) Wherever in this agreement the words "test period" are used, they shall be understood as meaning the period between July 1, 1914, and June 30, 1917, both inclusive.

(f) Wherever in this agreement the words "standard return" are used, they shall be understood as meaning the average annual railway operating income of the company, computed in the manner provided in section 1 of the federal control act, and ascertained and certified by the Commission.

(g) Wherever in this agreement the words "Director General" are used, they shall be understood as designating William G. McAdoo, or such other person as the President may from time to time appoint to exercise the powers conferred on him by law with relation to federal control, or such agents or agencies as the director general may from time to time appoint for the purpose; and wherever by this agreement any notice is to be given by the director general, the same may be given in his name by any subordinate thereto duly authorized.

(h) Wherever the property of the company is referred to in this agreement it shall be understood as including all the property described in paragraph (a) of section 2 hereof, whether owned or leased by the company, and, where the context permits, all additions or betterments thereto or extensions thereof made during federal control; and as to all such leased property the company shall have the benefit of and be subject to all the obligations and provisions of this agreement and shall be subject to all duties imposed by law in respect of such leased property.

(i) The descriptive words at the heads of the several sections of this agreement and the table of contents are inserted for convenience merely, and are not to be used in the construction of the agreement.

SECTION 2. PROPERTY TAKEN OVER

The company's railroad and system of transportation of which the President has taken over possession, use, control, and operation shall be considered as including:

(a) The following roads and properties: (*Here insert list of roads, noting names, principal termini, etc.*) together with all branches, tracks, trackage, bridge, and terminal rights, and lines of railroad owned or leased and operated by the company as a part of its system of transportation, and all other property, with the appurtenances thereof, whether included in the foregoing list or not, the revenues of which were used, or which, if the property had been then revenue bearing, would have been used, in computing the company's standard return. . . .

The company reserves to itself the benefit of all leases (and of all rents and revenues accruing therefrom), of parts of its right of way, station grounds, and other property, the revenues from which under the accounting rules of the Commission in force during the test period were properly creditable to "miscellaneous rent income" or "miscellaneous income." The company grants to the director general all its rights to terminate leases of any part of its right of way, yards, or station grounds, and to occupy and use the premises of any such lessee when, in his judgment, the same is required for operating purposes. The company shall have for its own benefit the right to lease for industrial sites or other purposes such portion of its right of way, yards, or station grounds, or structures thereon, as are not required by the director general for operating purposes.

and to receive and enjoy the rentals therefrom, subject to the right of the director general to cancel any such lease and to occupy the premises or structures whenever, in his judgment, the same are necessary for operating purposes. All expenses connected with any such property heretofore or hereafter leased or otherwise occupied, as in this paragraph provided, including taxes thereon which during the test period were not charged to railway tax accruals, shall be paid by the company while receiving the revenues therefrom.

[This paragraph may have to be modified, in particular cases, to fit the situation created by the existence of mixed operating and nonoperating property, and perhaps in other cases.]

(b) All materials and supplies on hand at midnight December 31, 1917. *[This item to be supported by an inventory, which, however, is not to be incorporated in the contract except by reference.]*

(c) All balances in the account or accounts representing the total of "Net balance receivable from agents and conductors" as of midnight December 31, 1917;

(d) *[Here insert list of such other operating assets and of any deposits or funds as may be agreed on in each case. If no such assets, deposits, or funds are taken over, omit this paragraph and correct §§ 4 (a), 4 (e), and 9 (d) accordingly.]*

SECTION 3. ACCEPTANCE

(a) The company accepts all the terms and conditions of the federal control act and any regulation or order made by or through the President under authority of said act or of that portion of the act approved August 29, 1916, referred to in paragraph (a) of the preamble to this agreement which authorizes the President in time of war to take possession, assume control, and utilize systems of transportation; and the company further and expressly accepts the covenants and obligations of the director general in this agreement set out and the rights arising thereunder in full adjustment, settlement, satisfaction, and discharge of any and all claims and rights, at law or in equity, which it now has or hereafter can have, otherwise than under this agreement, against the United States, the President, the director general, or any agent or agency thereof, for compensation under the Constitution and laws of the United States for the taking possession of its property, and for the use, control, and operation thereof during federal control, and for any and all loss and damage to its business or traffic by reason of the diversion thereof or otherwise which has been or may be caused by said taking or by said possession, use, control, and operation.

No claim is made by the company for compensation for the period between noon of December 28 and midnight of December 31, 1917; and the revenues of said period shall belong to the company, and the expenses thereof shall be paid by the company, allocated in both cases as provided in paragraph (b) of section 4 hereof.

(b) The company, on its own initiative or upon the request of the director general, shall take all appropriate and necessary corporate action to carry out the obligations assumed by it in this agreement or lawfully imposed upon it by or pursuant to the proclamation of December 26, 1917, or by the Federal control act.

(c) The federal control act being in section 16 thereof expressly declared to be emergency legislation enacted to meet conditions growing out of war, nothing in this agreement shall be construed as expressing or prejudicing the future policy of the federal government concerning the ownership, control, or regulation of the company, or the method or basis of the capitalization thereof, and the recitals or provisions of this agreement shall not be used, as evidence or otherwise, by either party hereto in any pending or future proceeding which involves the acquisition or valuation of the company's property or any part thereof; but nothing in this paragraph shall be taken or construed as affecting the settlement and discharge contained in paragraph (a) of this section, nor as limiting or qualifying any of the provisions of said paragraph for the purposes thereof.

SECTION 4. OPERATION AND ACCOUNTING DURING FEDERAL CONTROL

(a) All amounts received by the director general under paragraphs (c) and (d) of section 2 hereof and all other amounts whether received from the company in cash or collected or realized upon by him from current operating assets belonging to the company or arising from railway operations prior to midnight of December 31, 1917, shall be credited by him to the company; and the director general shall, to the extent of the cash so received or realized, pay and charge to the company all expenses arising out of railway operations prior to January 1, 1918, including reparation claims, and, unless objected to by the company, may pay and charge to the company any of such expenses, including reparation claims, in excess of the cash so received or

realized. Balances of the above accounts shall be struck quarterly on the last days of March, June, September, and December of each year, and the cash balance found on such adjustments to be due either party shall be then payable and, if not paid, shall bear interest at the rate of 6 per cent per annum, unless the parties shall agree upon a different rate; except that the rate of interest on any portion of a balance found due to the company which is derived from cash in bank to the credit of such company on interest, shall be adjusted in each case independently of this contract as the parties may agree.

(b) Railway operating expenses, reparation and other claims, hire of equipment and joint facility rents shall be allocated with reference to the time when incurred as between the period prior and subsequent to midnight of December 31, 1917, and as between the period of federal control and the period subsequent thereto. Railway operating revenues shall be allocated as between the period prior and subsequent to midnight of December 31, 1917, in accordance with the established accrual practices of the company; except that where prior to midnight of December 31, 1917, the company's part of a service on through business had been completed or carload lots on its own line had reached destination, the revenue of the company for such service shall be allocated to it; but as to classes of traffic where in the opinion of the director general such allocation will involve undue delay or undue absorption of accounting labor, such revenues shall be allocated in accordance with the established accrual practices of the company. Like methods of accruing and allocating such revenues shall be made at the end of federal control.

(c) All expenditures made by the director general during federal control for additions and betterments, exclusive of equipment, or for extensions begun prior to January 1, 1918, shall be charged to the company, and if the completion of any such addition, betterment, or extension is approved or ordered by the director general, the company shall be entitled under the provisions of paragraph (d) of section 7 hereof to interest on the cost thereof from the completion of the work; but no interest (except to the extent that the same may be allowed and included in the compensation provided for in paragraph (a) of section 7 hereof) shall be due the company upon any such expenditures for work done prior to January 1, 1918. Payments for all equipment ordered or under construction by the company prior to January 1, 1918, but delivered on or after that date, shall also be considered as expenditures made by order or approval of the director general under paragraph (d) of section 7 hereof. Interest during construction payable under this paragraph, and also interest during construction on the cost of any additions, betterments, and road extensions made by the company or at its expense to the company's property during federal control, shall be included in the cost of the work.

(d) Cash receipts or disbursements and other items arising out of transactions which do not enter into or form a part of those used in determining the company's standard return shall not be received or paid by the director general unless such transactions are negotiated or conducted by his order for account of the company and with its consent. When moneys are so received or paid by the director general in connection with such corporate transactions they shall be credited or charged to the company. There shall be an accounting of the amounts due by one party or the other under this paragraph at the end of each quarter year of federal control, and the amount so found due shall be then payable and if not paid shall bear interest as provided in paragraph (a) of this section.

(e) Any funds taken over as provided in paragraph (d) of section 2 hereof shall be maintained by payments and charges to appropriate operating expense accounts and used by the director general during federal control substantially in the same manner as prior to January 1, 1918. All sums paid by the director general to maintain pension funds or pension obligations or practices, and all contributions to Young Men's Christian Associations of employees, employees' savings funds, relief funds or associations, reading rooms, or health, accident, or death benefits for employees shall be treated as a part of railway operating expenses during federal control.

(f) All salaries and expenditures incurred by the company during federal control for purposes which relate to the existence and maintenance of the corporation, or to the properties of the company not taken over by the President, or to negotiations, contracts, valuations, or any business controversy with the government or any branch thereof, and which are not specially authorized by the director general, shall be borne by the company; except that the expenses of

valuation now being made by the Commission to the extent that they are, in the opinion of the director general, necessary to comply with the valuation orders and other requirements of the Commission and to the co-operation of the company in the making of such valuation, shall be paid by the director general as a part of railway operating expenses. If the company is dissatisfied with the ruling of the director general it may appeal to the Commission, whose decision shall be final.

(g) The director general shall furnish for additions, betterments and road extensions to the company's property approved or ordered by him any of the materials and supplies taken over under paragraph (b) of section 2 hereof, or purchased by him and held for use in connection with the company's property, in so far as, in his judgment, he can do so with due regard to his own requirements. Materials and supplies so furnished shall be charged to the company at cost.

(h) The director general shall at his option be substituted for the period of federal control in the place of the company in respect of the benefits and obligations of contracts relating to operation in force January 1, 1918 (including contracts made by subsidiaries for the use and benefit of the company and the right to abrogate or change and make new contracts with express companies for the period of federal control), except as to contracts between the company and subsidiary companies which shall be considered and treated as arrangements or practices; and the director general shall in like manner at his option be substituted for such period in respect of the benefits and obligations of arrangements and practices in force during the test period in regard to fuel, materials, and supplies for the operation of the property described in paragraph (a) of section 2 hereof and of any additions, betterments, and road extensions thereto, obtained from any mine, oil field, or other source of supply owned or controlled by the company, it being understood that under such arrangements or practices, if availed of by the director general, he shall, to the extent necessary to offset any increase in the standard return growing out of the furnishing by the company or of its subsidiaries, during the test period, of fuel, materials, and supplies under an arrangement or practice at less than the then cost or the then market value thereof for railroad purposes, be charged for such fuel, materials, and supplies a price expressed in dollars or cents per unit below or above the then cost or the then market value thereof for railroad purposes (as the practice of the company may have been) in the same amount that the prices charged the company during the test period were below or above the then cost or the then market value thereof for railroad purposes; and at the request of the director general or the company the prices for fuel or materials supplied between December 31, 1917, and the execution of this contract shall be adjusted on the foregoing basis: *Provided, however*, That a source of supply which the company had acquired to safeguard its own operations shall not be depleted or reduced for use on other transportation systems, except in cases of emergency to be determined by the director general, in which event the quantity so used on other transportation systems shall be accounted for to the company at the fair value thereof: *And provided further*, That materials and supplies secured under contracts which the company had made for its own operations shall, so far as practicable, be used on the company's property, and that, if used on any other transportation system, materials and supplies of like character shall be furnished by the director general for use in making such additions, betterments, and road extensions as shall be chargeable to the company, and shall be charged at cost under such contracts.*

(i) The director general shall pay, or save the company harmless from, all expenses incident to or growing out of the possession, operation, and use of the property taken over during federal control, except the expenses which under this agreement are to be borne by the company. He shall also pay or save the company harmless from all rents called in the monthly reports to the Commission equipment rents or joint-facility rents, and all judgments or decrees that may be recovered or issued against, and all fines and penalties that may be imposed upon, the company by reason of any cause of action arising out of federal control, or of anything done or omitted in the possession, operation, use, or control of the company's property during federal control, except judgments or decrees founded on obligations of the company to the director general or the United States.

(j) The director general shall save the company harmless from any and all liability, loss, or expense resulting from

or incident to any claim made against the company growing out of anything done or omitted during federal control in connection with, or incident to, operation or existing contracts relating to operation; and shall do and perform, so far as is requisite under federal control for the protection of the company, all and singular the things, of which he may have notice, necessary and appropriate to prevent, because of federal control or of anything done or omitted thereunder, the forfeiture or loss by the company of any of its property rights, ordinance rights, or franchises, or of its trackage, lease, terminal, or other contracts involving a facility of operation; but nothing herein contained shall be construed to require the director general to make any capital expenditure necessary to preserve a franchise or ordinance right not heretofore availed of by the company. The director general shall also save the company harmless from any and all claims for breach of covenant heretofore entered into by the company or by any predecessor in title or interest in any mortgage or other instrument in respect to insurance against losses by fire.

Nothing in this or in the preceding paragraph shall be construed to be an assumption by the director general of, or to make him liable on, any obligation of the company to pay a debt secured by a mortgage or any rent under a lease, except rents which during the test period were called in the monthly reports to the Commission equipment rents and joint facility rents and rents which under the accounting rules of the Commission in force during the test period were classified as operating expenses.

(k) In carrying out the provisions of paragraphs (a), (b), (c), and (d) of this section and the provisions of section 6 hereof the director general shall not settle any claim by or against the company against the objection in writing of the president or of any other duly authorized officer of the company. The conduct of all litigation before any court or commission arising out of such disputed claims, or out of operation prior to federal control, shall be in charge of the director general's legal force and the expense thereof shall be paid by the director general; but the company may, at its own expense, employ special counsel in connection with any such litigation.

(l) Nothing in this agreement shall be construed as inconsistent with the provision in section 10 of the federal control act that no process, mesne or final, shall be levied against any property under federal control, nor as a waiver by the United States of any claim that might otherwise be made by it that the rights of any state or subdivision thereof or of any individual or corporation have been abrogated or suspended by the taking over of the company's property or by federal control.

(m) The company shall have the right at all reasonable times to inspect the books and accounts kept by the director general relating to the property of the company, or to the operation thereof, and the director general shall during federal control furnish the company with a copy of the operating reports relating to its property, and as soon as practicable after the end of each fiscal year shall furnish to the company a complete list of its equipment as of the end of such fiscal year.

SECTION 5.—UPKEEP.

(a) During the period of federal control the director general shall, annually, as nearly as practicable, expend and charge to railway operating expenses, either in payments for labor and materials or by payments into funds, such sums for the maintenance, repair, renewal, retirement, and depreciation of the property described in paragraph (a) of section 2 hereof as may be requisite in order that such property may be returned to the company at the end of federal control in substantially as good repair and in substantially as complete equipment as it was on January 1, 1918: *Provided, however*, That the annual expenditure and charges for such purposes during the period of federal control on such property and the fair distribution thereof over the same, or the payment into funds of an amount equal in the aggregate (subject to the adjustments provided in paragraph (c) and to the provisions of paragraph (e) of this section) to the average annual expenditure and charges for such purposes included under the accounting rules of the commission in railway operating expenses during the test period, less the cost of fire insurance included therein, shall be taken as a full compliance with the foregoing covenant.

(b) The director general may expend such sums, if any, in addition to these expended and charged under paragraph (a) of this section (subject to the adjustments provided in paragraph (c) of this section) as may be requisite for the safe operation of the property described in paragraph (a) of section 2 hereof, assuming a use similar to the use during the test period and not

* In view of the differing situations of the various carriers, a uniform standard clause covering the subject matter of paragraph (h) will not be insisted upon, the same being left open for such separate treatment as may be agreed on in each case.

substantially enhancing the cost of maintenance over the normal standard of maintenance of railroads of like character and business during said period; and the amount, if any, of such excess expenditures during federal control shall be made good by the company as provided in paragraph (b) of section 7 hereof.

(c) In comparing the amounts expended and charged under the provisions of paragraphs (a) and (b) of this section with the amounts expended and charged during the test period, due allowance shall be made for any difference that may exist between the cost of labor and materials and between the amount of property taken over and the average for the test period, and, as to paragraph (a), for any difference in use between that of the test period and during federal control which in the opinion of the Commission is substantial enough to be considered, so that the result shall be, as nearly as practicable, the same relative amount, character, and durability of physical reparation.

(d) At the request of either party there shall be an accounting of the amounts due by one party or the other under paragraphs (a) and (b) of this section at the end of each year of federal control and at the end of federal control.

(e) If during federal control any of the property described in paragraph (a) of section 2 hereof or any replacement thereof or addition thereto or betterment or extension thereof is destroyed or damaged otherwise than by fire or public enemies, and is not restored or replaced by the director general, he shall reimburse the company the value of the property destroyed or the amount of the damage at the time of the loss; and the cost of restoration or replacement, or said value or damage, as the case may be, shall be charged to annual railway operating expenses: *Provided, however,* That if the Commission, on application of either party and after giving due consideration to the practice of the company during the test period in respect to such matters and to any other pertinent facts and circumstances, determines that it is just and reasonable that the said cost or value shall be apportioned or extended over a period of more than one year, this shall be done, and so much of said cost or value as may be apportioned by the Commission over the period subsequent to federal control, shall be charged to the company in the final accounting at the end of federal control and shall be paid by it.

If, during federal control, any of the property described in paragraph (a) of section 2 hereof or any replacement thereof or addition thereto or betterment or extension thereof is destroyed or damaged by fire, and is not restored or replaced by the director general, he shall reimburse the company the value of the property destroyed or the amount of the damage at the time of the fire; and the cost of restoration or replacement or said value of damage, as the case may be, shall be charged to annual railway operating expenses, but the same shall not be considered a charge to such expenses for the purposes specified in paragraph (a) of this section.

In case of any such loss or damage by fire, the director general shall, if given written notice of the requirements of any mortgage, equipment lease, or trust on the property so destroyed or damaged, make such restoration or replacement, or pay such value or damage, in such way as to meet the requirements of such mortgage, equipment lease, or trust in the same manner as would have been proper in applying the proceeds of insurance on such property if it had been insured by the company against loss or damage by fire in accordance with the terms of such instruments of lien; and a compliance with the written request of the company in respect thereof shall be a full acquittance of any obligation of the director general in the premises.

The foregoing parts of this paragraph are subject to the proviso that in case of loss or damage any addition and betterments made in connection with or as a part of the restoration or replacement of property damaged or destroyed and chargeable under the accounting rules of the Commission in force December 31, 1917, to investment in road and equipment, shall be charged to and paid by the company.

The director general shall not be liable to the company for any loss or damage due to the acts of public enemies.

(f) If any additions, betterments, or road extensions are made to the property taken over or any equipment is added at the expense of the company and with the approval or by order of the director general during federal control, he shall expend and charge to railway operating expenses such sums either in payments for labor and materials or by payments into funds, as may be requisite for the proper maintenance, repair, renewal, retirement, and depreciation of such property until the end of federal control.

(g) The company shall have the right to inspect its property at all reasonable times during federal control, and the director general shall provide reasonable facilities for such inspection.

(h) If any question shall arise, either during or at the end of federal control, as to whether the covenants or provisions in this section contained are being or have been observed, the matter in dispute shall, on the application of either party, be

referred to the Commission which, after hearing, shall make such findings and order as justice and right may require, which shall be final as to the questions submitted and shall be binding on and observed by both parties hereto, except that either party may take any question of law to the courts, if it so desires.

SECTION 6.—TAXES

(a) All taxes assessed under federal or any other governmental authority for the period prior to January 1, 1918, including a proportionate part of any such tax assessed after December 31, 1917, for a period which includes any part of 1917 or preceding years, and unpaid on that date, all taxes commonly called war taxes which have been or may be assessed against the company under the act of Congress entitled "An act to provide revenue to defray war expenses and for other purposes," approved October 3, 1917, or under any act in addition thereto or in amendment thereof, and all taxes which have been or may be assessed on property under construction, and all assessments which have been or may be made for public improvements, chargeable under the accounting rules of the Commission in force December 31, 1917, to investment in road and equipment, shall be paid by the company; but upon the amount thus chargeable to investment interest shall be paid to the company during federal control at the rate provided in paragraph (a) of section 7 hereof. Taxes assessed during construction on additions, betterments, and road extensions made by the company with the approval or by order of the director general during federal control, shall be considered a part of the cost of such additions, betterments, and extensions and shall, under the provisions of paragraph (d) of section 7 hereof, bear interest as a part of such cost from the date of the completion of such additions, betterments, or extensions. Assessments for public improvements which do not become a part of the property taken over shall bear interest from the date of the payment of such assessment.

(b) If any tax or assessment which under this agreement is to be paid by the company is not paid by it when due, the same may be paid by the director general and deducted from the next installment of compensation due under section 7 hereof. If any taxes properly chargeable to the director general have been or shall be paid by the company, it shall be duly reimbursed therefor.

(c) The director general shall either pay out of revenues derived from railway operation during the period of federal control or shall save the company harmless from all taxes, and the expense of suits in respect thereof, lawfully assessed under federal or any other governmental authority for any part of said period on the property under such control, or on the right to operate as a carrier, or on the revenues derived from operation, and all other taxes which under the accounting rules of the Commission in force December 31, 1917, are properly chargeable to "railway tax accruals," except the taxes and assessments for which provision is made in paragraph (a) of this section.

(d) If any such tax is for a period which began before January 1, 1918, or continues beyond the period of federal control, such portion of such tax as may be apportionable to the period of federal control shall be paid by the director general, and the remainder shall be paid by the company.

(e) Whenever a period for which a tax is assessed can not be definitely determined, so much of such tax as is payable in any calendar year shall be treated as assessed for such year.

SECTION 7.—COMPENSATION

(a) The annual compensation guaranteed to the company under section 1 of the federal control act shall be the sum of dollars during each year and pro rata for each fractional part of a year of federal control, subject, however, to any increase or decrease in the standard return hereafter made by the commission as provided in paragraph (d) of the preamble of this agreement.

(b) The said compensation shall be paid to the company quarterly in equal installments on the last days of March, June, September, and December of each year for the quarter ending therewith, except that the first two installments shall be due as of March 31, 1918, and June 30, 1918, respectively, but shall be paid upon the execution of this agreement; but from each installment there may be deducted any amount then due by the company under paragraphs (a) and (d) of section 4 hereof, under paragraph (b) of section 5 hereof, and under paragraph (b) of section 6 hereof, and all amounts required to reimburse the United States for the cost of additions and betterments made to the property of the company not justly chargeable to the United States, unless such matters are financed or otherwise taken care of by the company to the satisfaction of the director general, and the director general may apportion any such amounts to two or more subsequent installments: *Provided, however,* That said power to deduct amounts due or accruing under paragraph (b) of section 5 hereof and the cost of additions and betterments not justly chargeable to the United States shall not be so exercised as to prevent the company from paying out the

sums reasonably required to support its corporate organization, to keep up sinking funds for the company's debts required by contracts in force December 31, 1917, to pay its taxes, to pay rents and other amounts (not chargeable to capital account) properly payable by the company for leased or operated roads and properties, to pay interest which has heretofore been regularly paid by the company, and interest on loans issued during federal control and approved by the director general,* nor shall such deduction be made in respect of additions and betterments which are for war purposes and not for the normal development of the company, nor in respect of road extensions, nor in respect of amounts due under paragraphs (a) and (d) of section 4 hereof, in cases where the current assets, including materials and supplies, of the company taken over by the director general under the provisions of this agreement clearly exceed the current liabilities of the company paid or assumed by the director general under said section. In the event of a difference as to the fact whether additions and betterments are for war purposes and not for the normal development of the company, or as to whether an addition is a road extension, the question may, on application of either party, be referred to and determined by the Commission.

The power provided in this paragraph to deduct the amount due by the company for the cost of additions and betterments not justly chargeable to the United States is further declared to be an emergency power, to be used by the director general only when he finds that no other reasonable means is provided by the company to reimburse the United States, and, as contemplated by the President's proclamation and by the federal control act, it will be the policy of the director general to so use such power of deduction as not to interrupt unnecessarily the regular payment of dividends as made by the company during the test period.

Overdue installments of compensation, or balances thereof, provided for in this section shall bear interest from maturity at the rate of five per cent per annum, except that if the director general shall, prior to the execution of this contract, have loaned the company any money, the installments of compensation overdue at the date of the execution hereof shall bear interest from maturity at the same rate as that charged to the company on such loans.

(c) During federal control the company shall not, without the prior approval of the director general, issue any bonds, notes, equipment trust certificates, stock, or other securities, or enter into any contracts (except contracts in respect of corporate affairs and property not taken under federal control), or agree to pay interest on its debt at a higher rate, or for rent of leased roads and properties a larger amount, than the rates and amounts payable as of, or required by contracts in force on, December 31, 1917. The company may, however, procure the authentication and delivery to it under any mortgage or trust deed or agreement in force December 31, 1917, of bonds or notes issuable thereunder in respect of additions, betterments, extensions, and equipment, or for refunding purposes.

(d) Upon the cost of additions and betterments (including equipment), less retirements in connection therewith and upon the cost of road extensions, made to the property of the company during federal control, the director general shall, from the completion of the work, pay the company a reasonable rate of interest, to be fixed by him on each occasion. In fixing such rate or rates he may take into account not merely the value of money but all pertinent facts and circumstances, whether the money used was derived from loans or otherwise, provided that to the extent that the money is advanced by the director general or is obtained by the company from loans or from the proceeds of securities the rate or rates shall be the same as that charged by the director general for loans to the company or to other companies of similar credit.

(e) From its compensation so received by it or from other income, if adequate for the purpose, the company shall make all payments of interest, rents and other sums necessary to prevent a default under any mortgage or lease of any of the property described in paragraph (a) of section 2 hereof; and if at any time during federal control the company, by virtue of any change in the right of possession (subject to the rights of the United States) to any of said property or otherwise, shall no longer be entitled as between itself and any other person or corporation to receive the entire compensation herein provided, such compensation shall be apportioned and paid, as between the parties entitled thereto, as justice and right may require.

SECTION 8.—CLAIMS FOR LOSSES ON ADDITIONS, ETC.

(a) Prompt notice in writing, except as provided in paragraph (d) of this section, shall be given the company of the making or ordering of any additions, betterments, or road ex-

tensions, including terminals, motive power, cars, or other equipment to or for the property of the company costing more than one thousand dollars, with an estimate of the cost thereof. Such notice shall be given before the beginning of the work or the acquisition of the property whenever in the judgment of the director general it is practicable to do so. Within a reasonable time after the completion of the work or the acquisition of the property, a written statement of the final cost thereof shall be given the company. There shall be furnished the company, as soon as practicable after the end of each month, a written statement of all expenditures estimated to cost one thousand dollars or less chargeable to investment in road and equipment made during the month, with a brief description of the work done or of the property acquired; and such statement shall constitute all the notice of additions and betterments costing one thousand dollars or less required by (b) and (c) of this section. The notices provided in this paragraph may be given to the president of the company unless the company designates some other officer to receive the same, in which event the notice shall be given to such other officer.

(b) Any claim of the company for loss accruing to it by reason of expenditures for additions and betterments made to the property of the company during federal control in connection with or as part of the work of maintaining, repairing, and renewing the company's property and chargeable under the accounting rules of the Commission in force December 31, 1917, to investment in road and equipment, except such expenditures as are incurred in connection with the replacement of buildings and structures in new locations, may be determined by agreement between the director general and the company, or, failing such agreement as to the fact or amount of such loss, the questions at issue may, upon the application of either party at any time after the filing of the statement of claim hereinafter referred to, be ascertained in the manner provided in section 3 of the federal control act: *Provided, however,* That no loss shall be claimed by the company and no money shall be due to it in respect of such additions and betterments upon the ground that the actual cost thereof at the time of construction was greater than under other market and commercial conditions; and for the purpose of determining such controversy the amount paid for any addition or betterment shall be deemed the fair and reasonable cost thereof and shall be taken as the basis for such determination; nor unless the company, within sixty days of notice to it that the work will be done, shall give the director general notice of objection thereto and shall file with the director general a statement of its claim within ninety days after notice of the completion of the work.

(c) Any claim of the company for loss accruing to it by reason of any additions and betterments which are not made in connection with or as a part of the work of maintaining, repairing, and renewing the company's property, or accruing to it in connection with maintenance in the replacement of buildings and structures in new locations, or by reason of road extensions, terminals, motive power, cars, or other equipment made to or provided for the property of the company during federal control, may be determined by agreement between the director general and the company, or failing such agreement as to the fact or amount of such loss, may, by proceedings instituted not later than six months after the end of federal control, be ascertained in the manner provided in section 3 of the federal control act: *Provided, however,* That no loss shall be claimed by the company and no money shall be due to it in respect of such additions, betterments, road extensions, terminals, motive power, cars, or other equipment mentioned in this paragraph upon the ground that the actual cost thereof at the time of construction or acquisition was greater than under other market and commercial conditions; and for the purpose of determining such controversy the amount paid for any additions, betterments, road extensions, terminals, motive power, cars, or other equipment shall be deemed the fair and reasonable cost thereof and shall be taken as the basis for such determination; nor unless within sixty days after notice to the company of such construction or acquisition written notice is given to the director general by the company that it will claim a loss in respect thereof. With and as part of such notice the company shall state its objections to such construction or acquisition as far as reasonably practicable at the time. Nothing in this agreement shall be construed as barring the United States from contending that no loss within the meaning of the federal control act accrued to the company by reason of any additions, betterments, or road extensions made during federal control by order or approval of the director general, if it is made to appear that the company itself but for federal control should in the exercise of sound judgment have made such addition, betterment or road extension.

(d) Where additions, betterments, or road extensions or terminals, motive power, cars, or other equipment have been made to or provided for the property of the company during

* The company will be expected to furnish the director general, prior to the execution of any contract, with a sworn statement of all the fixed charges, rents, and other items mentioned in this clause, as of December 31, 1917.

federal control but prior to the execution of this agreement, the director general shall not be required to give the notice thereof provided for in paragraph (a) of this section and notice by the company of any claim of loss in respect thereto may be given the director general within ninety days after the execution hereof; and such claims shall thereafter be proceeded with in the manner provided in paragraph (b) or paragraph (c) of this section, as the case may be.

(e) The director general shall reimburse the company for the amount of loss ascertained under this section with a proper adjustment of interest thereon.

(f) The director general shall not acquire any motive power, cars, or other equipment at the expense, or on the credit, of the company in excess of what in his judgment is necessary, in addition to its then existing equipment, to provide for the traffic requirements of its own system of transportation; but this provision shall not prevent the director general, after the acquisition of such equipment, from using the same, or any part thereof, on the line of any other transportation system operated by him.

SECTION 9.—FINAL ACCOUNTING

(a) At the end of federal control all the property described in paragraph (a) of section 2 hereof shall be returned to the company, together with all repairs, renewals, additions, betterments, replacements, and road extensions thereto which have been made during federal control, except as any part thereof may have been destroyed or retired and not replaced, in which case the provisions of section 5 hereof shall govern and except that the director general shall not be obliged to restore or replace property destroyed or damaged by the acts of public enemies.

(b) At the end of federal control the director general shall return to the company all uncollected accounts received by him from the company and also materials and supplies equal in quantity, quality, and relative usefulness to that of the materials and supplies which he received, and to the extent that the director general does not return such materials and supplies he shall account for the same at prices prevailing at the end of federal control. To the extent that the company receives materials and supplies in excess of those delivered by it to the director general it shall account for the same at the prices prevailing at the end of federal control, and the balance shall be adjusted in cash.

(c) The total amount of the account "Net balance receivable from agents and conductors" at the end of federal control may be turned over by the director general to the company. He may also turn over all assets which have accrued out of operation; and the company shall, to the extent of the cash received or realized from such assets, pay and charge to the director general all expenses arising out of railway operations during federal control, including reparation and other claims, and may, unless objection is made by the director general, pay and charge to him any such expenses including reparation and other claims in excess of the cash so received or realized. On the first day of the third month following the termination of federal control an accounting between the parties shall be had, and so on the first of each third month thereafter. Any balance found due either party shall be payable as of the date on which the account is stated and shall bear interest until paid.

(d) At the end of federal control there shall be paid to the company any balance then remaining unpaid of the cash and special deposits received from the company at the beginning of federal control, together with any unpaid interest which may have accrued upon the same. There shall also be paid to the company all special funds which were taken over by the director general as enumerated in section 2 hereof, and any funds created under the provisions of this agreement, except to the extent that such funds may have been properly used under this agreement.

(e) Wherever under any provision of this section there is to be an adjustment of interest, it shall be at the rate of five per cent per annum unless the parties shall in any case agree on a different rate.

(f) After federal control no claim by or against the director general shall be settled by the company against the written objection of the director general or the attorney general of the United States. The conduct of all litigation before any court or commission arising out of such disputed claims or out of operations during federal control shall be in charge of the company's legal force and the expense thereof shall be paid by the company; but the director general or the attorney general may, at the expense of the United States, employ special counsel in connection with any such litigation.

The Railroad Administration has also tendered to representatives of the short line railroads a special form of contract to meet their peculiar conditions which has been the subject

of negotiations for several weeks. It was thought this might be declared acceptable to the short lines before the end of the week.

Orders of Regional Directors

MAINTENANCE OF ENGINE TERMINALS.—The Eastern regional director orders that to insure proper condition of engine terminals for the Winter, repairs be made to roundhouse, roofs, windows, doors, heating pipes, lighting systems, etc., November 1. Shelter should be provided for those employees whose occupations expose them to the weather, such as ashpit, turntable and coaling forces, in order to protect the men, and by making comfortable provision help insure retention of sufficient force. Machinery of coaling plants, turntables, etc., should be inspected and repaired and spare parts provided to insure uninterrupted service.

Headlight Requirements on Switching Locomotives.—The Eastern regional director states that it has been determined that when necessary to make changes in headlights on switching locomotives to meet the requirements of the law, or on account of renewals, they will be equipped with headlights of the incandescent type with a turbo-generator and a bulb of suitable wattage.

Utilization of U. S. Employment Service.—The Eastern regional director advises that while it is desired to utilize to the fullest extent the United States Employment Service in the providing of railway labor, no understanding or commitments have been made by the Railroad Administration to the effect that the Employment Service is charged with the duty and responsibility of protecting the railroad requirements. It must be clearly understood by those in charge of the operation and maintenance of railroad facilities that the responsibility for an adequate and proper force devolves upon them and that they are expected to utilize all of the sources available for the procurement of their labor.

Courtesy First.—The regional directors are adding to the director general's appeal for courtesy and consideration for the public on the part of railway employees. The regional director for the Southwestern district has supplemented the director general's appeal with a suggestion for holding meetings and getting right at the root of the matter. That part of his circular reads: "I suggest that each federal manager have a meeting of his department officers as promptly as possible, and go fully into this subject. In turn, the various department heads, particularly traffic, should have similar meetings with their subordinates."

Purchase of Rolling Equipment.—The Northwestern regional purchasing committee has furnished instructions to purchasing agents on the purchase of rolling equipment, such as locomotives, cars, coaches, etc. When an aggregate purchase for equipment, the capital expenditure for which has been duly approved, is estimated to cost \$100,000 or more, an order in triplicate should be sent to the regional purchasing committee with copies of plans and specifications, so that the matter may be submitted to the central advisory purchasing committee for purchase.

Such equipment amounting in the aggregate to less than \$100,000 should be purchased by the individual road, subject to the approval of the regional purchasing committee. Proposals covering such equipment should be tabulated and sent to the regional purchasing committee for approval with complete specifications, blue prints, and other details, accompanied by recommendations as to acceptance and reasons therefore. Equipment purchased by individual roads should as far as practicable comply with the equipment standards of the Railroad Administration.

Surplus Bar Iron on the Great Northern.—The North-

western regional purchasing committee states that the Great Northern has a surplus of bar iron which is available for immediate shipment. Roads in the vicinity of Duluth, Minneapolis and St. Paul requiring iron are asked to draw on this stock before placing orders elsewhere.

Sill Steps for Disposal by the Soo.—The Northwestern regional purchasing committee announces that the Minneapolis, St. Paul & Sault Ste. Marie has 4,800 left-hand single freight car sill steps and 1,800 right-hand double freight car sill steps for safety appliances on box cars available for disposal to other roads. E. T. Stone, purchasing agent of the Soo line at Minneapolis, will supply further information concerning this material.

Surplus Material for Disposal by S. P. & S.—The Northwestern regional purchasing committee announces that the Spokane, Portland & Seattle has for disposal at its Portland shops material including angle bars, various sizes of new galvanized corrugated culvert pipe, four-point Pierce transposition J. brackets, new caboose cupola lamps, several thousand feet of new circular loom, several thousand feet of cable and a number of miscellaneous items.

Solicitation of Labor.—The Northwestern regional director recommends prompt and systematic action in recruiting labor by all railroad officers including foremen, along the following lines:

- (1) The duty of keeping a record of the labor requirements should be placed in the hands of one man or bureau on each railroad under the immediate supervision of the federal or general manager.
- (2) The heads of each department should be required to report to that officer or bureau at stated periods as to their labor requirements and the shortage in the various crafts. These reports should include a statement as to action they are taking in the recruiting of labor.
- (3) A statement of the labor requirements should be sent to every United States employment office on the line.
- (4) Bulletins should be sent out from time to time showing the requirements for labor on each division. Agents should be instructed to post these bulletins where they can be seen by all interested and to solicit the aid of the newspapers in putting before the public the necessity of the railroads in the labor line.
- (5) In districts where the harvesting has been completed or where there has been a failure of crops, an active solicitation should be made to secure for railroad service the men who have been engaged in farm work.
- (6) Reduced building operations generally, and particularly in small towns, should make available carpenters and laborers for car repair work, if energetically solicited.

Routing Telegraphic Traffic Over Railroad Wires.—The regional director of Southwestern roads asks that the routing over railroad wires of all telegraphic traffic originating with officers of agents for agents of one line, destined to officers and agents of another line, or to and from officers of the Railroad Administration, should be over the most available and expeditious route, no matter in what region. In case of doubt or where it seems advisable to expedite the transmission of telegraphic traffic by extending circuits or connecting the circuit of one railroad to the circuits of another, E. A. Chenery, general superintendent of telegraph of the Southwestern region, should be consulted.

Telegraph School Wire Connections.—The Southwestern regional director points out the desirability of encouraging the establishment of telegraph schools by reputable parties in promising communities, because of the acute shortage of telegraphers at the present time. There will, therefore, be no objection to authorizing a *sounder only* connection in such a telegraph school, looped to either a railroad despatching or local message circuit (but not to a circuit on which commercial business is handled) provided the parties making the request bear all the expense in connection therewith. E. A. Chenery, general superintendent of telegraph of the region, should be advised of each installation as authorized for his information.

Reduced Fares to Soldiers.—The Southwestern regional director quotes a letter from Edward Chambers, director of the division of traffic of the Railroad Administration, on the subject of reduced fares to officers and enlisted men in

the United States Army. The letter points out that prior to the effective date of the director general's order No. 28 advancing passenger fares and discontinuing special concessions, reduced fares were in effect between a number of military camps and contiguous cities.

Railroad officers are requested to canvass the present situation and to make such recommendations regarding the re-granting of reduced fares to officers and enlisted men as may be in their judgment advisable. Each situation should be dealt with on its merits and where there are other reasonably satisfactory facilities for moving the men, such as trolley lines or motor buses it will be unnecessary to make any reduction which will have the effect of unduly burdening the steam roads. In cases like that of Camp Upton where there is no other means of transit, it is believed that the men who are largely recruited from New York should have an opportunity to visit their homes occasionally at low fares. It may prove advisable to confine the reduced rates to certain trains or certain days of the week. It is suggested that railroad officers confer with camp commanders so that it may be understood in advance that the soldiers must expect to put up with crowded cars if they are granted reduced rates. As to the measure of the reduction, this is also a matter in which the recommendations of railroad officers are requested. But unless there is some good reason to the contrary the rates should not be less than one fare for a round trip.

It is impracticable to use furlough fare certificates, which are used in connection with the long haul business for which a rate of one cent per mile is authorized, and the only feasible check upon the traffic will be to confine the sale of tickets to men in uniform and wherever possible, to given trains, either regular or special.

Improvements for 1919.—The Southwestern regional director quotes a letter from the director of the division of capital expenditures which states that while in general the ordering of material for 1919 may probably await preparation of the budget, wherever in the judgment of railway officers it is necessary to place immediate orders for materials for essential facilities for 1919 delivery, this should be done without awaiting specific approval.

Loss of Empty Milk and Cream Cans.—The Southwestern regional director quotes a letter from Edward Chambers, director of the division of traffic of the Railroad Administration, which points out that there is a great loss in transportation and a serious delay in the return of empty milk and cream cans throughout the United States, a condition which is particularly serious in its effects on the production and marketing of milk and cream because of the present scarcity and the high cost of the metal of which the cans are made. While conditions governing the transportation of milk vary widely, steps should be taken to adopt whatever plans for marking, waybiling and shipping cans as are most appropriate. Constant inspection should permit unnecessary accumulations, delays, rough handling and other abuses. The general appropriation of the cans by railway employees for use as water kegs and to other ends should be stopped.

Discontinuance of Fines for Mail Failures.—The Southwestern regional director announces that effective September 1, the practice, where now existing, of imposing fines upon train and station employees in connection with mail irregularities will be discontinued. If negligence occurs, discipline should be in some other form than fines. When railroad companies have contracts with teaming companies for handling mail between postoffices and railroad stations, the provisions of the contracts relating to fines will continue to be enforced.

Passenger Fares for War Industry Workmen.—The South-

western regional director announces the fares and arrangements which have been authorized for war industry workmen where special train service is necessary. The fare one way will be six mills per mile, plus five cents, with a minimum of ten cents per capita based on the mileage of the special service from starting point to destination. Fares from intermediate points to destination and vice versa will be the same as the fare between the extreme points covered by service. All trains will earn a minimum of \$3 per train mile. A special form of 10 or 12 trip tickets good for the bearer will be used, limited to 30 days or less. These rates and arrangements are confined to industries and construction contractors engaged wholly in war work. The special forms of 10 or 12 trip tickets will be sold through the industry wherever possible and will be honored only on workmen's trains.

Re-Lettering Express Company Cars.—Express cars should be lettered "American Railway Express," the word "Company" being eliminated.

Expense for Improvements to Be Borne by Two or More

Companies.—The Eastern regional director quotes from a letter of instructions received from R. S. Lovett, Director, Division of Capital Expenditures, that should govern in making improvements which should be borne by two or more companies, and which are not covered by existing agreements.

"(a) When joint facilities are desired an effort should be made in the first instance to get the companies concerned to agree to the joint improvement and to apportion the cost between them.

"(b) Where the companies will not agree and the federal manager deems the improvement necessary, the improvement shall be ordered and the cost shall be apportioned on such basis as shall be deemed proper, and the federal manager shall make requisitions accordingly; and thus the companies will be left to make claims for damages they may have sustained for having been compelled to make the capital expenditures involved.

"(c) In cases where the companies refuse to assent to the improvement the federal manager shall not order it unless reasonably satisfied that it will justify itself from the government standpoint. Where it will produce increased capacity there will probably be sufficient justification. Where the improvement will not increase capacity but will merely promote economy, the question should be very carefully considered whether the saving for a few years will be sufficient to justify the government in incurring the expenditure, since it is quite possible—the risk varying in different cases—that the government will be compelled to stand it all."

Wage Increase for Agents, Clerks and Laborers

Eight-Hour Day and Raises Amounting to \$25 a Month or
12 Cents an Hour for Million Employees

DIRECTOR GENERAL McADOO on September 5 issued Supplements 7 and 8 to General Order 27, granting further increases in wages to nearly one million employees of railroads under federal control, after recommendations had been made by the Board of Railroad Wages and Working Conditions, based on an exhaustive investigation made by the Board.

Supplement 7 affects all clerks, station employees, stationary enginemen, boiler-washers, power transfer and turntable operators, and common laborers in shops, roundhouses, stations, storehouses and warehouses. It contains general rules for promotion and adjustments of grievances.

Supplement 8 affects all maintenance of way department employees working on tracks, bridges and buildings, and includes painters, mason and concrete workers, water supply employees, plumbers, etc.

The two supplements stabilize wages and remove inequalities occurring in General Order 27.

In the supplements certain basic wage minimums are established.

Generally speaking, the wage increases amount, as compared with the wages paid on January 1, 1918, to \$25 per month for employees paid on a monthly basis, and 12 cents per hour for employees paid on an hourly basis. These increases include any increase granted to these employees put into effect under General Order 27. General Order 27 is cancelled in so far as it applies to these employees.

The new rates are effective as of September 1, 1918. Back pay from January 1, 1918, not already paid out, will of course be based on the rate established in General Order 27. Under these supplements, the eight-hour day is established throughout for these employees, with overtime up to 10 hours on a pro rata basis with time and one-half thereafter. Because of the situation resulting from General Order 27, it is impossible to estimate adequately at this time, how much of an increase in the operating expenses of the railroads these changes will total.

The Supplements are as follows:

Clerks and Miscellaneous Employees

Supplement 7 to General Order 27

Effective September 1, 1918, superseding General Order 27, and in lieu thereof, as to the employees herein named, the following rates of pay and rules for overtime and working conditions for all clerical forces in all departments, and for certain employees in stations, storage or terminal warehouses, docks, storehouses, shops and yards, upon railroads under federal control, are hereby ordered:

ARTICLE I. RATES OF PAY.

(a) For all employees who devote a majority of their time to clerical work of any description, including train announcers, gatemen, checkers, baggage and parcel room employees, train and engine crew callers and the operators of all office or station equipment devices, (excepting such as come within the scope of existing agreements or those hereafter negotiated with the railroad telegraphers), establish a basic minimum rate of \$62.50 per month; and to this basic minimum rate and all rates of \$62.50 and above, in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$87.50 per month.

(b) This order shall apply to chief clerks, foremen, subforemen and other similar supervisory forces of employees herein provided for.

(c) For office boys, messengers, chore boys and other employees under 18 years of age filling similar positions, and station attendants, establish a basic minimum rate of \$20 per month, and to this basic minimum rate and all rates of \$20 per month and above, in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$45 per month.

(d) For all other employees not otherwise classified, such as janitors, elevator and telephone switchboard operators, office, station and warehouse watchmen, establish a basic rate of \$45 per month, and to this basic minimum rate and all rates of \$45 per month and above, in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$70 per month.

(e) The same increases provided for in Sections (a), (b), (c) and (d) of this article, shall apply to employees named therein paid on any other basis.

(f) The wages for new positions shall be in conformity with the wage for positions of similar kind or class where created.

ARTICLE II.—STATIONARY ENGINEERS (STEAM), FIREMEN AND POWER HOUSE OILERS.

(a) For all stationary engineers (steam), establish a basic minimum rate of \$85 per month, and to this basic minimum rate, and all rates of \$85 and above, in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$110 per month.

(b) This order shall apply to chief stationary engineers.

(c) For all stationary firemen and power house oilers, establish a basic minimum rate of \$65 per month, and to this basic minimum rate, and all rates of \$65 and above, in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$90 per month.

ARTICLE III.—LOCOMOTIVE BOILER WASHERS.

For all locomotive boiler washers who were on January 1, 1918, prior to the application of General Order 27, receiving less than 26 cents per hour, establish a basic minimum rate of 26 cents per hour, and to this basic minimum rate, and all hourly rates of 26 cents and above, add 12 cents per hour, establishing a minimum rate of 38 cents per hour, provided that the maximum shall not exceed 50 cents per hour.

ARTICLE IV.—POWER TRANSFER AND TURNTABLE OPERATORS.

For all operators of power driven transfer and turntables who were on January 1, 1918, prior to the application of General Order 27, receiving less than 21 cents per hour, establish a basic minimum rate of 21 cents per hour, and to this basic minimum rate, and all hourly rates of 21 cents and above, add 12 cents per hour, establishing a minimum rate of 33 cents per hour, provided that the maximum shall not exceed 45 cents per hour.

ARTICLE V.—SHOP, ROUNDHOUSE, STATION, STOREHOUSE AND WAREHOUSE EMPLOYEES (EXCEPT EMPLOYEES PROVIDED FOR IN HARBOR AWARDS).

(a) For all laborers employed in and around shops, roundhouses, stations, storehouses and warehouses (except employees provided for in harbor awards), such as engine watchmen and wipers, fire builders, ashpitmen, boiler washer helpers, flueborers, truckers, stowers, shippers, coal-passers, coal chute men, etc., who were on January 1, 1918, prior to the application of General Order 27, receiving less than 19 cents per hour, establish a basic minimum rate of 19 cents per hour, and to this basic minimum rate, and all hourly rates of 19 cents and above, add 12 cents per hour, establishing a minimum rate of 31 cents per hour, provided that the maximum shall not exceed 43 cents per hour.

(b) For all common labor in the departments herein referred to and not otherwise provided for, who were on January 1, 1918, prior to the application of General Order 27, receiving less than 16 cents per hour, establish a basic minimum rate of 16 cents per hour, and to this basic minimum rate and all hourly rates of 16 cents and above, add 12 cents per hour, establishing a minimum rate of 28 cents per hour, provided that the maximum shall not exceed 40 cents per hour.

ARTICLE VI.—MONTHLY, WEEKLY OR DAILY RATES.

For all monthly, weekly or daily rated employees, in the departments herein referred to, and not otherwise provided for, increase the rates in effect as of January 1, 1918, prior to the application of General Order 27, on the basis of \$25 per month.

ARTICLE VII.—MAXIMUM MONTHLY WAGE.

No part of the increases provided for in this order shall apply to establish a salary in excess of \$250 per month.

ARTICLE VIII.—PRESERVATION OF RATES.

(a) The minimum rates, and all rates in excess thereof, as herein established, and higher rates which have been authorized since January 1, 1918, except by General Order 27, shall be preserved.

(b) Employees temporarily or permanently assigned to higher rated positions, shall receive the higher rates while occupying such positions; employees temporarily assigned to lower rated positions shall not have their rates reduced.

ARTICLE IX.—EXCEPTION.

The provisions of this order will not apply in cases where amounts less than \$30 per month are paid to individuals for special service which only takes a portion of their time from outside employment or business.

ARTICLE X.—HOURS OF SERVICE.

Eight consecutive hours, exclusive of the meal period, shall constitute a day's work.

ARTICLE XI.—OVERTIME AND SENIORITY.

(a) Where there is no existing agreement or practice more favorable to the employees, overtime shall be computed for the ninth and tenth hour of continuous service, pro rata on the actual minute basis, and thereafter at the rate of time and one-half time. Even hours will be paid for at the end of each pay period; fractions thereof will be carried forward.

(b) When notified or called to work outside of established hours employees will be paid a minimum allowance of three hours.

(c) Employees will not be required to suspend work during regular hours to absorb overtime.

ARTICLE XII.—PROMOTIONS.

(a) Promotions shall be based on ability, merit and seniority; ability and merit being sufficient, seniority shall prevail, except, however, that this provision shall not apply to the personal office forces of such officers as superintendent, trainmaster, division engineer, master mechanic, general freight or passenger agent, or their superiors in rank and executive officers. The management shall be the judge, subject to an appeal, as provided in Article XIII.

(b) Seniority will be restricted to each classified department of the general and other offices and of each superintendent's or master mechanic's division.

(c) Seniority rights of employees referred to herein, to: (1) New positions, (2) vacancies: will be governed by paragraphs (a) and (b) of this article.

(d) Employees declining promotion shall not lose their seniority.

(e) Employees accepting promotion will be allowed 30 days in which to qualify, and failing, will be returned to former position without loss of seniority.

(f) New positions or vacancies will be promptly bulletined for a period of five days in the departments where they occur. Employees desiring such positions will file their applications with the designated official within that time, and an appointment will be made within 10 days thereafter. Such position or vacancy may be filled temporarily pending an assignment. The name of the appointee will immediately thereafter be posted where the position or vacancy was bulletined.

(g) In reducing forces, seniority shall govern. When forces are increased employees will be returned to the service and positions formerly occupied, in the order of their seniority. Employees desiring to avail themselves of this rule must file their names and addresses with the proper official. Employees failing to report for duty or give satisfactory reason for not doing so within seven days from date of notification will be considered out of the service.

(h) A seniority roster of all employees in each classified department who have been in the service six months or more, showing name, date of entering the service and the date of each promotion or change, will be posted in a place accessible to those affected.

(i) The roster will be revised and posted in January of each year, and shall be open to correction for a period of 60 days from date of posting, on presentation of proof of error by an employee or his representative. The duly accredited representative of the employee shall be furnished with a copy of roster upon written request.

ARTICLE XIII.—DISCIPLINE AND GRIEVANCES.

(a) An employee disciplined, or who considers himself unjustly treated, shall have a fair and impartial hearing, provided written request is presented to his immediate superior within five days of the date of the advice of discipline, and the hearing shall be granted within five days thereafter.

(b) A decision will be rendered within seven days after the completion of hearing. If an appeal is taken it must be filed with the next higher official and a copy furnished the official whose decision is appealed within five days after date of decision. The hearing and decision on the appeal shall be governed by the time limits of the preceding section.

(c) At the hearing or on the appeal the employee may be assisted by a committee of employees or by one or more duly accredited representatives.

(d) The right of appeal by employees or representatives, in regular order of succession and in the manner prescribed up to and inclusive of the highest official designated by the railroad, to whom appeals may be made, is hereby established.

(e) An employee on request will be given a letter stating the cause of discipline. A transcript of evidence taken at the investigation or on the appeal will be furnished on request to the employee or representative.

(f) If the final decision decrees that charges against the employee were not sustained, the record shall be cleared of the

charge; if suspended or dismissed, the employee shall be returned to former position and paid for all time lost.

(g) Committees of employees shall be granted leave of absence and free transportation for the adjustment of differences between the railroad and the employees.

ARTICLE XIV.—RULES FOR APPLICATION OF THIS ORDER.

(a) It is not the intention of this order to change the number of days per month for monthly paid employees. The increases per month provided for herein shall apply to the same number of days per month which were worked as of January 1, 1918.

(b) The pay of female employees for the same class of work shall be the same as that of men, and their working conditions must be healthful and fitted to their needs. The laws enacted for the government of their employment must be observed.

ARTICLE XV.—INTERPRETATION OF THIS ORDER.

The rates of pay and rules herein established shall be incorporated into existing agreements, and into agreements which may be reached in the future on the several railroads, and should differences arise between the management and the employees of any of the railroads as to such incorporation, intent or application of this order prior to the creation of additional railway boards of adjustment, such questions of difference shall be referred to the director of the Division of Labor for decision, when properly presented, subject always to review by the director general.

Agreements or practices, except as changed by this order, remain in effect.

Maintenance of Way Employees

SUPPLEMENT NO. 8 TO GENERAL ORDER NO. 27.

Effective September 1, 1918, superseding General Order 27, and in lieu thereof, as to the employees herein named, the following rates of pay and rules for overtime and working conditions for all employees in the maintenance of way department (except mechanics and helpers were provided for in Supplement 4, General Order 27, and clerical forces), upon railroads under federal control are hereby ordered:

ARTICLE I.—RATES OF PAY.

(a) For all building, bridge, painter, signal and construction, mason and concrete, water supply, maintainer and plumber foremen, establish a basic minimum rate of \$90 per month, and to this basic minimum rate and all rates of \$90 per month and above in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$115 per month.

(b) For all assistant building, bridge, painter, signal and construction, mason and concrete, water supply, maintainer and plumber foremen and for coal wharf, coal chute, and fence gang foremen, pile-driver, ditching and hoisting engineers, and bridge inspectors, establish a basic minimum rate of \$80 per month and to this basic minimum rate and all rates of \$80 per month and above, in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$105 per month.

(c) For all track foremen establish a basic minimum rate of \$75 per month, and to this basic minimum rate and all rates of \$75 per month and above in effect as of January 1, 1918, prior to the application of General Order 27, add \$25 per month, establishing a minimum rate of \$100 per month.

(d) Rates of pay for all assistant track foremen will be five cents per hour in excess of the rate paid laborers whom they supervise.

(e) For all mechanics in the maintenance of way and bridge and building departments, where not provided for in Supplement 4 to General Order 27, who were on January 1, 1918, prior to the application of General Order 27 receiving less than 40 cents per hour, establish a basic minimum rate of 40 cents per hour, and to this basic minimum rate and all rates of 40 cents per hour and above, add 13 cents per hour, establishing a minimum rate of 53 cents per hour.

(f) For helpers to all mechanics in the maintenance of way and bridge building departments, where not provided for in Supplement 4 to General Order 27, who were on January 1, 1918, prior to the application of General Order 27, receiving less than 30 cents per hour, establish a basic minimum rate of 30 cents per hour, and to this basic minimum rate and all hourly rates of 30 cents per hour and above add 13 cents per hour, establishing a minimum rate of 43 cents per hour.

(g) For track laborers and all other classes of maintenance of way labor not herein named, who on January 1, 1918, prior to the application of General Order 27, were receiving less than 16 cents per hour, establish a basic minimum rate of 16 cents per hour, and to this basic minimum rate and all hourly rates of

16 cents per hour and above, add 12 cents per hour, establishing a minimum rate of 28 cents per hour, provided that the maximum shall not exceed 40 cents per hour.

(h) For drawbridge tenders and assistants, pile-driver, ditching and hoisting firemen, pump engineers and pumpers, crossing watchmen or flagmen, lamp lighters and tenders, add to the rate in effect as of January 1, 1918, prior to the application of General Order 27, \$25 per month.

(i) The wages for new positions shall be in conformity with the wages for positions of similar kind or class in department where created.

ARTICLE II.—WEEKLY, MONTHLY OR DAILY RATES.

For all monthly, weekly or daily rated employees in the departments herein referred to, and not otherwise provided for, increase the rates in effect as of January 1, 1918, prior to the application of General Order 27 on the basis of \$25 per month.

ARTICLE III.—MAXIMUM MONTHLY RATE.

(Same as Article VII., Supplement 7.)

ARTICLE IV.—PRESERVATION OF RATES.

(Same as Article VIII., Supplement 7.)

ARTICLE V.—EXCEPTION.

(Same as Article IX., Supplement 7.)

ARTICLE VI.—HOURS OF SERVICE.

Eight (8) consecutive hours, exclusive of the meal period, shall constitute a day's work.

ARTICLE VII.—OVERTIME AND CALLS.

(Same as Article XI., Supplement 7.)

ARTICLE VIII.—PROMOTION AND SENIORITY RIGHTS.

(a) Promotions shall be based on ability, merit and seniority. Ability and merit being sufficient, seniority shall prevail. The management shall be the judge, subject to an appeal, as provided for in Article IX.

(b) The seniority rights of laborers as such will be restricted to their gangs; except where gang is abolished they may displace laborers in other gangs who are junior in service.

(c) Except as provided for in Section (b) of this Article the seniority rights of employees referred to herein, to: (1) New positions, (2) vacancies: will be governed by Section (a) of this Article, and will be restricted to the maintenance division upon which employed.

(d) Employees declining promotion shall not lose their seniority.

(e) Employees accepting promotion will be allowed 30 days in which to qualify, and failing, will be returned to former position without loss of seniority.

(f) New positions or vacancies will be promptly bulletined for a period of five days at the tool house or in the department where they occur. Employees desiring such positions will file their applications with the designated official within that time and the appointment will be made within 10 days thereafter. Such position or vacancy may be filled temporarily pending assignment. The name of the appointee will immediately thereafter be posted where the position or vacancy was bulletined.

(g) In reducing forces, seniority shall govern; foremen will displace other foremen who are their junior in service before displacing laborers. When forces are increased, employees will be returned to the service and positions formerly occupied in the order of their seniority. Employees desiring to avail themselves of this rule must file their names and addresses with the proper official. Employees failing to report for duty or to give satisfactory reason for not doing so within seven days from date of notification will be considered out of the service.

(h) Employees furloughed for six months or less will retain their seniority.

(i) A seniority roster of all employees in each classified department, showing name, date of entering the service, and date of promotion will be posted in a conspicuous, accessible place in each roadmaster's or supervisor's office. The names of laborers who have been in the service at least six months prior to date roster is posted or revised will be shown, with their relative standing, and the date they entered the service.

(j) The roster will be revised and posted in January of each year, and shall be open to correction for a period of 60 days after date posted on presentation of proof of error by an employee or representative. A copy will be furnished to each foreman or duly accredited representative upon request.

ARTICLE IX.—DISCIPLINE AND GRIEVANCES.

(Same as Article XIII., Supplement 7.)

ARTICLE X.—GENERAL RULES.

(a) For main line, branch line and yard section men, the

day's work will start and end at point designated to report for duty at their respective sections or yards.

(b) Employees taken from their regular assignment or outfit, to work temporarily elsewhere, will be furnished with board and lodging at the railroad's expense.

(c) Unless they so desire, except in emergency, employees shall not be transferred from one division to another.

ARTICLE XI.—RULES FOR APPLICATION OF THIS ORDER.

(Same as Article XIV., Supplement 7.)

ARTICLE XII.—INTERPRETATION OF THIS ORDER.

(Same as Article XV., Supplement 7.)

Coach Cleaners

The director general also issued an addendum to Supplement 4 to General Order 27, providing the following rates of pay and rules for coach cleaners:

ARTICLE I.—RATES OF PAY.

(a) For coach cleaners who were on January 1, 1918, prior to the application of General Order 27, receiving less than 16 cents per hour, establish a basic minimum rate of 16 cents per hour, and to this basic minimum rate and all hourly rates of 16 cents and above, add 12 cents per hour, establishing a minimum rate of 28 cents per hour, provided that the maximum shall not exceed 40 cents per hour.

(b) All coach cleaners shall be paid on the hourly basis.

ARTICLE II.—PRESERVATION OF RATES.

(a) The minimum rates and all rates in excess thereof, as herein established, and higher rates which have been authorized since January 1, 1918, except by General Order 27, shall be preserved.

(b) Coach cleaners temporarily or permanently assigned to higher rated positions shall receive the higher rates while occupying such positions; coach cleaners temporarily assigned to lower rated positions shall not have their rates reduced.

ARTICLE III.—HOURS OF SERVICE.

Eight consecutive hours, exclusive of the meal period, shall constitute a day's work.

ARTICLE IV.—OVERTIME.

(a) Where there is no existing agreement or practice more favorable to the employees, overtime will be computed for the ninth and tenth hour of continuous service, pro rata on the actual minute basis, and thereafter at the rate of time and one-half time. Even hours will be paid for at the end of each day period; fractions thereof will be carried forward.

(b) Coach cleaners will not be required to suspend work during regular hours to absorb overtime.

ARTICLE V.—APPLICATION.

The rates of pay and rules herein established shall be incorporated into existing agreements on the several railroads.

Austrian Railways Seriously Crippled

JULIAN GRANDE, writing to the New York Times from Berne, Switzerland, on June 28, gives some interesting facts concerning the condition of the Austrian railways. The following extracts are taken from his article:

Now that the bread ration has been reduced to a little more than three ounces a day, it is not likely that the underfeeding of railway servants, which was so bitterly complained of in the Austrian Parliament at its Spring session, will improve.

In the 1917 report of the Aussig-Teplitz line in Bohemia (twelve miles long only, yet of considerable importance), it was stated that iron, coal, sleepers, and lubricants generally cost from twice to four times as much as in 1913, and that even for so small a line \$1,100,000 has had to be paid out in assistance to employees and for other causes due to the war. The total takings amounted to 8 per cent more than in 1916, but the total expenditure amounted to 23 per cent more, the railway being in consequence considerably on the wrong side in its finances. Moreover, it was complained that a very large number of trucks and carriages needed repairing, and there was neither labor nor material with which to repair them.

Meanwhile the Austrian Southern Railway receipts for 1917 are also on the wrong side by \$2,661,540. This unsatisfactory balance sheet is attributed solely to the fact that the Southern Railway during 1917 was used more than ever for military purposes, including the transport of troops, who were, of course, carried at a very low rate, which did not enable the company to cover its expenses.

Negotiations are in progress between the Austrian and Hungarian government to raise this military tariff, and to make the rise date back to January 1 this year. Ordinary civilian traffic, of course, had to be pushed on one side in order to make way for troop transport.

The freight receipts of the Southern Railway amounted to about \$150,000,000, or more than \$10,000,000 in excess of the 1916 receipts; but the total receipts from all sources were less than those of 1916. Writing off was also heavy, and, in short, the company is considerably on the wrong side.

The scarcity of paper has compelled the Austrian Ministry of Railways to limit the cardboard used for railway tickets by issuing on frequented stretches tickets half the ordinary size. In the last eighteen months Austrian railway fares have been twice raised, and in order to economize paper the invalid tickets were each time called in, "ungültig" (invalid) was stamped on them on one side, and the new fare on the other side. In the last year and a half the Austrian State Railways complain that they have had to print 400,000,000 tickets.

Late News from Washington

"Shipping Day" Committees

AS ANNOUNCED in the *Railway Age* of July 9, page 261, the Car Service Section has established committees for the several regional districts to consider sailing day plans and the efficient handling of l.c.l. freight. On Wednesday, the Section issued a statement to the railroads in which it defined the duties of these committees as follows:

These committees will, without delay, have a survey made covering l. c. l. freight forwarded for a period of at least 10 days from all stations and transfer points in their respective territories, and will institute "shipping days" and through car loading via one or more designated routes based on the following considerations: (a) Volume of traffic; (b) direct routing; (c) car conservation.

The committee for each region will determine the routing on cars destined to points within the same region.

The chairmen and such members of the regional committees as may be designated by the chairmen will, with the Car Service Section, act as a general committee to determine the routing and adjust necessary matters affecting inter-region cars.

Care must be exercised to prevent any undue advantage being given to one city or section as against a nearby competing city or section.

The support of shippers, jobbers and various commercial organizations in each locality should be obtained for the detailed plans as adopted.

As arrangements are perfected for each shipping center or distributing point, chairmen will furnish to the regional director and to the Car Service Section, a detailed report showing:

- (a) Number of additional through cars established.
- (b) Estimated increase in tonnage per car.
- (c) Estimated daily or weekly saving in equipment.

The chairmen will advise the Car Service Section of opportunities for improved loading through the back hauling of freight, particularly from far distant points, as for example freight from Boston, New York, or Philadelphia, destined to local points within a radius of one hundred miles

east of San Francisco, which might be loaded to advantage in through cars to San Francisco, involving but one intermediate handling, as against several such handlings if loaded in cars carded to points east of San Francisco.

As announced in detail in the *Railway Age* of July 9, the chairmen of the regional committees are as follows:

J. R. Kearney	Albany Region
George Morton	Central Western Region
C. H. Ketchum	Eastern Region
T. M. Proctor	North Western Region
J. A. Talbott	Localities Region
A. J. Stanley	South Western Region
F. M. Lucore	South Western Region

Interpretation of Wage Order

For the purpose of affording prompt interpretations of all wage orders issued by the director general, the duties and authority of the Board of Railroad Wages and Working Conditions are extended by supplement 6 to General Order 27, to include investigations and recommendations to the director general of interpretations of all such wage orders, when requested to do so by the Director of the Division of Labor. The supplement states that it should be understood by railroad employees that it is impracticable to give interpretation on *ex parte* statement, to the thousands who request information as to the manner in which wage orders should be applied in individual cases. Operating officials of the railroads are required to place wage orders in effect fairly and equitably, and should differences of opinion arise necessitating a formal interpretation, the matter will be disposed of in the following manner:

When a wage order is placed in effect in a manner with which an employee, or the employee's committee disagrees, a joint statement quoting the language of the wage order, and including the contentions of employees and the contentions of officials, signed by the representatives of the employees and the officials, will be transmitted to the director of labor, who will record and transmit same to the Board of Railroad Wages and Working Conditions, which will promptly investigate and make recommendation to the director general. Upon the receipt of interpretation from the director general, the director of labor will transmit such interpretation to the Railway Boards of Adjustment for their information and guidance, in the application of such interpretation to existing conditions, or to questions arising from the incorporation of the order as so interpreted into existing agreements on all railroads under federal control. As occasion demands, all interpretations will be printed and given general publicity, for the purpose of communicating the information to all concerned, and thus avoiding the necessity of duplication of interpretations.

On and after September 1, 1918, any disagreement between the employees and the officials, over the application of any wage order, will be submitted to the director of labor, as outlined above, but in order promptly to dispose of all requests for interpretations previously presented to the division of labor, or to the Boards of Adjustment, such requests will be immediately recorded and transmitted to the Board of Railroad Wages and Working Conditions by the director of labor.

Nothing contained in the supplement revokes authority granted to the Division of Labor or Railway Boards of Adjustment in determining disputes arising in connection with the application of interpretations of wage orders to existing conditions, or in connection with the incorporation of such interpretations into existing agreements.

Division of Inland Waterways Created

Director General McAdoo has announced the appointment of G. A. Tomlinson as director of the Division of Inland Waterways of the United States Railroad Administration. The new division will be on an equal plane with the other principal divisions of the Railroad Administration. Under

Mr. Tomlinson's general direction will be the Erie canal, the Delaware and Raritan canal, the Cape Cod canal, the Mississippi & Warrior waterways and any other inland waterways which may be taken under the control of the Railroad Administration in the future.

Mr. Tomlinson at the present time is federal manager of New York and New Jersey canals under the Railroad Administration and also had been a member of the Inland Waterways Committee. The position of federal manager of New York and New Jersey canals previously held by him, will be filled in the near future.

The director general called into conference on Wednesday the members of the Inland Waterways Committee, headed by Major General W. M. Black, which he appointed on February 16, 1918, and thanked them for their splendid work. He informed the members of the committee that since it had performed the work for which it was created, he had decided to relieve it of its duties and place the administrative supervision of the Inland Waterways under the control of the Railroad Administration, under the direction of Mr. Tomlinson. The Inland Waterways Committee has investigated a number of projects on which it has reported to the director general. In a number of instances these recommendations have been adopted by him and are now in effect. The director general expressed particular appreciation of the conscientious manner in which the members of the committee performed their duties.

Increasing the Capacity of a Water Softener Without Enlargement

By C. R. Knowles

Superintendent Water Service, Illinois Central, Chicago

PREVIOUS TO 1907 the water used at the Waterloo, Iowa, shops of the Illinois Central was secured largely from two wells at the shops, although these wells did not furnish all the water required and it was necessary to purchase considerable water from the Waterloo Water Co. The waters from the company wells and from the city plant were both very hard, however, and caused a great deal of trouble and expense from scaling and other evils. In 1907 three additional wells were drilled and a water softening plant was installed. This softener was of the intermittent type with a capacity of 12,000 gal. per hour. This installation dispensed with the purchase of water from the city and the softened water eliminated much of the boiler trouble and resultant engine failure due to bad water.

The requirements for water increased from approximately 300,000 gal. per day in 1907 to over 400,000 gal. per day in 1915, which was far in excess of the rated capacity of the softener. By utilizing a 100,000 gal. reservoir for the storage of untreated water it was possible to use a surface pump from the reservoir in filling the treating tanks as well as the deep well pumps. In this manner the time of filling the treating tanks was reduced from two hours to one hour and the capacity of the plant increased to about 14,000 gal. per hour. The consumption continued to increase, however, and in 1916 the capacity of the softener was again exceeded. Partly treated and milky water was pumped over to the roadside tank whenever the softener was operated in excess of its rated capacity.

Plans were then made to increase the capacity of the softener, but it was found impossible to install additional tanks on account of the limited space. Moving the softener was practically out of the question on account of the heavy expense and lack of a desirable location; therefore, it was decided to leave the softener in the original location and in-

crease the capacity by converting it from an intermittent to a continuous type softener.

The tanks are 25 ft. 6 in. in diameter with 18 ft. 6 in. staves, inside measurements, with a capacity of 71,000 gal. each or a combined capacity of 142,000 gal. By converting the plant to a continuous system it was found that the capacity could be increased to 35,000 gal. per hour and allow four hours settling time, or the same as the intermittent system. As before stated, the space was very limited, there being no room to the west, north or south of the softener tanks and only a very limited space to the east which was utilized for the filters which were installed with the remodeled softener. This necessitated putting the chemical mixing tank above, supporting it on top of the two main settling tanks.

The original softener was typical of the average intermittent plant with two main settling tanks with agitators driven by bevel gearing from a shaft across the top of tanks. The power to drive the agitators was furnished by a small steam engine, and the lime and soda ash were mixed in a small tank located on the ground floor, the chemicals being elevated to the settling tanks by means of a steam jet pump. The softened water was drawn off from the top through floating outlet pipes.

In remodeling the old plant practically all of the old ma-

was divided into three parts and each tank was provided with a sludge box to prevent overloading the drain.

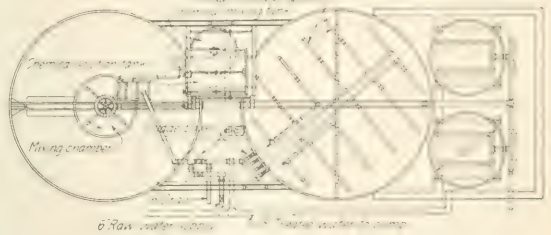
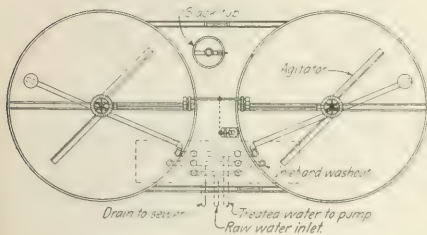
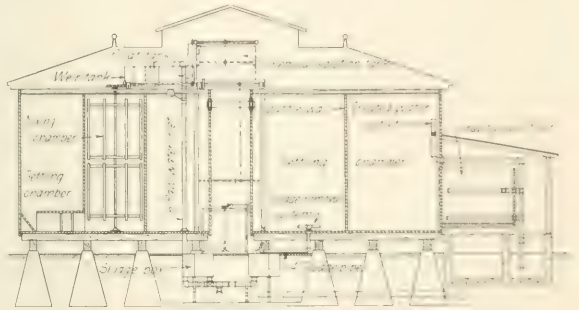
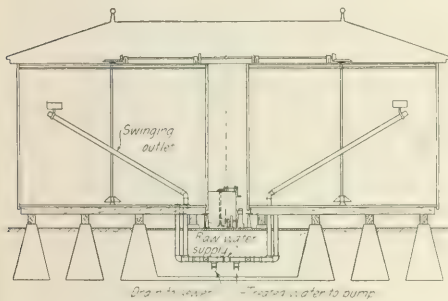
The remodeled softener was equipped with filters, as the old system, which was not provided with filters, gave a great deal of trouble from milky water. The filter system consisted of two 10-ft. gravity sand filters located east of the softener in the only available space. A concrete clear water basin was constructed beneath the filters with a capacity of 13,000 gal., as it was preferable to pump from the clear water basin rather than direct from filters.

The work of rebuilding the plant and converting it to a continuous system was done by the International Filter Company, Chicago.

An American's Observations

On the Railways of Japan

TRAINS THAT ARE NEARLY late, high grade labor that earns \$25 a month; all employees in uniform and discipline so severe that disobedience of the rules may result in a lengthy term in jail, are some of the characteristics of railway operation in Japan that were observed by a member of the Russian Railway Service Corps. This ob-



Plans and Sections of Old and Revised Treating Plants

terial was utilized. The roof was raised over the center of the tanks to permit the installation of the chemical solution tank and the chemical feeding equipment on top of the tanks. A mixing chamber 8 ft. in diameter was installed in the west tank with agitators driven in the same manner and with the same shafting as formerly used with the intermittent system. Also the lime and soda ash are weighed and delivered to the solution tank with the same equipment as with the intermittent system. A baffle wall was constructed through the center of the east tank and sludge removal systems were installed in both tanks. The drain from the old softener was long and the course uncertain, so the sludge removal system

server had a week's trip over the Japanese railways and has given an idea of his experiences in the following report:

We covered about 2,000 miles of their lines and we were very agreeably surprised in what we found as to the general condition. While it is no doubt a truthful saying that railways are never finished, we think the railways in Japan are as nearly finished as is possible and much more nearly so than any we have ever seen. Every bit of work that they do, whether on branch lines or main line, is permanent. The road is all well ballasted with good clean gravel and crushed rock; power and equipment are in first-class condition, locomotives are kept perfectly clean and there is not a piece of

material of any kind or any grass or dirt on the right-of-way. They have fine station layouts and in the larger cities such as Tokyo, Yokohama, Kobe and Osaka they have fine station buildings, the best of course being at Tokyo, the capital. We were shown through the private waiting rooms of the Imperial family in that building and they are very gorgeous.

They have miles and miles of rip-rap of dry masonry work, some of which has been in place for over 30 years and is as good now as the day it was laid. The drainage ditches are laid with stone, sliding cuts are faced with dry wall masonry, tunnels are all of two bore, one for each track, and are brick lined with portals faced with stone and well drained. On high fills they plant a tough grass which overcomes any running off of material with the result that the fills are as perfect as the day they were made. Left hand operation is used on double track.

They have locomotives built in America, Germany, England and Japan. Those built in Japan are left hand, i. e., the engineer is on the left hand side. This is on account of the signals on double and single track being on the left hand side.

They have no train despatchers, the same system as is in use in England and Russia being used for movement of trains, i. e., station masters despatch trains from station to station by the use of the staff. The blocking is absolute, and a train having the staff can go either way. During our entire trip every train we traveled on was on time. If one makes inquiry at a station as to a train being on time it is considered rather a foolish question, as they are always on time. Sidetracks are close together, averaging two and one-half miles apart, and every sidetrack has a day and a night station force.

Labor at 30 Cents a Day

The station forces work 24 hours continuously and are then off for 24 hours. Train and enginemen work on an average of ten hours.

Conductors are called guards. Salaries are very low, engineers and conductors average 50 yen per month; firemen, brakemen and station masters, 30 yen; and station help 20 yen (a yen being equal to 50 cents). Track, roundhouse and other labor average 60 sen per day, a sen being equal to our one-half cent. All employees are of course in the war department, as the railways are government owned and every employee is uniformed, even the common laborers. All except common laborers are furnished one uniform per year by the railway; laborers buy their own. Station master's and guard's uniforms cost 12 yen or \$6 each.

Engines of freight trains are rated on a car basis, and they have no system of tonnage; 40 cars is the maximum down mountains and 20 cars at all other points. The largest Mallet engines they have are of about 51,000 lb. tractive effort, and their Consolidation engines about 30,000 lb. tractive effort. There are three classes of passenger cars, first, second and third, but there is very little first-class travel.

Passenger Fares by Zones

Passenger and freight rates are made up from zones, the rates being the same for the first 50 miles, the next zone 100 miles, the next 200, the next 300 and the next 400 miles and all over. In other words you can travel for the same fare to a point 800 miles as to one 400 miles.

All stations are equipped with gates for passengers who must show tickets before entering trains as no ticket collections are made on the train. When leaving the train passengers are required to pass out of a gate and tickets are taken up by station master. There is no such thing as paying fare on the train. Stations are not called in passenger trains, but on stopping at a station members of the station force pass along the side of the cars on the platform and call out the name of the station. Station stops are not

as long as in the United States. Baggage is all handled in and out of the cars through the windows and never through the doors. They have a large force at each station whose duty it is to take the baggage out of the windows. At the larger stations they provide on the platform what they call toilets and which mean a wash room. These are all open, equipped with brass wash basins and hot and cold water. Passengers furnish their own soap and towels. When trains stop at these principal stations the passengers rush to these toilets and wash up. You will notice this especially at the first stop after a night run. We traveled part of the way on their train De Luxe which has eight cars and makes but few stops. has an observation car, a full sized dining car and first and second class sleepers, the first class being compartment cars. All of the sleeping car berths are single, a little too small for a large man, but very comfortable.

In switching or giving signals a green and a red flag are used by day and a green and a red lantern by night. When the green is waving or moving the engine moves; immediately on display of the red they stop. This requires every switchman to carry two flags in the day time and a combination lantern showing red on one side and green on the other at night.

We saw but one coal dock, and this was very similar to the Great Northern type. At all other coaling stations the work is done by carrying the coal in small baskets which hold about 20 lb. In doing track work everything is systematized, even to tamping for which they use a tamping pick. Section crews are all of an even number of men, usually six; one man does the singing and every man's pick must hit the ballast at the same time. Rails are all laid with square joints. At every station they have a platform on each track where double tracked, and where they have a single track there is a platform passing siding so there is no such thing as passengers crossing tracks. In fact it is a violation of the law, which is rigidly enforced, to walk on or to cross over tracks. Where necessary overhead or undergrade crossings lead from the main station building to the opposite track.

Severe Discipline

In discipline everything is handled the same as in the army. Violations of rules or instructions are punished, first by dismissal from the service and then the Department of Justice steps in. The man is given a court trial and if they find him guilty he is given a penitentiary sentence. We learned of a case of an assistant station master, who was intoxicated, giving a train a staff while there was a train ahead in the block. A collision resulted, one or two employees killed, and the assistant station master was given five years in the penitentiary. The result of this discipline is a very close observance of the rules and instructions, making it unnecessary to have traveling engineers or train masters, auditors, inspectors, etc., as a man's duty is all covered by instructions and he realizes that unless he performs his duty he will be taken to task by the court. They have division superintendents and master mechanics.

Sizing up the entire railroad, including its operation, we think it is excellent. They handle a very heavy business and the people are well satisfied. Congress recently appropriated four hundred million yen or two hundred million dollars for new lines to be built within the next ten years. All of the railway officials want to start standardizing the gage as soon as it can be done, and I would not be surprised to see this started shortly after the close of the war.

JAPANESE LOAN FOR NEW RAILWAY — The July 11 issue of the Seoul Press says that a loan of 10,000,000 yen (\$4,980,000) from Japan, to be used for the construction of the Kirin-Hoilyong Railway, has been concluded.

Locomotive Stokers and Smoke Prevention

With Careful Firing Lighter Fires Can Be Carried Which
Permits More Perfect Combustion

By W. S. Bartholomew
President, Locomotive Stoker Company

THE BURNING OF BITUMINOUS FUEL in locomotive fireboxes presents many problems that are not present in connection with either hand-fired or mechanically-fired batteries of boilers in stationary plants. In the first place, the conventional design of locomotive fireboxes is laid down on the basis of burning approximately 100 lb. of coal per square foot of grate area per hour, and this is often exceeded in actual service under severe conditions by 50 per cent; or, in other words, it is not unusual, under stress conditions, to find that 150 lb. of coal is consumed per square foot of grate area per hour in a locomotive firebox. In the second place, the load factor of a locomotive has such wide variations that it is practically impossible to keep the amount of smoke emitted from the locomotive stack down to what might be readily considered possible in stationary plants, as with a maximum horsepower of a locomotive requiring 100 lb. or more coal per square foot of grate area per hour, as just mentioned, it is necessary to build the fire up to the point where that amount of coal can be consumed to evaporate the necessary amount of water to secure maximum horsepower, and oftentimes just as this is accomplished the point is reached where it is necessary to shut off the power entirely and drift, or use very little of the capacity of the locomotive. It will readily be appreciated that such wide variation of power requirements makes it necessary to meet the smoke problem on locomotives burning bituminous coal by intelligent handling on the part of the fireman, either when hand-firing, or mechanically firing, locomotives.

The prime purpose of the application of a mechanical stoker to locomotives at the present time is not along the lines of smoke prevention except in a few rare cases which I will mention later. For the purpose of comparison as between the general run of locomotives in service before mechanical stokers were applied in any number to the locomotives of today, I might say that the average tractive effort of locomotives recently ordered by the United States Railroad Administration is practically double what it was when the Master Mechanics' Association began to investigate the subject of mechanical stokers for locomotives. At that time the tractive effort of locomotives being turned out by the builders averaged about 33,000 lb., whereas today the average is about 60,000 lb. The Mallet locomotives now being delivered to the Virginian are the largest Mallet locomotives ever built. They have a tractive effort of approximately 160,000 lb. and would not have been built had it not been possible to mechanically fire them.

The 4,500 mechanical stokers which have been sold for locomotives to date are distributed over several classes of locomotives, beginning at approximately 50,000 lb. tractive effort, and running to about 100,000 lb., the largest number being on Mikados averaging about 55,000 lb., the next largest on 2-10-2 locomotives averaging about 75,000 lb. and the third in importance are the Mallets, averaging 85,000 lb. To date only about 25 stokers have been applied to switching locomotives and these mainly for the purpose of smoke prevention in the Chicago district by the Pennsylvania Lines West for use in transfer service, where the locomotives were worked to approximately their capacity, and where it

seemed necessary to do everything possible to reduce the smoke to the lowest possible minimum.

On all these classes of locomotives which I have just mentioned, the first consideration in applying the stokers was the supplying of the necessary amount of coal to produce the maximum horsepower when necessary to work such locomotives to their maximum capacity. The grate areas of these locomotives vary from 56 sq. ft. to about 100 sq. ft., and on the basis of the use of 100 lb. to 120 lb. of coal per square foot of grate area per hour, these locomotives consume from 6,000 to 12,000 lb. of coal per hour of ordinary quality, and in the districts where very low-grade fuel is used, the coal consumption runs from 7,000 to 15,000 lb. of coal per hour.

It will be readily seen, therefore, that many of these locomotives require more coal than can either conveniently or readily be put into the firebox by hand with the scoop through the ordinary firedoor, even if the fireman were the most expert obtainable, and had the physical stamina to perform the work through any extended period. The use of mechanical stokers on such locomotives, therefore, became a necessity rather than a desirability, even though a humanitarian purpose was accomplished by their application.

In the writer's judgment, the second important consideration in connection with the application of mechanical stokers to locomotives comes in connection with the use of lower grade fuel than can readily be used for hand-firing. This lower grade fuel is not always represented by a less number of B.t.u.'s. per pound, although this is often the case. The firemen very often complain of "poor coal" on trips where the results are not all that might be expected, when the coal is of excellent quality, but either fine in size, or wet. In other words, when slack coal is supplied for hand-firing purposes, the firemen usually complain of "poor coal."

Several of the first large applications of mechanical stokers to locomotives were made on the Chesapeake & Ohio, Norfolk & Western, Baltimore & Ohio, and Chicago, Burlington & Quincy, where slack coal was available for locomotive fuel but had not formerly been used for that purpose on account of the objections of the firemen to the use of slack coal for hand-firing. At the time of the first application of the stokers there was a sufficient difference between the price of slack coal and lump coal used for hand-firing to make up for any difference in economy which comes from the use of slack coal under the varying conditions of locomotive firing. At the present time, however, with the present fuel shortage, there is not the economy in the use of slack coal that existed at the time when mechanical stokers were first applied for the purpose of using slack coal. It remains true, however, that in the districts where low-grade fuel is used, especially in the lignite and semi-lignite districts where the B.t.u.'s. are often as low as 9,500 and the amount of ash is as high as 21 per cent, it has been found possible to use coal for locomotive fuel, by mechanically firing it, that would not otherwise be available for that purpose.

The use of the stoker makes it possible for the fireman to watch his fire and give time to the removal of the ashes, pay attention to the grates, and, of course, there being no limit to the amount of coal which can be supplied by the stoker, the extra amount of coal required on account of the low quality

* Abstract of a paper presented at the annual meeting of the Smoke Prevention Association, August 22, 1918.

does not cause hand-firing upon the fireman, as would be the case with hand firing.

Within the past three or four weeks a large number of mechanical stokers have been put in service on the Atchison, Topeka & Santa Fe, where all locomotives had formerly been hand-fired, and the question came up immediately as to whether slack coal could be used when the ordinary coal used for hand-firing was not immediately available; the following quotation, from a report of the mechanical expert instructing the enginemen in the use of the stoker, will be of interest:

"The fireman is not allowed to touch the coal on the tank. The firemen are complaining about this coal on hand-fired engines. It is almost impossible to keep a hand-fired engine hot with the slack coal. We did not have any trouble maintaining steam pressure. There was about 6 in. of fire on the grates on our arrival at Marceline. This fire could be cleaned in ten minutes. Mr. Petet, the fireman, did a creditable job of stoker firing. He was more than pleased to witness the operation of a machine that would feed slack coal to the firebox fast enough to maintain maximum steam pressure.

With further reference to the use of mechanical stokers in connection with low-grade coals for locomotive fuel, I beg leave to quote a few paragraphs from Technical Paper No. 80, issued by the Department of the Interior, Bureau of Mines, which particularly commends this method of firing which comes with the use of mechanical stokers, particularly of the over-feed type:

"Soft or bituminous coal should be fired in small quantities and at short intervals, the quantity that should be fired varying with the size of the grate and the intensity of the draft.

"Small and frequent firing makes the coal supply more nearly proportional to the air supply, which in most hand-fired furnaces is nearly constant. They also reduce the formation of crust on the fire and the chance of holes in the fuel bed. With small and frequent firings better combustion is obtained.

"When a fresh charge of bituminous coal is spread over an incandescent fuel bed, the coal is heated rapidly, and 20 to 40 per cent of the combustible matter is distilled off in the form of gases and tar vapors. This distilled combustible matter requires for its combustion additional air. It can be readily understood that the heavier the charges, the larger amount of volatile combustible driven off two to five minutes after firing.

"To burn the volatile combustible, about 15 times its weight of air needs to be supplied. Therefore, immediately after firing, a large quantity of air should be admitted over the fire, and this quantity should be gradually reduced as the distillation of the volatile combustible nears completion. The larger the quantity of fresh coal fired at a time, the larger the volume of air needed for the complete combustion of the volatile matter.

"An ideal case is the one in which the coal is fed into the furnace constantly and at a uniform rate, as is done with some mechanical stokers. The coal supply is then as uniform as the air supply."

In hand-firing, it is customary, of course, for the fireman to put in a fire, and while general instructions are given to fire frequently as being the best practice, all are familiar with the fact that it is common practice to fire several scoops of coal at a time, and then close the door for a few minutes until that quantity of coal is consumed. This saves the fireman from the heat incident to the constant opening of the fire door and permits periods for rest and observation of signals.

The next consideration in importance in connection with the application of mechanical stokers has to do with the use of one fireman on locomotives of the size above mentioned as compared with the necessity for two, and in some cases three firemen on long distances. There has been much discussion between the firemen and the railroad companies during the past six or eight years as to the necessity of two

firemen or relief men on certain classes of locomotives, and while this has not had an important bearing upon the development of mechanical stokers for locomotives, it is one of the considerations, particularly in certain districts where large number of locomotives are used which would come well within the limits of size of locomotives on which the firemen have asked for assistance either on account of the low-grade fuel or the large size of the locomotives.

On the lines of one of the large railroads in the extreme Northwest both of these conditions existed. The coal available locally for locomotive fuel is of very low grade and high in ash content and the locomotives in ore service and over the mountains all exceed 60,000 lb. tractive effort. Many of these locomotives were put in oil-fired service for the relief of the firemen, and where oil was not available for locomotive fuel stokers have been applied to nearly 400 locomotives on this road, thus saving to the railroad the expense of relief men and making it possible to use low-grade local fuel.

The following quotation from another report of operation conditions illustrates a concrete case of what is accomplished in this direction by the application of stokers:

"We were pushing a Frisco Santa Fe engine. This engine hasn't any stoker and had two firemen out of Princeton to Elmore, and got two relief firemen out of Elmore to top of Spark Gap Mountain, making this engine cost \$14 for the trip of 70 miles. If it had been stoker-fired, it would cost \$3.50 for the 70 miles and the overtime after eight hours, so you can see the cost of the large, hand-fired locomotives."

The division in this instance was of such length that not only was one relief fireman necessary on this particular locomotive but two were required before the end of the division was reached. Of course this is an extreme condition and I only quote from it to illustrate that phase of the stoker proposition.

Another important feature in favor of stoker-fired locomotives is that they carry a much thinner fire than hand-fired locomotives. This contributes to better combustion, for the reason that air supply will more readily reach the firebox through the grate openings, rather than through the door as in hand-firing, and the air will be heated more readily in going through the fire. This light fire also saves delay at terminals as less time is required to clean the fire.

The stoker must eventually also have the effect of inducing a better class of men to take up the locomotive firing trade, and at the present time it is noticeable that less extra men are required and less difficulty is experienced in hiring new men for firemen on divisions of railroads where mechanical stokers are in use than on hand-fired divisions. Certain railroad officers consider this phase of the stoker problem of very great importance.

Most of these considerations have to do with the smoke prevention problems, as when the firemen are able to give proper attention to the fire without physical exhaustion much can be accomplished in the matter of prevention of smoke.

The wide variation of coal consumption requirements of the locomotives have been the problems which have had to be met in connection with the development of mechanical stokers for locomotives. That these problems have been met must be apparent, as the United States Railroad Administration has ordered mechanical stokers for application to all locomotives now being built which have a tractive effort of 50,000 lb. or over, and mechanical coal passers have been ordered for the smaller locomotives.

Most of the members of the Smoke Prevention Association will come in contact with many of these locomotives, especially in connection with their operation within the city limits of our large cities, and I wish to state that during the past five or six years the smoke problems of such districts as the cities of Washington, Baltimore, Chicago, and other places, have been met by mechanically fired locomotives in a very

satisfactory way. So far as the writer knows, there have been no fines imposed for excessive smoke on stoker-fired locomotives in any of these districts.

Stoker-fired locomotives were first withheld by the Baltimore & Ohio from the city limits of Washington because they used slack coal and there was a possibility of their making smoke; as the firemen became accustomed to handling these engines and carried a light fire, feeding a small amount of coal regularly, it was found that the stoker locomotives

could be used without violation of the smoke ordinances.

Mechanical stoking of locomotives raises the efficiency of the locomotive by increasing its earning power, raises the efficiency of labor, lessens the arduous physical labor and suffering of the fireman, and at the same time lifts the grade of his employment, and has great possibilities along the lines of the use of lower grade fuel. By the carrying of thinner fires much can be accomplished in the way of smoke prevention.

Meeting of the National Industrial Traffic League

How the Large Shippers of the Country Feel Toward the New Management of the Railroads

THE NATIONAL INDUSTRIAL TRAFFIC LEAGUE held its regular summer meeting at Hotel Lafayette, Buffalo, N. Y., on Thursday and Friday, August 29 and 30, with about 200 members in attendance. President G. M. Freer occupied the chair, and E. F. Lacey, assistant secretary of the League, served as secretary of the meeting. Luther M. Walter, assistant to the director of public service and accounting, United States Railroad Administration, was present, and the first business of the opening session was to listen to him while he explained the attitude of the Administration toward shippers and the multifarious problems of freight transportation, and answered questions put to him by the traffic men. He said that the prime objective of the Administration would be to disturb existing conditions and relations as little as possible. Nevertheless many practices have been changed fundamentally. Shippers could be assured that existing troubles were not falling wholly on their side of the fence; railroad men, too, have anxieties about the future.

The participation of shipping representatives in local committees of railroad freight officers has worked well thus far, and if it continues to afford satisfactory results the shippers can expect still further recognition. The railroad officers have received explicit instructions, sent out jointly by Mr. Prouty, director of public service, and Mr. Chambers, director of the Division of Traffic, and the public is to be taken fully into the confidence of the Administration. Frank conferences, animated by the spirit of give and take, will bring satisfactory results. Compromises may be necessary, sometimes; it is a duty to take up all controversies in a broad spirit.

Protests against excessive or unreasonable freight rates will be taken before Director Prouty. Every one presenting a protest should take care to get intelligent and lucid local backing; that is to say, take care that the complaint is really representative. When a decision is reached at Washington concerning any change in freight rates it is proposed that it shall be made public, promptly, in such a way that all interested shall be fully informed. A citizen may go to a freight committee in his own locality even if his grievance is in a distant state. The local committee will communicate with the remote committee, as may be necessary; and it may comment on the grievance or complaint if its opinion is pertinent. Claims for reparation will probably be referred in all cases to the Interstate Commerce Commission.

Local committees will, in no case, make final decisions as to rates; and their decisions will not be sent to Washington without first having been fully considered in conference with shipping representatives.

Demurrage Problems

Rule 6 of the demurrage code was the first committee topic taken up for discussion. This rule imposes a charge on cars

received from switching lines and delayed because delivered without billing. Complaint has been made that cars loaded and sent out after 6 o'clock at night are penalized by this rule, after 7 o'clock the next morning, the trouble being that the railroad had no office open to receive the shipping instructions. The meeting approved the suggestion of the committee that the government be asked to extend the free time, in cases like this, until noon of the next day.

The League also approved the recommendation of the committee that carriers be asked to send arrival notices by first-class mail, which now is no more expensive than postal cards, the rate being two cents alike on sealed letters and on postal cards. A principal reason for the recommendation is that first-class mail, if misdirected, will be returned to the sender, which is not the case with postal cards.

Considering certain claims of inequitable operation of the rule for modifying demurrage charges when cars are bunched on the road and come in too fast for the consignee, the meeting approved the proposition that claims on account of bunching ought to be received by the carrier within 30 days, not 15 days as at present, and that the same time should be allowed in the presentation of claims for refund on account of weather interference.

Recent changes in the regulations for the application of the average agreement in the assessment of demurrage charges were briefly discussed. Heretofore, the proprietor of a grain elevator could make such an agreement covering all cars coming into his elevator regardless of the name to which such cars might be consigned, but the rules as they now stand have substituted the word "consignee" in place of the word "receiver" so that it is questionable whether the proprietor of an elevator could make an agreement binding on consignees sending cars there (addressed to themselves) and desiring that they be not included in the average agreement. It was voted, as the sense of the League, that the receiver of the cars, that is, the proprietor of the elevator, should be allowed to enter into such an agreement on behalf of shipments addressed to various consignees; and to do so in behalf of all shippers or consignees patronizing his elevator, or only a part of them. The view was expressed that possibly the average agreement is not a desirable thing at grain elevators; but it was pointed out that without this the independent elevator is discriminated against by elevators owned by railroad companies at which no demurrage regulations apply.

Conditions in the Express Business

The report of the committee on express traffic dealt with a dozen different subjects, but mostly in the way of information only. A complaint that the express companies would not absorb switching charges on a shipment which constituted a carload, and which was destined to a plant just outside the

regular wagon-delivery limits, was discussed by the meeting at some length, but the consignee was told in effect that he would have to make his own fight. Each such case must be decided on its merits; and it is not likely that the Interstate Commerce Commission would require an express company to deliver goods outside its regular and reasonable territorial limits. As to the recent general increase in express rates the only consolation offered was that probably another increase would be made before long.

Delays in settlement of claims against the express companies continue to be a cause of grievance, but no better advice was forthcoming than that each claimant should press his claim, especially if it be an old one, keeping it persistently before the highest officers of the carriers.

In the discussion of difficulties in tracing express shipments, and particularly where it is desired to trace by telegraph, the fact came out that express offices in New York city are now forwarding packages without any waybill except that which is pasted to the package. Records of the passage of shipments through junction or transfer points appear to have been entirely abandoned.

Shippers who have complained of the rules of the express companies in regard to packing freight have been told by the Administration that a thorough revision of these rules is now being made and that the changes will probably soon be laid before the Interstate Commerce Commission for approval. It was voted that the committee co-operate with the express companies in this matter and also ask the Interstate Commerce Commission to give a hearing on the subject.

Sale of Unclaimed Freight

The Freight Claims Committee reported on general order No. 34, of the director general, ordering the sale of non-perishable freight, refused or unclaimed, when it has been on hand sixty days. No provision is made for notifying the consignor, although a clause in the uniform code of storage rules requires notice to be sent if the shipment is plainly marked with the sender's name. It was resolved that when freight is refused, the shipper ought to be notified at once, and where unclaimed the notice should be sent 15 days after arrival and notice to consignee; and the committee was instructed to endeavor to have this change made. In the new classification used by the express companies there is a specific requirement that when freight is refused, the consignor, if known, shall be notified at once; and this classification has been approved by the Interstate Commerce Commission.

Concealed Loss and Damage

The Railroad Administration has made, or is preparing, a rule cutting off all claims for concealed damage. A letter on the subject was sent out from Washington some time since, and freight claim agents have already stiffened up and are looking with increased disfavor on all claims for concealed loss or damage. It was voted that a committee should at once seek a conference with the Railroad Administration, with a view to securing the adoption of reasonable and just rules for dealing with claims of this character; and the committee was also instructed to take up the question of claims for losses of coal, coke, ore and live stock; or, if the executive committee should find it desirable, separate committees will be appointed for each class of claims.

A number of members spoke of the large number of claims now pending, aggregating many thousands of dollars in amount; and emphasized the importance of urging the Railroad Administration to take action.

Double Carloads; Freight Office Practices

The car service section of the Railroad Administration has issued instructions concerning the loading of two carload lots in a single car, and the League has circulated these instruc-

tions; but the executive committee now recommends that the restrictions as to loading, in the same car, two loads for points not on the same line, should be modified; so that a shipment off the direct line may be put into the same car with another provided the detour does not take the car aside more than 15 per cent of the total distance, with a maximum side trip of 50 miles. This recommendation the League adopted.

The establishment of service bureaus to take the place of the off-line freight offices formerly maintained, was discussed by a number of members. The fact was brought out that such bureaus are already in operation at Kansas City, and at San Francisco. At Chicago it is expected that local agents will, in some cases, represent roads which formerly had no representation in Chicago. At Kansas City the working of the scheme is not yet entirely satisfactory, and the shippers are proposing to ask that the initial carrier be made responsible in the matter of giving rates, etc., as if it were actually an agent of the remote road. Shippers in Chicago and elsewhere will recommend that uniformity in representation be maintained, as far as practicable; for example, if the Boston & Maine is represented by a certain road in Chicago, it is desirable that it be represented by the same road in St. Louis.

Whether or not the Administration will establish these Information Bureaus at all places where, heretofore, foreign lines have had representation is not yet certain. In Chicago the Pennsylvania, the New York Central, and the New York, Chicago & St. Louis, maintain efficient information bureaus, and shippers desiring information get satisfactory service; and it was voted that the government be asked to inaugurate similar satisfactory service everywhere.

General Order No. 25 of the Railroad Administration requiring payment of freight charges on delivery of goods was briefly discussed. The committee suggested that any member having a grievance in this connection should present it fully at the next meeting of the League. In Chicago many business men look unfavorably on the proposal for a consolidated collection bureau. It was finally voted that a circular be sent to all members of the League calling for their experiences during the month of September; and that the information thus obtained be summarized and sent to the Division of Public Service.

The general advance in freight rates has been under consideration by the traffic bureaus in all of the principal cities for several weeks past, many inequalities in tariffs having been discovered, calling for conference between the railroads and shippers. H. C. Barlow, representing Chicago shippers, and J. C. Lincoln, representing those of New York City, have spent nearly the whole of their time for many days on these committees. Mr. Barlow reported that thus far the recommendations of the conferees at Chicago have been approved in Washington. The railroad officers are as keen as any shipper to correct all inequalities and hardships. Members of the League having grievances should formulate them and make them known.

Bills of Lading

The report of the committee on bills-of-lading disclosed that the recent ruling that the legend "United States Railroad Administration," etc., should be printed or stamped on every bill-of-lading, had resulted in a good deal of friction at many places. The Administration seems to have issued its order without full appreciation of the fact that in many cases a large shipper desires to print a single form of bill for use in sending freight over a dozen different railroads; and, according to the strict letter of the regulations, as at present interpreted, this would require him to have a dozen different rubber stamps. One member complained loudly because the Administration leaves each railroad to exercise its own judgment in matters of this kind; he would have more specific regulations formulated in Washington. Another member suggested that in view of the number and variety of rubber

stamps now required by the freight department, it would be well for the government to take over and operate all rubber stamp factories in the country. A committee was instructed to take up the matter with the Administration at Washington.

Side Track Agreements

The report of the special committee on railroad leases and side track agreements was briefly discussed. In March last, the League had taken action looking to the presentation of arguments before the Interstate Commerce Commission; but before anything was done the Railroad Administration took up the matter; and the Division of Operation and the Division of Law have now promised that a fair clause shall be adopted. Director Prouty of the Division of Public Service has proposed that in handling claims for personal injuries, the lessor (the railroad) shall be liable fully to the lessee, and the lessee liable fully to the lessor, each for damage to the one caused by the other; but the lessee shall be liable for damage to property of third parties except where the lessor is plainly at fault. This was approved by the League in 1916, and the same is now reaffirmed.

Miscellaneous Matters

There was a brief discussion of complaints that joint freight rates, in which a road not under government control is interested, are now inequitable, in many cases, because of the recent general change in tariffs; and the president was instructed to at once present these complaints to the Administration at Washington.

On recommendation of the freight claims committee, it was voted that the director of public service be requested to instruct all carriers that it is their duty to sign bills-of-lading bearing a notation that damages will result from unreasonable delay. Claims for damages on account of unreasonable delay have been refused on the ground that the carrier had no notice that unreasonable delay would cause damage.

At Youngstown, Ohio, and presumably at other places, it is proposed to consolidate freight houses and to arrange that all l.c.l. freight, for example, destined to Cleveland, be sent over one road; this in lieu of having sailing days on the several roads. It was brought out that in a case of this kind the consignee might have special reasons for favoring one road, and objection to another; and that, therefore, consignees should have a chance to make their wishes known before the adoption of such a scheme.

The policy of the post office department in adjusting claims for loss and damage in the parcel department came in for some criticism. It was voted that the post office department should be asked to apply in this department the same principle as that in vogue among common carriers.

The Division of Traffic has promised to simplify tariffs for extra baggage, especially those for transportation over two or more roads.

The president announced that, at the request of the Shipping Board, he had appointed a committee of fourteen on merchant marine. The chairman of this committee is J. C. Lincoln, manager of the traffic bureau of the Merchants' Association, New York City.

Among the visitors present at this convention was James E. Walsh, of Toronto, representative of the Canadian Manufacturers' Association, who, being invited to speak, presented the greetings of his constituents and expressed his appreciation of the value of the League. The Canadian government has virtually taken control of the Canadian Northern and the Grand Trunk Pacific, and there is a considerable sentiment toward taking over other roads. Mr. Walsh thought, from what he had heard in the two days of the meeting, that the merchants and manufacturers of the United States would not have much to say in favor of government operation.

On motion of F. B. Montgomery, manager of the traffic department of the International Harvester Company, it was

voted that the president of the League should write to Director General McAdoo, setting forth the desirability of appointing a representative of the shippers of the country as a member of his advisory board; for only a person familiar by experience with the merchants' and manufacturers' side of freight traffic problems can be sufficiently versed in details properly to present that side of many important questions.

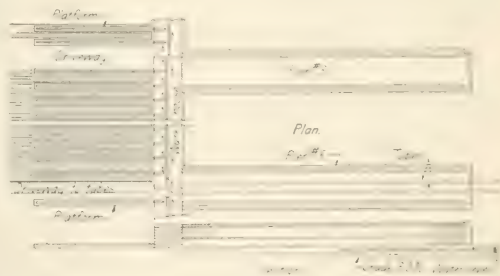
The annual meeting of the League is to be held at Cincinnati in November.

Conveyor Scheme for Handling New York City's Package Freight

THE CONSTRUCTION OF THREE TUNNELS under the Hudson river between the railway terminals in Jersey City and Manhattan Island for vehicular traffic with provision for two conveyors on each side of each tube to transport l.c.l. freight, is the latest solution proposed for the package freight handling problem of New York City. This plan was described at a meeting of the American Society of Terminal Engineers in New York on May 21, by M. A. Long, assistant to the chief engineer of the Baltimore & Ohio. The essential details of this novel plan, as outlined by Mr. Long, are contained in the following abstract of his paper.

The tunnels should be designed for the use of vehicles of all kinds. In order to allow gasoline motors to be used, ventilating fans could be placed in the tunnels on each side of the river. These fans would be connected to ducts placed in the ceiling and side walls.

The tunnels should be so designed that there would be space for two conveyors approximately 10 ft. high and 10 ft. wide on each side to carry package freight between Jersey City and Manhattan. These conveyors would be run in either direction in taking freight from Jersey to New York and from New York to Jersey. Any package too large or too



Enlarged Plan of the Pier and Warehouse Units

heavy for the conveyors would be hauled through the tunnel by trucks or teams.

Ninety per cent of the package freight destined to and from New York could be handled by the conveyors. They can be designed to carry a load equivalent to that usually placed on warehouse floors and they should be built in sections with individual drives to each and with a master control for all, the package tunnel to be patrolled while in operation. Each conveyor will carry approximately 1,250 tons per hour, four conveyors per tunnel, therefore, would carry 2,500 car loads in 10 hrs., figuring 20 tons per car. Based on this capacity, three conveyors, which is one less than the capacity of one tunnel, could handle more than the present estimated daily package tonnage to and from New York City while the total scheme will provide a capacity equal to four times that amount based on a working day of ten hours.

Working two shifts, eight times the present tonnage could be handled.

The layout on the Jersey side should include a system of warehouses parallel with the river; receiving platforms at the rear and at right angles to the warehouses could be fitted with conveyors to handle the freight from cars to warehouses or piers and to feed the main conveyors in the tunnel. The export piers will be located in front of and at right angles to the warehouses. In constructing the tunnels a pier will be built with them in such a manner that it will span the tunnel and provide the necessary space in which the tunnel can rise to the ground surface; and in this manner no river frontage would be sacrificed.

It has not been the custom to build warehouses over piers, but there is no reason why we should not do so when the foundations rest on rock or hard pan. The additional expense necessary to provide foundations to support an eight or ten-story warehouse will be no greater here than on any of the adjacent lots on shore, where the initial foundation for the pier is considered. Therefore, the scheme has been developed to show warehouses over the piers; these warehouses to be built narrower than the pier proper to allow room for ships' tackle; the platform alongside the piers to be separate



Suggested Location of the Terminal Warehouses and Tubes

from and yet a part of the pier. The platforms will be built of timber so designed that they will act as fenders for the main structure and take the initial shock.

This same scheme should be carried out on the New York side of the river, except for the long receiving platforms. These would not be necessary as the plan eliminates the necessity for freight tracks and freight cars in New York City. The conveyors could run to warehouses on the East side of West street or similar streets and teams would make delivery from these warehouses. This would allow New York City to develop its water front to the limit for export freight. It is not likely that any passenger subway will be built in West street and a freight subway could be built north and south on this street and the Marginal Way, fitted with conveyors to handle package freight to be delivered to any warehouse along the city side of the Marginal Way.

Branches could be run from these tunnels to steamship piers, so that package freight could be delivered to them by branch conveyors. The storage of the cargo in a warehouse alongside or adjacent to the slip at which a particular vessel is to dock, would permit that vessel to load and depart in much less time than it takes at present. In this scheme package freight to and from New York could be delivered to any of the warehouses or piers described in New York or New Jersey without having to appear on the surface of the Hudson river or on the crowded streets of New York City.

All conveyors should be reversible and outbound packages would be taken to cars in the same manner in which they are taken from them. The floor or carrying capacity of the conveyor is to be of a special design, which I have originated. It can be trucked over obliquely while in motion and, in the event of a temporary breakdown, electric tractors and trailers

can be put into use and can travel over it as easily as they can be operated on a floor; it is designed to be placed in the floor of warehouses and is so constructed that it will not interfere with the headroom on the floor beneath and it will not mean any particularly special design of floor construction; it will eliminate practically 90 per cent of the trucking in handling goods in and out of warehouses.

This scheme is particularly attractive because it can be built without disturbing the present method of operation; each railroad will still maintain its own property and can either own a conveyor for the delivery of freight in New York or can own one jointly with another friendly line with a tonnage agreement for handling, or some similar arrangement; it will allow New York City to develop to the limit its export and import business since no local package freight would be handled at the river front; it will take most of the car floats off of the Hudson river; ice and fog will in no way hinder or delay the receiving or delivering of the daily tonnage; the cost per ton for handling will be lower than in any other scheme I have seen and it will require less manual labor; instead of handling all business through one point it provides 12 different centers for handling; it can be enlarged to suit any expansion in business; and by constructing warehouses to hold the tonnage now held in cars in the New York and Jersey yards, about 20,000 cars will be released.

Each tunnel will cost from \$18,000,000 to \$20,000,000.

Forged Return Bends for Superheater Units

THE LOCOMOTIVE SUPERHEATER COMPANY, New York, a short time ago perfected a process of forging or swaging the return bends on superheater units from the unit pipes without the use of any form of autogenous welding. The steps in the process are shown in the illustration. The first step splits and machine-welds the ends of the pipes together and is carried on in a forging machine. The next step forms what is known as a preliminary swage



Steps in the Process of Forming the Forged Return Bends in Superheater Units

and the return bend is then placed in a special swaging or forging machine and the completed bend is formed. The final step consists of cutting off the short extended butt, pressing the return bend back into shape so that there is no greater thickness than the outside diameter of the pipe, and smoothing the end off with an air hammer. The cut sections show the character of the completed return bends. As previously stated, there is no oxy-acetylene or electric welding used, the entire process being a machine forging job. These return bends are formed on the long pipes of the units and not on short ones as shown in the illustration, these short pipes being employed merely for the purpose of illustrating the process. Each unit thus becomes a continuous pipe from the saturated to the superheated steam chambers of the header.

General News Department

Director General McAdoo is preparing to issue an order prohibiting the garnisheeing of wages of railroad employees.

The American Association of Passenger Traffic Officers will hold its annual meeting at Baltimore, Md., on October 23 and 24, instead of on the earlier date heretofore announced.

The freight house of the Chesapeake & Ohio, at Newport News, Va., was destroyed by fire on August 23; estimated loss \$50,000. A new freight house, adjacent to the building destroyed, was saved.

The employees of the Interborough Rapid Transit Company, New York City, have been granted a general increase in pay, said to average \$1 per day per capita. The aggregate estimated increase in the payrolls is about \$3,000,000.

Pennsylvania Railroad employees now on active duty in the military or naval service of the United States number 20,193; 14,085 men from the lines east of Pittsburgh, and 6,108 from the western lines. In March last the total was 11,769.

The Chesapeake & Ohio has engaged the State Public Service Utility Audit & Investigating Company of Charleston, West Virginia, W. J. Bienemann, president, to make the separation of its accounts as between federal and corporate interests.

The track from Hagerstown, Md., to Security is not to be torn up. The announcement to this effect was premature. W. H. Angle, the contractor for the work, had drawn the spikes of two miles of track when he received an order to suspend operations.

The Master Car Builders' rules of interchange, as revised June, 1917, have been extended to remain in effect until further notice. This announcement is made in circular No. 14 issued August 26. The extension applies also to circulars interpreting or modifying the 1917 rules. Notice will be given in advance of the date on which the 1918 code of rules is to go into effect.

Two Chicago ticket scalpers caught by H. A. Koch, inspector of passenger traffic of the Railroad Administration, in charge of the investigation and prosecution of scalpers, have been arrested and now await trial. They are David Lyons and Harry W. Young. They are charged with altering railroad tickets purchased at their places of business and thereby conspiring to defraud the government.

Studies are being made by the United States Railroad Administration to determine whether the adoption of an equitable and universal plan for the compensation of employees, in case of death or injury, and provision of life, health and old age insurance is practicable. There are difficulties in the way arising from the existence of the present pension and insurance plans, but it is expected that they can be overcome.

The National Association of Purchasing Agents will hold its third annual convention at Hotel Pontchartrain, Detroit, Mich., on September 23, 24 and 25. Attendance at the convention is not limited to members of the association, an open invitation being extended to purchasing agents in all industries and in all sections of the country. The president of the association is E. L. McGrew, president of the Underground Cable Company, Pittsburgh, Pa., and the secretary is L. F. Boffey, 25 Beaver street, New York City.

Every patriot must produce cross ties; or, if he is not a farmer or owner of timber land, he must do what he can to aid in the production of ties by others. This is the gist of a circular which has been issued by F. H. Fechtig, purchasing agent of the Atlantic Coast Line Railroad, which he is circulating in the territory adjacent to his road. The circular contains the specification for ties as approved by the Railroad Administration, and appeals to the farmer, the tie chop-

per, the section foremen, tie inspectors, station agents and everybody who can influence a farmer, or aid the company in its quest for largely increased quantities of ties.

A strike of trainmen on the Denver & Salt Lake which commenced on August 21, was terminated on the 25th only after it was announced that the government had taken over the road. The men demanded back wages which they claimed were due them under the Adamson law and also the wage increase granted to roads under governmental control in General Order No. 27, dating back to the first of last January. The government has agreed to give the men their back pay under General Order No. 27. As to the Adamson law wages which have been the subject of litigation—when the amount due the men is settled by the court and receiver's certificates issued therefor, the government will cash the certificates so that the money may be paid to the men.

Successful Airplane Mail Service

The Post Office Department reports that during the month of August the airplanes made their trips between New York and Washington without any serious delay. The aerial carriers flew on 27 days, and there were only two forced landings, one causing a delay of 7 minutes, and the other 10 minutes. One of these accidents, caused by the breaking of a magneto shaft, occurred within four miles of the New York terminus at Belmont Park; and except for this four miles, the whole mileage for the month, 11,961 miles was accomplished. A total of 5,879 lb. of mail was carried in August. No airplane had to be laid up in the shop for repairs during the month.

Inventory of Steel Stocks

A country-wide inventory of stocks of steel on hand is being made by the War Industries Board in co-operation with the Census Bureau. The present estimated total production of steel in sight is 17,000,000 tons, while the war demands aggregate over 23,000,000 tons, with the demand constantly rising. Chairman Baruch announces that he cannot approve requests for an ounce of steel for domestic uses. The Census Bureau is sending questionnaires to more than 40,000 manufacturers asking complete reports of stocks of steel on hand down to the smallest holdings. It is sought to reach every manufacturer who uses steel in any way and in any amount.

Pennsylvania Railroad Pensions

The list of Pennsylvania employees retired on pension on July 1, which has just been issued, contains the names of 63 men, and one woman, 51 of the 64 being on the Eastern lines, and the others on the Western. Seven employees had worked more than a half century each. Four officers are included in the list, namely, A. B. Starr, special assistant to the vice-president in charge of operation, Pittsburgh; Daniel T. McCabe, vice-president in charge of traffic, Pittsburgh; Samuel Moody, passenger traffic manager, Pittsburgh, and Joseph A. Clift, chief accountant in the department of the auditor of freight traffic, Philadelphia. The one woman, Miss Bridget E. Whalen, was telegraph operator at Collier, W. Va., where she had served without a break from July 26, 1868, or 26 days less than half a century. The company's circular includes a portrait and sketch of Miss Whalen, along with those of other prominent pensioners, and says that she was regarded as one of the best train-order operators in the country. She was a person who commanded marked esteem among her neighbors, and no man, however rough, came into her presence without showing her the highest respect. Her acts of charity in the community where she resided were proverbial, and the extent of her charitable work is indicated by the statement that although she had received fair remuneration for her services for 50 years she is now dependent upon her pension allowance for a livelihood.

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Results of M. C. B. and M. M. Letter Ballot

The outcome of the voting on questions ordered submitted to letter ballot at the annual meeting of the Master Car Builders' Association has been announced in Circular No. 7, issued by the secretary. All of the proposals submitted to a vote were carried. The most important matter considered was the adoption of the No. 10 contour line for the type D coupler. (See *Railway Age*, June 21, 1918, page 1501.) This was adopted with but a single dissenting vote. The design of the 6-in. by 8-in. shank for the type D coupler was also carried by a large majority. The gages to insure interchangeability of parts and specifications for the purchase and acceptance of couplers, knuckles, locks, and other parts were also adopted. The modifications of certain specifications proposed by the Committee on Tests and Specifications for Material were carried. (See *Railway Age*, June 21, 1918, page 1489.) It was also voted to add to the interchange rules a provision making the use of metal safety blocks mandatory and prohibiting the use of wooden safety blocks. The remainder of the twenty-two questions related to minor changes in the standards and recommended practices of the association.

The twenty questions appearing on the letter ballot of the Master Mechanics' Association were all adopted. The majority of these were submitted by the Committee on Specifications and Tests for Material. Several new specifications were adopted as recommended practice and a number of others were revised. (See *Railway Age*, June 21, 1918, page 1519.) The overall width of journal bearings was increased and several of the recommended practices of the association were advanced to standard. (See *Railway Age*, June 21, 1918, page 1524.)

New York City Ticket Offices

The new consolidated ticket offices in New York City, except the one at 31 West 32nd street, were opened for business on Tuesday, September 3. That on 32nd street will be opened on September 23, more than two months later than the time at which it was expected to open all of the offices.

The offices now opened are at 64 Broadway; Broadway and Chambers street; 114 West 42nd street, and 336 Fulton street (Brooklyn). The principal office is at 64 Broadway, where 57 men will be employed. Ten of these will serve at the Information Bureau. All of the offices together will employ about 200 men, which is 100 less than the number now employed in city offices; and 48 offices are to be abandoned, saving in rentals about \$290,000 yearly. A school is to be at once established to train young women in ticket selling. The course of instruction will occupy two months, or longer, and the pupils are to be paid while learning.

George A. Cullen, chairman of the committee in charge, issued a statement to the ticket sellers in which he said, in part: "Director General McAdoo has equipped you with the finest tools, but there are two things which he cannot supply. The first of these is the spirit of service. You will meet each day more people seeking important, accurate and vital information than, I believe, in any other organization in this great city.

"You can respond to this need in a careless and perfunctory way, doling out half-facts and guesses, or you can painstakingly ascertain what the inquirers want to know (indeed help them to find out as is so often necessary) and then give them clear, explicit and understandable answers—a joy to do. You can provide them with transportation and accommodations in a grudging and indifferent manner or do this with carefulness and alacrity and with consequent satisfaction to yourselves.

"The other feature that is wholly up to you is what for want of a better term I may call the spirit of civility. Civility is not a mask to be put on—a smile or an external assumption of politeness. To be of any lasting value in the day's work, the week's work, the year's work, it must come from an honest and whole hearted desire to put yourself in the other fellow's place. In a word, it is the constant practical application of the Golden Rule which in your work particularly is more essential than all the so-called rules and regulations our committee can possibly set down for your guidance. We want no slackers, no grouches among us."

Traffic News

Grain is now moving on the New York state barge canal, 30 boats having been loaded with wheat at one elevator, at Buffalo, last week. Four boats with pig iron left Buffalo on August 28 for Bridgeport, Conn.

Rate Reduction on Grain from Buffalo Eastward

The Division of Traffic of the Railroad Administration has authorized, effective September 1, to expire October 10, a reduction of 2 cents per 100 lb. in the ex-lake rates from Buffalo, N. Y., to eastern seaboard cities on grain from Lake Michigan ports. This adjustment seems necessary to attract the maximum amount of grain to the boats at Lake Michigan ports before the beginning of the movement of the northwestern crop through Lake Superior ports. The latter movement will require practically all the lake tonnage available; hence the necessity of making an extra effort to get grain which normally should move through the Chicago gateway.

The present rates will automatically be restored on October 11. Any grain to get the benefit of the lower rates must move out of the Buffalo elevators prior to October 11.

Coal Production

Recovery from the slump of the past five weeks marked the production of bituminous coal during the week ended August 24, according to the weekly bulletin of the United States Geological Survey. The output during that week, including lignite and coal made into coke, is estimated at 12,603,000 net tons and not only exceeded the production during the week preceding by 669,000 net tons, or 5.6 per cent, but exceeded the production during the preceding three weeks. Production during the current week of 1918 was 1,852,000 net tons, or 17 per cent in excess of the production during the corresponding week of 1917.

The average production per working day during the week of August 24 is estimated at 2,100,000 net tons, as against 1,989,000 net tons during the week preceding, and 1,792,000 net tons during the week of August 24, 1917.

Production of anthracite in the United States during the week of August 24 is estimated at 2,134,000 net tons, as against 1,924,000 net tons during the week preceding, an increase of 10.9 per cent, and as against 1,988,600 net tons during the corresponding week of 1917, or an increase of 7.3 per cent. The average daily production during the week of August 24 is estimated at 355,667 net tons, as against 336,839 net tons during the coal year to date, and as against 329,831 net tons during the same period of 1917.

Total production for the coal year to date is estimated at 41,768,000 net tons, an increase over 1917 of 869,000 net tons, or 2.1 per cent.

For the week ended August 17 the operators reporting produced 84.5 per cent of the total estimated output, the mines being operated at 77.7 per cent of their full time capacity. As during the preceding week, the report says, the limiting factor was car shortage, the operators reporting a loss of 12.4 per cent of full time from this cause and poor transportation conditions caused increased losses of time by the mines in Illinois, Somerset County, Pa., New River and Winding Gulf, and the high volatile districts of West Virginia and in northeast and western Kentucky. Improved supply of cars existed in western Pennsylvania, Cumberland-Piedmont district and in southwest Virginia.

According to the weekly report to Director General McAdoo by the Car Service Section of the Railroad Administration, 247,288 cars of coal of all kinds were loaded by railroads in the week ended August 17, as compared with 216,415 cars for the corresponding week in the previous year. A summary of reports for the week ended August 24 partly estimated shows a total of 264,305 cars, as compared with 228,029 in the corresponding week of the previous year. This would make the increase in 1918 up to and including August 24 over the same period of 1917 a total of 488,413 cars.

Commission and Court News

Interstate Commerce Commission

New Haven May Retain Steamer

Lines on Long Island Sound

Opinion by Commissioner Woolley.

The commission has handed down a decision granting the New York, New Haven & Hartford permission to continue the operation of the steamer lines on Long Island Sound controlled by the New England Navigation Company, the Hartford & New York Transportation Company and the New Bedford, Martha's Vineyard & Nantucket Steamboat Company, as it is found that under present conditions the services are being operated in the interest of the public and are of advantage to the commerce and convenience of the people and as continued operation by the railroad will neither prevent, exclude nor reduce competition on the route via water under consideration. Action in the future, however, will be dependent upon circumstances and conditions.

The commission's decision goes into great detail concerning the service operated by the steamboat companies and says that, all things considered, including the physical characteristics of the region and the direction in which early conditions caused the rail lines to be built, it is strongly of the opinion that economy and efficiency demand the greatest possible co-ordination between the petitioner's rail lines and steamer lines to New York, and that there is slight probability that this could be secured to as great an extent as at present under independent ownership and operation of the steamer lines. (50 I. C. C. 634.)

Colonial Navigation Company v. New York, New Haven & Hartford Railroad Company. Opinion by Commission Woolley.

The practice of the defendants in maintaining a through route for the transportation of passengers and baggage between New York and points on its lines, via Providence, R. I., in connection with the New England Steamship Company, which it controls through stock ownership, while refusing to establish a similar route with the complainant, is found to result in undue prejudice. The defendant is required to establish joint passenger fares in connection with complainant not higher than those contemporaneously maintained in connection with the New England Steamship Company. (50 I. C. C. 634.)

Court News

Dangerous Approach to Train

The Kentucky Court of Appeals holds that for breach of duty to furnish a passenger safe approach to the defendant's train, he having to cross two tracks in going from the station to the cars, the railroad is liable for his injury by the train of another railroad using the same station and coming on one of such tracks, without regard to which owned and controlled the station and tracks.—*Scott v. Cincinnati, N. O. & T. P., (Ky.), 203 S. W. 1064. Decided June 14, 1918.*

Failure to Pay Tariff Rates Bars Recovery of Damages

A shipper of a carload of horses from Hot Springs, Ark., to Louisville, Ky., through a mistake of the agent, paid freight at less than tariff rate. On the arrival of the stock in Louisville, the L. & N. declined to permit it to be unloaded until the balance of the freight was paid. This was not done until next morning, and in consequence of the delay a horse contracted pneumonia, from which it died. In an action against the railroad it was held by the Kentucky Court of Appeals that, as a shipper is conclusively presumed to know the published rate, this man should have paid the additional amount demanded; and his failure to do so precluded recovery for damages resulting from the delay in unloading. The shipper had an agent present who had accompanied the horses. The fact, if it were a fact, that the agent did not have the money to make the payment at the time furnished no excuse. Plaintiff was presumed to know

that it would be unlawful for the shipment to be delivered to him or his agent without payment of the legal rate.—*Blackford v. St. Louis, I. M. & S. (Ky.), 203 S. W., 867. Decided June 11, 1918.*

Persons Entitled to Recover Damages—

Apportionment of Damages Between Carriers

The Texas Court of Civil Appeals holds that the consignee of an intrastate shipment of cattle and another who did not buy an interest in the cattle until they reached their destination would have no right to recover against the carriers for cattle killed and injured in transit; the owner not having sold them an interest in the chose in action.

The contract of the initial carrier was to transport to a certain place, and there deliver to the connecting carrier. There was no partnership between the carriers or ratification of the original contract. It is held that where evidence wholly failed to show the damages which occurred on each line there was no basis for an apportionment of damages by the jury. Receiving from the initial carrier cattle for transportation was not a ratification of the initial carrier's contract, but merely a compliance with the state statute requiring a connecting carrier to receive and transport all freight delivered to it by any other line.—*Pouder v. Crenwelge (Tex.) 203 S. W. 1125. Decided June 12, 1918.*

Warning Devices at Crossings—Safety Signals

In an action by the driver of an automobile for personal injuries received when he collided with a freight train standing on a crossing the only negligence relied on was the failure of the automatic electric crossing gong to ring. The Massachusetts Supreme Judicial Court holds that even if this appliance were maintained by the railroad because required to do so by statute, its purpose was to protect travelers on the highway from the danger of approaching trains, and not to warn them against cars and engines which were standing still. A plaintiff cannot recover for the violation of a statute unless there is a causal connection between his injury and the condition to which the statute applies. The fact that the railroad voluntarily maintained the appliance without an order or request from the railroad commissioners did not show that it was intended to protect against standing cars. A failure to use a safety appliance, adopted as a protection against some particular danger, cannot be relied upon to prove negligence when the injury is caused by another danger which the appliance was not designed to guard against; and the responsibility voluntarily assumed to maintain these signals imposes no higher duty on a railroad company than the statute requires.—*W. Glauffin v. Boston & Maine (Mass.) 119 N. E. 955. Decided May 28, 1918.*

Discrimination in Absorption of Switching Charges

At certain points south of Richmond three railroad companies, the Seaboard Air Line, the Southern and the Atlantic Coast Line, were competitors for traffic to and from that city. Each road had switching facilities at Richmond, connecting with each other, and each delivered freight from competitive points to industries on its own tracks in Richmond at its tariff rate to that point, without extra charge for switching; also each road absorbed the switching charge of a competitor on freight to be hauled by it to industries on the competitors' tracks at Richmond. Other railroads, the Chesapeake & Ohio and the Richmond, Fredericksburg & Potomac, not competitors for the southern business, entered Richmond and had switching facilities connecting with those of the competing roads. Such roads, however, did not absorb the switching charges on freight to be delivered to industries on the lines of the roads with which they were not in competition. Under a complaint of the Richmond Chamber of Commerce the Interstate Commerce Commission decided, three of the commissioners dissenting, that this method of business was an unlawful discrimination against the industries on the non-competing railroad lines under section 2 of the Interstate Commerce Act; and the federal district court for the Eastern District of Virginia refuses to enjoin the commission's order.—*Seaboard Air Line v. United States, 249 Fed., 368. Decided January 19, 1918.*

Supply Trade News

Ephron Catlin, Jr., secretary of the Southern Railway Supply & Equipment Company, of St. Louis, has enlisted in the Naval Reserve Flying Corps.

P. H. Hamilton, roadmaster on the St. Louis-San Francisco, at Sapulpa, Okla., has resigned to become southern representative of the P. & M. Company, with headquarters at Chicago.

H. E. Chilcoat, representative of the Westinghouse Air Brake Company at its Pittsburgh office, has severed his connection with that company to accept the position of manager of the Clark Car Company, manufacturers of the Clark extension side dump car. Mr. Chilcoat was born in Orbisonia, Pa., and received his early education in the public schools at that place. In 1900 he went to the Pittsburgh district, entering the employ of the Pennsylvania Railroad as machinist's helper and served successively as work inspector, gang foreman and foreman of the air brake department until 1906, when he left the railroad company to enter the service of the Westinghouse Air Brake Company as



H. E. Chilcoat

traveling inspector. Shortly after joining the Westinghouse organization he was assigned to the southeastern district with headquarters at Richmond, Va. In 1910, he was transferred to the Pittsburgh district office as representative, looking after the commercial interests of the company in the district served by that office until August, when he resigned to take up the duties of his present position, with headquarters at Pittsburgh, Pa.

E. R. Wood, formerly eastern representative of the High Speed Hammer Company, Rochester, N. Y., has associated himself with the sales department of Sherritt & Stoer Company, Inc., Philadelphia, Pa.

F. J. O'Brien, formerly sales manager of the Globe Seamless Tube Company, of Chicago, and for the last year and a half mill manager at Milwaukee, has been promoted to general manager, with headquarters at Milwaukee, effective September 1.

J. G. Sullivan, who resigned recently as chief engineer of the Canadian Pacific, Western Lines, with headquarters at Winnipeg, Man., has opened a consulting engineer's office in that city, making a specialty of railway work, mining, foundations, tunnelling, elevators, etc.

L. C. Sprague, special railroad sales representative of the Chicago Pneumatic Tool Company, with headquarters at Chicago, has been promoted to district manager of sales for that company, at New York, succeeding **Charles Booth**, resigned. **C. W. Cross** succeeds Mr. Sprague.

Harry L. Barnitz, announces that he has severed his connection with the International Oxygen Company as sales agent, and is now conducting business under his own name as consulting engineer on oxygen and hydrogen, plant installation and technical processes for their uses. His office is at 617 West 152nd street, New York.

Robert F. Carr, president of the Dearborn Chemical Company, of Chicago, has been commissioned major on the general staff in the department of purchases, storage and traffic of the army, with headquarters at Washington, D. C. Major

Carr will work in conjunction with **Lieut. Col. W. R. Roberts** in connection with the standardization of army equipment.

The A. G. A. Railway Light & Signal Company, Elizabeth, N. J., reports the sale of steady lights to the Boston & Maine; three equipments for cars to the Detroit & Mackinac, and one Unison flashlight to the Delaware, Lackawanna & Western. Lights for cars have been shipped to Rio Janeiro, Brazil.

John W. Foyle, vice-president of the Gustin-Bacon Manufacturing Company, Kansas City, Mo., has accepted a commission as major in the Quartermaster Corps, and reported to Washington September 1. Mr. Foyle has been with the Gustin-Bacon Manufacturing Company five years, prior to which he served 17 years with the Missouri, Kansas & Texas. He was at one time chairman of the executive committee of the Railway Storekeepers' Association.

W. J. Schlacks announces that he has purchased the McCord Locomotive Lubricator Company and has incorporated the Locomotive Lubricator Company for the manufacture and sale of the Schlacks system of locomotive force feed lubrication. **O. H. Neal** and **C. W. Rudolph**, who have been associated with Mr. Schlacks and McCord & Co., have joined the new company. The Locomotive Lubricator Company will have offices in the Tower building, Chicago.

J. H. Rodger has been elected acting vice-president of the Safety Car Heating & Lighting Company, with office at Chicago. Mr. Rodger has been sales representative with that company



J. H. Rodger

since April, 1911, prior to which he was with the Standard Coupler Company and the Monarch Machine Company. **A. Clark Moore**, vice-president of the Safety Car Heating & Lighting Company, whom he succeeds, has been given a leave of absence for the duration of the war to accept a commission as major, in charge of aircraft production in New York district. Major Moore was born January 18, 1880, and entered the railway supply business in the New York office of the Safety Car Heating & Lighting Company in July, 1899.

In 1906 he went with the Western Steel Car & Foundry Company and later with McCord & Co., returning to the Safety Car Heating & Lighting Company in August, 1907, remaining with that company with the positions of sales agent in New York, 1907, manager, northwestern district, 1908, general manager, New York, 1911, and vice-president with headquarters in Chicago since June, 1913. Major Moore is a past president of the Railway Electrical Supply Manufacturers' Association.

Guy E. Tripp Special Assistant, Ordnance Department

Announcement is made of the appointment by Major General C. C. Williams, Chief of Ordnance, of five special assistants who will act for him in the general supervision of the various activities of the Ordnance Department.

Col. Guy E. Tripp, Ord. Dept., U. S. A. (chairman of the board of the Westinghouse Electric & Manufacturing Co.), who has been serving as chief of the production division, has been named as one of these special assistants, and has been placed in complete charge of the administration and work of the eleven district officers having supervision over the production of ordnance material in their respective sections of the country. The ordnance district chief will report directly to him.

W. H. Marshall, formerly president of the American Locomotive Company, and later associated with J. P. Morgan & Co., is another of the special assistants. Mr. Marshall will have supervision over the artillery program, including engineering, manufacturing and inspection.

Financial and Construction

Railway Financial News

CHICAGO, MILWAUKEE & ST. PAUL.—See editorial comments elsewhere in this issue.

CHICAGO & WESTERN INDIANA.—The \$15,000,000 one-year 6 per cent notes which matured on September 1, 1918, are being presented at the office of J. P. Morgan & Co., but are not being paid, because no funds have been received for the purpose. The Chicago & Western Indiana is a terminal company owned jointly by the Chicago & Eastern Illinois, Chicago, Indianapolis & Louisville, Grand Trunk Western, Wabash, and Erie. The notes are secured by \$21,000,000 first and refunding bonds which enjoy a first lien upon extensive freight-terminal property in and around Chicago, used by the Pennsylvania, Atchison, Illinois Central, Burlington, Rock Island, Chesapeake & Ohio, Erie, Wabash and other roads. In 1917 the company earned its interest charges and 6 per cent dividends on its \$5,000,000 stock. It has been generally expected among holders of the notes that the Railroad Administration would advance funds to meet the debt in case enough of the bonds could not be sold to provide the funds; and it is still expected that the notes will be dealt with in some way within a few days.

DENVER & RIO GRANDE.—See editorial comments elsewhere in this issue.

INTERBOROUGH RAPID TRANSIT.—A syndicate composed of J. P. Morgan & Co. and other bankers has been formed to sell \$33,400,000 of Interborough Rapid Transit Company's 3-year 7 per cent notes at 98½. These notes are secured by deposit of \$52,187,000 first refunding 5s into which the notes are convertible at maturity at 87½ per cent and interest. The new notes mature July 1, 1921.

NORTHERN PACIFIC.—See editorial comments elsewhere in this issue.

Railway Construction

ILLINOIS CENTRAL.—A one-story freighthouse, 38 ft. by 200 ft., with concrete foundation, brick walls and tile roof, is being built at La Salle, Ill. A platform 16 ft. wide will extend 120 ft. beyond the building and will be constructed of concrete, floored with creosote blocks. In addition, 1,100 sq. yd. of driveway will be paved with brick. The old freighthouse is being remodeled into a two-stall enginehouse. T. S. Leake & Co., Chicago, have the contract for the work. The improvements, including a rearrangement of tracks which is being done by the railroad, will cost about \$75,000.

This road is preparing plans for the construction of a one-story brick freight and passenger station at Dawson Springs, Ky., which will be 34 ft. by 192 ft., with a concrete foundation and a slate roof.

U. S. ARMY.—Company A of the 106th United States Engineers is building a railway from Sunburst, N. C., into the heart of a forest in the mountains in the western portion of that state, to provide transportation for timber, from which aeroplane parts will be made.

PORT PROJECT FOR ROME.—A convention has been signed by representatives of the Italian Government and by credited delegates of the city and province of Rome for constructing a port at Ostia Nuova, which when completed and connected with the Tiber by means of a navigable canal will give harbor facilities to the city of Rome and thereby satisfy an old ambition of the capital. The first group of works to be constructed will cost about 47,000,000 lire (\$9,000,000), which is to be advanced by the Commune, the state reimbursing, according to the convention, 50 per cent, and the province 10 per cent of the expenses. The port will allow on completion an annual movement of 1,000,000 tons.—*Commerce Reports.*

Railway Officers

Railroad Administration

General and Regional

Edward A. Chenery, whose appointment as general superintendent of telegraph of the Southwestern region, with headquarters at St. Louis, Mo., was announced in the *Railway Age*



E. A. Chenery

of August 30, was born on the Atlantic ocean on October 17, 1859. He entered railway service on the Grand Rapids & Indiana, as a telegraph operator, in November, 1872. He continued to serve in that capacity until January, 1879, when he went with the Galveston, Harrisburg & San Antonio, with which company he served successively as telegraph operator, despatcher, car accountant and secretary to the general superintendent. In December, 1886, he resigned to become secretary to the general superintendent of the Union Pacific.

The following year he became superintendent of telegraph of the Terminal Railroad Association of St. Louis. Sixteen years later he resigned to become superintendent of telegraph of the Missouri Pacific. On August 27, Mr. Chenery was appointed general superintendent of telegraph of all lines under federal control in the Southwestern region, with headquarters at St. Louis, Mo.

Charles Adelbert Morse, chief engineer of the Rock Island Lines, at Chicago, has been appointed assistant director of operation of the Railroad Administration in charge of main-



C. A. Morse

tenance of way, with headquarters at Washington, D. C. Mr. Morse was born at Bangor, Me., on January 1, 1859, and was educated at the University of Maine. He began railroad work in 1880 as a chainman on the Chicago, Burlington and Quincy, and was subsequently instrument man and office man on the same road. From November, 1881, to 1884, he was division engineer on the Mexican Central. He then returned to the Burlington for a year and a half and in January, 1886, went with the

Atchison, Topeka & Santa Fe, with which road he was successively transitman, division engineer, and resident engineer during the ensuing 15 years. From July, 1901, to February, 1902, he was assistant to the chief engineer at Topeka, Kan., following which he was principal assistant engineer at La Junta, Col., engineer of the eastern grand division at Topeka, Kan.; acting chief engineer, with the same headquarters, and assistant chief engineer. From

September 1, 1905, to September 1, 1906, he was acting chief engineer of the Coast lines of the same system, with headquarters at Los Angeles, Cal., and in the following three years was chief engineer of the lines east of Albuquerque, with headquarters at Topeka, Kan. From November, 1909, to March, 1913, he was chief engineer of the entire Santa Fe system following which he was appointed to the same position on the Chicago, Rock Island & Pacific. In April, 1914, he was appointed also chairman of the valuation committee of the Rock Island, and this year when the railroads were placed under federal operation, he was appointed chief engineer of all the Rock Island lines. Mr. Morse has long been active in the affairs of the American Railway Engineering Association and is now its president.

The following have been appointed staff officers in the organization of the Southern regional director, with office at Atlanta, Ga.: **J. W. Small**, formerly superintendent of motive power, Seaboard Air Line, and recently mechanical assistant to regional director, staff officer, mechanical; **J. T. King**, staff officer, transportation; **W. R. Rodenbaugh**, staff officer, engineering; **E. H. Dulaney**, member Southern Regional Freight Traffic Committee, staff officer, traffic; **G. W. Lamb**, assistant comptroller, Louisville & Nashville, staff officer, accounting; **W. L. Stanley**, assistant to federal manager, Seaboard Air Line, staff officer, claims and claim prevention, and **J. A. Jones**, superintendent of telegraph, Southern Railway, staff officer, telegraph and telephone.

Federal and General Managers

E. L. Brown, general manager of the Denver & Rio Grande, has had his jurisdiction extended to include the Salt Lake City Union Depot & Railroad Company.

W. G. Bied, federal manager of the Chicago & Alton, has had his jurisdiction extended over the Peoria & Pekin Union and the Peoria Railway Terminal, effective August 27.

J. E. Taussig, general manager of the Wabash, with office at St. Louis, Mo., has been appointed federal manager of that road and also of the Toledo, St. Louis & Western, with office at St. Louis, Mo.

E. D. Bronner, federal manager of the Michigan Central and the Grand Rapids & Indiana, with office at Detroit, Mich., has had his authority extended over the Detroit Terminal Railroad.

W. F. Thiehoff, assistant to the general manager of the Chicago, Burlington & Quincy, has been assigned to temporary service as acting general manager of the Denver & Salt Lake, with headquarters at Denver, Colo., effective August 28.

E. E. Calvin, federal manager of the Union Pacific, the Oregon Short Line, the St. Joseph & Grand Island and the Los Angeles & Salt Lake, has had his jurisdiction extended over the Ogden Union Railway & Depot Company, effective August 28.

The authority of **E. M. Costin**, federal manager of the Cleveland, Cincinnati, Chicago & St. Louis, the Muncie Belt Railway and the Indianapolis Union, with office at Cincinnati, Ohio, has been extended over the Chicago, Indianapolis & Louisville, the Cincinnati, Indianapolis & Western, and the Detroit, Toledo & Ironton.

L. Kramer, federal manager of the Missouri, Kansas & Texas, the St. Louis-San Francisco, the Oklahoma Belt and the West Tulsa Belt, has had his jurisdiction extended over the Kansas City, Clinton & Springfield. This road will be added to the second district of the St. Louis-San Francisco and will be operated as the Osceola subdivision of the Ozark division.

C. G. Burnham, federal manager of the Chicago, Burlington & Quincy, the Quincy, Omaha & Kansas City, the Toledo, Peoria & Western, west of Peoria, including the Peoria Terminal, the Rockport, Langdon & Northern and the Rapid City, Black Hills & Western, has had his jurisdiction extended to include the Illinois Terminal and the Missouri & Illinois Bridge and Belt, effective August 27.

The jurisdiction of **A. W. Thompson**, federal manager of the Baltimore & Ohio (East of Parkersburg and Pittsburgh);

the Cumberland Valley; the Western Maryland; the Coal & Coke; the Cumberland & Pennsylvania, and the Wheeling Terminal Railroad, with office at Philadelphia, Pa., has been extended over the Gettysburg & Harrisburg and over that portion of the Philadelphia & Reading from Shippensburg, Pa., to Harrisburg, Pa., which lines are released from the jurisdiction of C. H. Ewing, federal manager.

Operating

George Linn has been appointed acting manager of the Marine Department of the New York Central, with office at New York.

W. M. Corbett, terminal manager at Kansas City, Mo., has had his jurisdiction extended over the Kansas City Connecting Railway.

John Duffy, assistant secretary of the Lehigh Valley, has been appointed assistant to general manager with headquarters at New York.

H. D. Page has been appointed terminal manager of the Peoria-Pekin switching district, with headquarters at Peoria, Ill., effective August 27.

J. R. Roycroft has been appointed general agent, with office at Charleston, West Virginia, of the Chesapeake & Ohio, vice **G. D. Moffet**, resigned.

W. D. Trump, general manager of the Detroit Terminal Railroad, with office at Detroit, Mich., has been appointed terminal manager in charge of all terminal operations at Detroit.

F. A. Lehman and **John Purcell**, assistants to the vice-president on the Atchison, Topeka & Santa Fe, with headquarters at Chicago, have been appointed assistants to the federal manager.

Frank P. Little, assistant superintendent of the Chicago-Petoskey division of the Pere Marquette, has been appointed superintendent of the Detroit-Canadian division, with office at Detroit, Mich., vice **J. J. Corcoran**, promoted.

W. M. Edgar, superintendent transportation of the Weatherford, Mineral Wells & Northwestern, with office at Weatherford, Tex., has been appointed general superintendent and treasurer, with headquarters at Weatherford, vice **B. C. Crow**, second vice-president and general superintendent, resigned to accept other services.

H. V. Platt, president of the Ogden Union Railway & Depot Company and first vice-president of the Los Angeles & Salt Lake, with headquarters at Salt Lake City, Utah, has been appointed terminal manager with jurisdiction over the Salt Lake switching district, including Midvale, Utah, Murray and Garfield, and the Ogden (Utah) switching district.

J. Lowell White, superintendent of transportation of the Atlantic Coast Line, with authority over the First Division, also over the line between Winston-Salem and Wadesboro and the Winston-Salem Southbound, with headquarters at Rocky Mount, N. C., has had his authority extended over the system of the Atlantic Coast Line, with office at Wilmington, N. C., and **W. B. Darrow**, superintendent of transportation, with office at Wilmington, N. C., has been appointed superintendent of transportation of the First division, with office at Rocky Mount, N. C.

Augustus E. Ruffer, general superintendent of transportation on the Erie, with office at New York, has been appointed general superintendent of the lines east, vice **John J. Mantell**, furloughed to fill position of terminal manager; **Charles P. Eckels**, superintendent of the New York division and branches, with office at Jersey City, N. J., has been appointed general superintendent of transportation, vice Mr. Ruffer; **George H. Derby**, chief clerk to the general superintendent of transportation, has been appointed assistant to general superintendent of transportation; **William J. English**, superintendent of the Kent division, at Marion, Ohio, has been appointed superintendent of the New York division and branches, vice Mr. Eckels; **Harry R. Adams**, assistant superintendent of the Kent division, at Kent, Ohio, has been appointed superintendent of the Kent division, vice Mr. English.

George S. Stewart, having returned from the Russian Railway Service Corps, has been reappointed general superintendent of the lake district of the Great Northern, with headquarters at Superior, Wis. **P. F. Keating**, who has been general superintendent at Superior, has been appointed assistant general superintendent of the eastern district, with headquarters at St. Paul; **C. E. MacLaughlin**, assistant general superintendent at St. Paul, becomes superintendent of the Willmar division, with headquarters at Willmar, Minn.; **E. C. Huffman**, division superintendent at Willmar, has been transferred to the Breckenridge division, at Breckenridge, Minn.; **L. M. Davis**, division superintendent at Breckenridge, has been transferred to the northern division, with headquarters at Crookston, Minn., and **J. R. Miller**, who was division superintendent at Crookston, has been appointed trainmaster of the Fergus Falls division, with headquarters at Melrose, Minn., effective August 28.

M. W. Clement, division superintendent of the Pennsylvania Railroad, eastern lines, and the New York, Philadelphia & Norfolk, with office at Cape Charles City, Va., has been appointed superintendent of freight transportation. **R. H. Pinkham**, assistant division superintendent of the Pennsylvania, with office at Cresson, Pa., has been appointed superintendent of the New York, Philadelphia & Norfolk; **H. P. Lincoln**, division superintendent of the Pennsylvania, with office at Williamsport, Pa., has been appointed special agent, in the office of the general superintendent, central division; **H. H. Russell**, assistant division superintendent at Pittsburgh, Pa., has been appointed superintendent of the Williamsport division; **T. A. Roberts**, assistant division superintendent at Frazer, has been appointed assistant superintendent of the Pittsburgh division with headquarters at Youngwood; **W. M. Post**, assistant division superintendent at Mifflin, has been appointed assistant superintendent of the Pittsburgh division, with office at Cresson; **G. C. Koons**, assistant division superintendent at Trenton, N. J., has been appointed assistant superintendent of the Middle division, with office at Mifflin, and **C. E. Brinser**, terminal division engineer at Philadelphia, has been appointed assistant superintendent of the New York division with office at Trenton, N. J.

Financial, Legal and Accounting

W. H. Ross has been appointed acting federal treasurer of the Kansas City, Mexico & Orient lines, with headquarters at Wichita, Kan., succeeding **E. H. Rowley**, resigned, effective August 24.

H. Johnson, secretary, auditor and general freight and passenger agent of the Duluth & Iron Range, with office at Duluth, Minn., has been appointed general freight and passenger agent and federal auditor.

E. M. Smith, secretary, treasurer and auditor of the Kansas City, Clinton & Springfield, with headquarters at Springfield, Mo., will continue to act as auditor. **R. F. McGlothlin** has been appointed acting federal treasurer.

W. L. Holder has been appointed land and tax commissioner, and **F. J. Burke**, assistant general freight agent of the Texas & Pacific at New Orleans, La., has been appointed assistant land and tax commissioner of all of the lines under the jurisdiction of **J. L. Lancaster**, federal manager. Mr. Holder will have his headquarters at Houston, Texas, and Mr. Burke at Dallas, effective September 1.

O. H. Bower, auditor of the Missouri, Kansas & Texas, of Texas, with headquarters at Dallas, Texas, has been appointed also auditor of the Union Terminal of Dallas, with the same headquarters, succeeding **A. S. Steirer**, resigned. **R. P. Roach**, local treasurer of the Missouri, Kansas & Texas of Texas, with headquarters at Dallas, has been appointed also acting federal treasurer of the Union Terminal of Dallas, with headquarters at Dallas, succeeding **J. W. Everman**, resigned.

James Maffitt Danner, whose appointment as auditor and local treasurer of the Abilene & Southern, with headquarters at Abilene, Tex., was announced in the *Railway Age* of August 16, was born at Ft. Worth, Tex., on July 30, 1887. Mr. Danner entered the service of the Ft. Worth & Denver City on July

11, 1903, as an office boy in the accounting department and subsequently became interline clerk in the joint account department. On July 1, 1907 he went with the Trinity & Brazos Valley as chief clerk of interline accounts at Ft. Worth, Tex. In the fall of that year he entered the service of the St. Louis-San Francisco in the interline freight accounting department of which he had charge. On March 1, 1908, he became a special clerk in the accounting department of the Atchison, Topeka & Santa Fe at Amarillo, Tex. The following year he left railway service to engage in business. Six months later, however, he returned to railroad work as cashier of the Wichita Valley, at Abilene. On August 15, 1910, he became assistant auditor of the Abilene & Southern, which position he held until his appointment as mentioned above.

Harry D. Heuer, whose appointment as general auditor of the Terminal Railroad Association of St. Louis, the St. Louis Merchants Bridge Terminal, the Wiggins Ferry, the



Harry D. Heuer.

St. Louis Transfer, the St. Louis Connecting Railway and the Interstate Car Transfer, was announced in the *Railway Age* of August 23, has had his jurisdiction extended to include the Alton & Southern, the St. Louis & O'Fallon, the St. Louis National Stock Yards, the East St. Louis National Stock Yards, the St. Louis & Belleville Electric and the St. Louis, Troy & Eastern. Mr. Heuer was born at St. Louis, Mo., on September 8, 1873, and began railway work in the auditor's office of the St. Louis & San

Francisco in June, 1890. The following year he became general accountant of the St. Louis Merchants Bridge Terminal. In August, 1894, he was appointed assistant to the auditor of the Terminal Railroad Association of St. Louis and the St. Louis Merchants Bridge Terminal and on April 1, 1903, he became assistant auditor of the Terminal Railroad Association of St. Louis and its affiliated companies, which position he held until his appointment as general auditor as mentioned above.

Traffic

Girvan N. Snider has resumed the duties of coal traffic manager of the New York Central (Line Buffalo, N. Y., Clearfield, Pa., and East) and the West Shore Railroad, with office at New York. **J. Noble Snider**, acting coal traffic manager having entered the United States military service.

Robert L. Russell, assistant freight traffic manager of the Philadelphia & Reading, with office at Philadelphia, Pa., has been appointed chairman of the freight traffic committee of the North Atlantic Ports, with office at New York, succeeding **George D. Ogden**, who is now chairman of the Exports Control Committee.

R. W. Hockaday, industrial commissioner of the Missouri, Kansas & Texas, with headquarters at St. Louis, Mo., has been appointed industrial commissioner of that road and the St. Louis-San Francisco, with the same headquarters. **E. C. Hoag** has been appointed assistant industrial commissioner, with headquarters at St. Louis, Mo., effective September 1.

W. F. Sterley, general freight and passenger agent of the Ft. Worth & Denver City, has been appointed assistant general freight agent of that road the Wichita Valley the Houston & Texas Central, the St. Louis-San Francisco and Texas, the Ft. Worth & Rio Grande, the Brownwood North & South, the International & Great Northern (Ft. Worth to Spring-Madisonville branch), the Abilene & Southern and the Ft. Worth Belt, with headquarters at Ft. Worth, Tex., effective September 1.

Engineering and Rolling Stock

William A. Cotton, chief clerk to the general mechanical superintendent of the Erie, has been appointed assistant to the general mechanical superintendent, with office at Meadville, Pa.

W. G. Massenburg, division engineer on the Gulf, Colorado & Santa Fe, at Beaumont, Texas, has been appointed district engineer of that road and the Ft. Worth & Rio Grande, the St. Louis-San Francisco & Texas, the Brownwood North & South, the Texas Midland, the International & Great Northern from Spring to Ft. Worth and Madisonville branch, the Ft. Worth Belt and the Ft. Worth Passenger Station, with headquarters at Galveston, Texas.

Walter R. Roof, whose promotion to bridge engineer of the Chicago Great Western, with headquarters at Chicago, was announced in the *Railway Age* of August 23, was born

at Newcastle, Ind., on April 15, 1881. Mr. Roof was educated at Purdue University, graduating in 1906. In June of that year he entered railway service with the Chicago & North Western, at Chicago, as a rodman. The following year he went with the Pullman Company, serving in an engineering capacity. Later in the same year he became draftsman in the bridge and building department of the Illinois Central, where he remained until 1910, when he went with the Chicago Great Western in the same capacity.

In 1913 he was promoted to assistant bridge engineer, which position he held until his appointment as noted above.

T. T. Irving, whose promotion to chief engineer of the Grand Trunk, Western Lines, with headquarters at Detroit, Mich., was announced in the *Railway Age* of August 30, was

educated at the Prince of Wales College and McGill University, graduating from the latter institution in 1898. He entered the service of the Grand Trunk in May of that year as assistant engineer on the eastern division at Montreal. In 1904, Mr. Irving was promoted to resident engineer on the western division and was engaged in that capacity until 1912, at which time he was appointed trainmaster. The following year he became division engineer on the western lines, with headquarters at Chicago, which position

he held until his promotion to chief engineer of the Western Lines, at Detroit, Mich., as mentioned above. Mr. Irving has been in the service of the Grand Trunk continuously for a period of 20 years.

D. W. Thrower, assistant valuation engineer of the Illinois Central, has been appointed valuation engineer, with office at Chicago, succeeding **D. J. Brumley**, resigned to go with the corporation.

Maurice Coburn, principal assistant engineer of the Pennsylvania Lines West, St. Louis system, has been appointed

supervising engineer of those lines, with headquarters at Indianapolis, Ind.

The following appointments have been made in the engineering organization for all of the lines under the jurisdiction of **J. S. Payett**, federal manager, and **F. Merritt**, chief engineer: **K. B. Duncan**, engineer on the Gulf Lines of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Texas, has been appointed bridge engineer, with headquarters at Dallas, Texas. **J. L. Starkie**, office engineer on the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Texas, has been appointed assistant engineer; **J. H. Davidson** has been appointed water engineer, with headquarters at Dallas; **W. A. Hudson** has been appointed right of way agent, with headquarters at Dallas.

Corporate

Executive, Financial, Legal and Accounting

John W. Platten, whose election to the presidency of the Gulf, Mobile & Northern was announced in the *Railway Age* of June 28, entered the railway service in 1888 as a clerk in the

office of the assistant general passenger agent of the New York, Pennsylvania & Ohio, at Cleveland. He remained with the Erie system for about 14 years, and in 1901 was appointed treasurer of the company. In 1903 he resigned and went to the Lehigh Valley, of which road he became second vice-president in 1904. Since 1905 he has held no official position in the railroad world, although he has been prominent in financial matters and has been chairman of a number of reorganization committees, including the first extension mortgage bond holders' committee of the Missouri, Kansas & Texas. He is a director of the Atlanta & Charlotte Air Line and of the Meridian & Memphis.

Charles Kephart Dunlap, whose election as president of the Southern Pacific Lines in Texas and Louisiana was announced in the *Railway Age* on July 26, was born at Greenfield, Ohio, on April 8, 1863. Mr. Dunlap entered railway service on July 5, 1887, on the Mexican International, now a part of the National Railways of Mexico, then owned by the Southern Pacific Company. He was first employed in the material department and subsequently was cashier at Torreon, Mex., agent at Sabinas, rate clerk, chief clerk and commercial agent at Monterey and Mexico City. In July, 1893, he was promoted to general freight and passenger agent, and in August, 1901, was appointed general freight agent of the lines composing the Southern Pacific System in Texas. Five years later he was promoted to traffic manager, which position he held at the time of his election as mentioned above.



W. R. Roof



J. W. Platten



T. T. Irving



C. K. Dunlap

G. B. Herbert, auditor of the Southern Pacific Lines in Louisiana and secretary and auditor of the Lake Charles & Northern at New Orleans, La., has been appointed secretary and auditor of the Southern Pacific Lines in Texas and Louisiana. **O. M. Longnecker** has been appointed treasurer. Mr. Herbert and Mr. Longnecker succeed **D. J. DeBlanc**, whose appointment as local treasurer under the Railroad Administration was announced in the *Railway Age* of July 12. **S. G. Reed**, assistant general freight and passenger agent of the Southern Pacific Texas Lines at Dallas, Texas, has been appointed land and tax agent, effective September 1.

Operating

W. E. Brown has been appointed general manager of the Dayton, Toledo & Chicago, with headquarters at Covington, Ohio, vice **W. J. Bohon**, resigned.

Lawrence V. Guild, assistant to the receiver of the Kansas City, Mexico & Orient and assistant to the president of the Kansas City, Mexico & Orient of Texas, has resigned to become secretary to the federal manager of the Union Pacific System, with headquarters at Omaha, Neb.

Arthur B. Starr, special assistant to the fourth vice-president of the Pennsylvania Lines West and previous to May 1, 1916, general superintendent of freight transportation of the same lines, was retired on July 16, through the operation of the pension regulations, after 48 years and 4 months continuous service with the Pennsylvania System.

Traffic

William R. MacInnes, whose appointment as vice-president of the Canadian Pacific, in charge of traffic, was announced in our last issue, has been freight traffic manager of that road for the last fifteen years. He was born at Hamilton, Ont., on June 7, 1867, and was educated at private schools in Canada and in England and at Marlborough College, England. He is the son of the late Donald MacInnes, who was a senator in the Canadian Parliament, and a member of the board of directors of the Canadian Pacific Railway. **W. R. MacInnes**, has been in the service of the Canadian Pacific since June, 1885, having begun that year as a clerk in the purchasing department at Montreal. He was soon promoted to a position in the solicitor's office and then was transferred to the traffic department, in which he was rapidly promoted. In 1896 he was made Chicago representative of the freight department, and three years later became general freight agent of the company's lines west of Lake Superior. Here he remained three years, 1899-1901, and in the latter year was promoted to the position of assistant freight traffic manager of the western lines. This he held until his promotion to freight traffic manager in 1903.

Daniel T. McCabe, vice-president in charge of traffic of the Pennsylvania Railroad, Western Lines, was retired from active service on July 1, under the operation of the company's pension regulations and placed on the Railroad Retirement System after a continuous service of 48 years. While withdrawing as an executive officer Mr. McCabe will continue to serve the corporate interests of the Pennsylvania System by remaining a member of the board of directors of the Pittsburgh, Cincinnati, Chicago and St. Louis, the Pennsylvania Company and other corporations. **Samuel Moody**, passenger traffic manager of the Pennsylvania Lines West of Pittsburgh also retired from active service under the pension regulations on July 1. He had been in the service of the company for 32 years and 6 months.



W. R. MacInnes.

Engineering and Rolling Stock

J. J. Ginty, signal inspector on the Grand Trunk, has been appointed supervisor of signals at Montreal, Que., succeeding **Charles H. Tillett**, promoted.

J. A. Burnett, electrical engineer in the signal department of the Grand Trunk at Montreal, Que., has resigned to become technical assistant on the British government war purchasing board, at Washington, D. C.

F. T. Hatch, chief engineer maintenance of way of the Pennsylvania Lines West, St. Louis system, with headquarters at St. Louis, Mo., remains with the corporation as consulting engineer and will have charge of valuation matters, with headquarters at St. Louis.

George H. Davis, resident engineer of the Toronto Terminals of the Canadian Pacific, has been appointed assistant engineer maintenance of way, with office at Montreal, Que., and **U. A. G. Dey**, assistant engineer of construction at Montreal, has been made assistant engineer of the Toronto Terminals, succeeding Mr. Davis.

R. C. Watkins, division superintendent on the Southern Pacific Lines in Texas, has been appointed maintenance of way engineer of the Southern Pacific Lines in Texas and Louisiana. **E. B. Dailey**, assistant director of purchases of the Southern Pacific System at New York, has been appointed mechanical engineer of the Southern Pacific Lines in Texas and Louisiana, effective September 1.

Obituary

G. A. Bruce, general master mechanic of the Great Northern, eastern district, with headquarters at St. Paul, died on August 26, at Minot, N. D.

C. W. Van Buren, general master car builder of the Canadian Pacific, was killed in an automobile accident near Albany, N. Y., on August 25.

Robert E. Smith, general superintendent of motive power of the Atlantic Coast Line, with office at Wilmington, N. C., was found dead in bed on August 27. Mr. Smith's rifle was found in his room and it is the opinion of a coroner's jury that he had accidentally shot himself while cleaning the gun.

Thomas R. Taltavall, editor of *Telegraph and Telephone Age*, died at his home in Mahwah, N. J., on September 2 at the age of 63. Mr. Taltavall was for many years a prominent figure in the conventions of the Railway Telegraph Superintendents' Association, and had a wide acquaintance among railroad men in that department. He was an expert telegrapher, and was for many years superintendent of the leased wire system of the Associated Press. He had worked in the technical press editorial field for the past 28 years, and had been editor of *Telegraph and Telephone Age* since 1911.

Charles W. W. Field, formerly city passenger agent of the Central Vermont and the Grand Trunk, at Boston, and second lieutenant in the 103rd Machine Gun Battalion, 52nd Brigade, 26th Division, of the American Expeditionary Forces, was killed in action in France on July 19. Lieutenant Field was born in Windham, Me., on June 25, 1892, the son of a veteran of the Civil War. He was educated at Windham High School and Bowdoin College, and entered the railroad service at Portland, Me., as a ticket seller of the Boston & Maine. Later he went to Boston in the service of that company, and entered the employ of the Central Vermont in January, 1917. He resigned a few months later to attend the officers' training camp at Plattsburg, N. Y.

RECEIPTS FROM THE NATIONAL FORESTS in the fiscal year 1918, ending June 30, exceeded those for 1917 by almost \$120,000, and totaled over \$3,574,000.

CHAMBER OF COMMERCE FOR BUENOS AYRES.—An Allied chamber of commerce has been organized in Buenos Ayres to unify and promote commercial and trade interests of the nations at war with Germany. The chamber will be governed by three delegates from each of the British, French, Italian and Belgian chambers of commerce and three delegates from the American Commercial Club. A paid secretary will be in charge and will answer inquiries.

EDITORIAL

Railway Age

EDITORIAL

In the first Liberty Loan campaign the railway men of this country subscribed for bonds on a good scale, in the second loan they doubled their first totals and in the third they considerably more than doubled their totals for the second loan. Are they going to keep up this enviable record and double their third totals in the next loan? It looks easy. The Liberty Loan Committee for the Seventh Federal Reserve District (Chicago) has made a detailed compilation showing the Liberty Bond subscriptions of the 450,000 railroad men in that district. In the first loan 11 per cent of the employees subscribed for an average of \$92.50 per subscriber; in the second, 20 per cent for an average of \$82.50; in the third, 84 per cent for an average of \$72. On this basis there should be for the fourth loan 100 per cent for an average of \$60 per subscriber. An average of \$60 per railroad man is going to look pretty low in view of the recent generous wage awards. A well directed campaign should greatly increase this figure.

Railway Men and the Liberty Loan

A prominent manufacturer who has studied hundreds of industrial plants, recently made this observation—that the greatest weakness in the different organizations is that the foremen have been selected more for their technical knowledge and ability to carry out orders, than for their ability to understand and direct men. The railroads are no better off in this respect than industrial organizations, whether it be in the office, on the road, in the shops, or in the yards. True there are many natural executives and real leaders among railroad officers and foremen, but the necessity for training men to develop latent ability in this respect has been largely overlooked, and yet the science of handling men, of understanding human relationships and human nature is just as real and concrete as the science of mathematics, and is of far greater importance than technical knowledge, when it comes to securing output and harmonious relationships. No matter how good the mechanical machine for playing a musical instrument may be, it will fall far short of the touch of a master hand. Men cannot be handled mechanically, or by rules and regulations. They require the direction of a master hand who understands their feelings, their ways of thinking and living, and their ambitions—and who has a keen sympathy with them. This is the type of men that the railroads must select, train and develop for positions of leadership.

How to Pick Real Leaders

If we are to judge by conditions in England, higher passenger fares and inconveniences in transportation alone will not go for towards reducing passenger traffic on the railroads. In England, in spite of an increase in fares of 50 per cent at one time and with very drastic reductions in service, the number of persons presenting themselves for journeys is still exceedingly large. During the recent Bank Holiday the British railways handled a more intensive passenger traffic than they have ever carried at any previous period in their history. This will emphasize

"Travel Slacker" a Strong Name

that the increase to 3 or 3½ cents a mile that we have had in this country, combined with the comparatively minor inconveniences that American passengers have in the way of busy central ticket offices and lack of seats, will not go far towards reducing passenger traffic. The Railroad Administration has not had much to say as yet about the inadvisability of traveling unnecessarily. We would suggest that in its efforts to retain the satisfaction of the traveling public, it amplify the statements of the director general and his actuary, Mr. Price, and possibly start a campaign of publicity emphasizing more strongly and more generally the necessity of not traveling unnecessarily. It is going a bit too far to begin to talk about "travel slackers"—the public press has in instances adopted the term—when two-thirds of the people of the country do not yet know that they might better keep off the trains except on necessary errands. Surely a campaign against unnecessary travel will do far more than merely making travel inconvenient. A passenger will complain at higher fares and get up a grouch if he has to stand on a train or in line at a too busy ticket office, but he will travel, nevertheless. And a grouch against government operation of railways, if we understand aright, is not one of the things desired by the Railroad Administration. Better that a prospective passenger should be strongly advised to stay at home and save his grouch for the cohorts of Kaiser Bill the Damned.

For a full appreciation of the significance of the Railway Executives Advisory Committee's recommendations and an appreciation of the limitation of its authority, it is necessary to understand just what the committee is. It is supported by 82 railways, representing 90 per cent of the railroad mileage of the

The Advisory Committee's Standing

United States. All of the important railroads of the country, with the exception of the Southern Railway, contribute to its support. As such, it is easy to understand how great weight its recommendations will carry. On the other hand, it has no authority whatsoever to bind its members or the roads represented by its members to any course of action. The recommendations which the committee has made that the contract, as finally approved by the director general, shall be accepted, can only be laid before the boards of directors of the respective roads, passed on by them and referred to the stockholders for their approval. If, therefore, the recommendations of the National Association of Owners of Railroad Securities really represents the sentiment of a majority of the stockholders of any of the larger roads, it will be perfectly possible for the individual companies to refuse to ratify the recommendations of the Advisory Committee; but before taking any such step as that, the stockholders ought to be fully informed by their boards of directors as to the extent and quality of the work which has gone into the negotiation between the Advisory Committee and the Railroad Administration. This committee has been at work since January, 1918. It is hard to exaggerate the amount of patience required to conduct such a long drawn out negotiation with the government, especially when both sides to the negotiation were fully aware of the overwhelming advantage which the government had. It was only through the slow process of convincing the railroad administration

that simple justice not only for stockholders of railroads, but for all of those directly or indirectly affected by railroad credit, necessitated a particular change in the contract that the advisory committee could move the government from its original purpose. The weight which the report should carry must be measured, therefore, not by the authority which the committee has, but by the ability of its members and the quality of the work which they have put into these negotiations.

A situation which is causing much concern to railway officers has resulted from the different interpretations that may

An Explanation of Intent Necessary

be made of Supplement No. 4 to Order 27 providing for additional increases in the wages of employees of the mechanical department. Under Section 5, Article 1, of this supplement specific mention is made of cable splicers, linemen and groundmen, signalmen and signal maintainers, where handling wires and apparatus carrying 240 volts or over in dense traffic zones and all other work properly recognized as first-class electrical workers work. This has been interpreted literally by certain railways, and increases have been granted to employees not usually considered as mechanical department employees. The introduction to Supplement No. 4 reads: "In the matter of wages, hours and other conditions of employment of employees in the mechanical departments (specified herein) of the railroads under federal control it is hereby ordered." The fact that in this introduction, employees in the mechanical department only are mentioned makes it possible to construe Supplement No. 4 as excluding many signalmen and others handling wires and apparatus carrying 240 volts or over as these men have never been considered as employees of the mechanical department; and in the wage adjustments certain roads have not included them. It is evident that one of the interpretations is in error. Either the men on the first group of roads are getting consideration they are not entitled to or those of the other group are being denied their rights. The situation at best is unfortunate, and it is to be hoped that an explanation of the exact intent of the supplement will be forthcoming, without delay.

Seven Months of Government Control

DIRECTOR GENERAL McADOO has made a report to President Wilson, reviewing the work done by the Railroad Administration during the first seven months of its existence. The report, as the director general says, is necessarily fragmentary, since not only is "the reconstructive work undertaken not entirely complete," but full statistical data regarding the things done and results accomplished are not available.

In reading the director general's report the mind naturally reverts to President Wilson's statement that government control was adopted entirely as a war measure, and his assurance that "nothing will be altered or disturbed which it is not necessary to disturb." The report of the director general, referring to the numerous radical changes which have been made, shows that in Mr. McAdoo's opinion, at least, there were many things it was "necessary to disturb."

There were three classes of conditions in the transportation field which, apparently, caused President Wilson to take over the railroads. These were, financial conditions, labor conditions, and operating conditions. It is interesting in reviewing the director general's report, to consider how the problems presented by these conditions have been met.

The financial plight of the railway companies was becoming desperate. Expenses were advancing portentously, while freight and passenger rates were being held almost

stationary by state and federal commissions. It was essential to the maintenance of the solvency of many companies that the government should permit extensive advances in rates or guarantee the net returns of the companies. The government really has done both. Having taken the railroads over, it has adopted a policy of advancing rates which practically insures that the roads will not incur a permanent deficit under government control. This will tend to maintain the value of the companies' securities. The government also has practically guaranteed the net return the railways earned during the last three years before government control, and the director general has adopted a contract form which the Railway Executives' Advisory Committee has advised the railway companies to accept. Therefore, for the period of the war, the government has fairly well solved the financial problem of the railways.

As to the financial problem which will be presented when the properties are returned to the companies, that is another matter. Mr. McAdoo refers to some economies which have been effected by the Railroad Administration. These include \$4,615,000 in official salaries; \$1,500,000 in legal expenses, and approximately \$23,600,000 through the elimination of competition in traffic. With total operating expenses increasing more than a billion dollars a year, such savings are matters of small consequence. It is not unlikely that the savings in official salaries will, in their adverse effect on efficiency, cost more than they are worth. With expenses on so much higher a level, will the government be willing, after the return of the roads to their owners, to leave rates on the high basis on which it has found it necessary to put them? The answer to this question will largely determine to what extent the financial problem of the railways has been solved.

The labor problem with which the railways were confronted at the time of the adoption of government control was of the greatest difficulty and importance. There was a time when the labor employed on railways was the best paid in the country. The enormous advances which had rapidly occurred in the wages paid by the government and private industries engaged in war work had, however, created great dissatisfaction among railway employees and in the absence of corresponding advances in railway wages the roads were in danger of losing a large part of their most valuable employees. The government was in a far better position to deal successfully with this problem than the companies. It could make whatever advances in wages were necessary, and then make whatever advances in rates were necessary to offset them. The advances in wages thus far made are estimated at \$500,000,000 a year, and practically all have been the result of recommendations received by the director general from boards and commissions appointed by him. On the whole, the Railroad Administration has dealt successfully with the labor problem. It does appear that in some cases it has made larger advances in wages than were necessary, and that it is showing a tendency, in cases of conflicts between officers and employees, to make concessions to the latter which bode ill for the future of discipline upon the railways; but probably it would be easier to find fault with the way the labor situation has been handled than to have handled it any better. It need hardly be said that the saving of about \$5,000,000 in the salaries of the officers will not go far in paying the increase of \$500,000,000 in the wages of the employees.

A large part of the director general's report is devoted to a description of the reorganization of the railway operating staff which has been undertaken and of the operating results which have been secured. Government control has been abandoned and government operation has been adopted. Federal managers have been substituted for the presidents of the companies as the chief executives of the individual lines, and district managers, regional directors and direc-

tors of departmental divisions have been appointed, to whom the federal managers report. The railways have been regrouped, and there has been a vast centralization of authority in the regional directors and in the central administration at Washington.

It is contended by spokesmen of the Railroad Administration that the result has been a "striking increase in the efficiency with which the railroads are being operated." There has been a "striking" improvement in transportation conditions since last December. It happened, however, that owing chiefly to government preference and priority orders and weather conditions, the transportation situation at that time was the worst ever known. While the present situation represents a great improvement over that which existed last winter, it represents little or no improvement over that of a year ago, when the railways were being operated under the Railroads' War Board. The business of the country is being handled as smoothly and expeditiously as could be expected in the circumstances, but not quite as much freight business has been handled thus far this year as last year. All things considered, this is not surprising. A year ago the railways were being operated with the greatest efficiency ever known. The period since government control was adopted has been one of transition, and the changes made in the organizations have been so drastic that it would not have been surprising if there had been a marked decrease in efficiency. While the railroads have not handled quite as much freight business as last year, they have handled it in a somewhat more orderly and satisfactory way, and this is a high tribute to the skill with which the operating problems have been solved.

Mr. McAdoo refers to what has been done in the standardization and purchase of equipment, and in the promotion of needed improvements and betterments in terms which indicate that he is satisfied with the progress which has been made. This is one of the weakest parts of his report, and touches upon probably the weakest part of his program as thus far carried out. The thing most needed to enlarge the capacity of the railways is to enlarge their facilities. Considering all the power and resources at its disposal, the Railroad Administration has thus far made a progress in increasing the facilities of the railways that has been lamentably slow and small. Its spokesmen have attempted to make it appear that its attempts to standardize equipment, and the snail-like methods used by its purchasing department, have not delayed increases in the amount of equipment. It is an outstanding fact, however, that, although it is now September, only a trifling number of its standard locomotives have yet been delivered, while as to the standard freight cars, the director general says in his report, "it is expected that the manufacturers can commence delivering them early in September." After eight months of government operation the Administration was still talking of the "commencement" of the first deliveries of cars ordered by it. In other words, actual developments are completely vindicating the criticisms and predictions regarding delays in the obtaining of equipment which the *Railway Age* began making last February, when the Administration's program of standardization was first announced. If the Railroad Administration had promptly ordered already existing types of locomotives and cars last spring, as it should have done, the present and prospective conditions with respect to the supply of equipment would be much better than they are.

Mr. McAdoo has selected his chief lieutenants from among the leading railway men of the country, and, as he shows in his report, he is paying them salaries as high as \$40,000 to \$50,000 a year. He is doing this because "it is not only equitable but necessary that they should be justly remunerated," and also "to make the juniors realize that the promotions and rewards of a railroad career are still worth working for." There are not wanting persons who question his wis-

dom both in employing former executive officers of railway companies in these positions and in paying such large salaries. The Hearst newspapers have published an editorial, entitled "A Conspiracy to Discredit Federal Control of Railways," in which they charge that the "old railroad chiefs" are engaged in sabotage to reduce railroad efficiency. "Mr. McAdoo ought," say these papers, "as fast as he can, to replace these old railroad chiefs with a younger generation of railroad men, who, by winning their spurs in the government service, have everything to gain by their success and nothing to lose." The *Chicago American*, in which this editorial appeared, bore the same date as the director general's report to the President. In his report Mr. McAdoo said, "Officials and employees have worked with such loyalty and zeal to accomplish what has already been done that it is a genuine pleasure to make acknowledgment of their splendid work. It is a constant satisfaction to be associated with them. You can rely upon their patriotic enthusiasm and alacrity in the work of winning the war, in which they as well as the soldiers at the front have enlisted with such laudable determination and patriotism."

Hearst charges that the important railway men in the service of the Railroad Administration are traitors. McAdoo says that they are serving the government with energy, loyalty and patriotism. To be libeled by Hearst and lauded by McAdoo on the same day should be glory enough for the "old railroad chiefs" for that one day.

The Compensation Contract

ALTHOUGH THE FINAL DRAFT of the standard clauses for the compensation contracts between the government and the railroads, offered to the companies last week by Director General McAdoo, does not represent as complete protection of the interests of the railroad companies as they believed themselves entitled to, the Railway Executives' Advisory Committee has recommended its acceptance on the grounds both of enlightened self-interest and the dictates of patriotism. The form of contract is still unsatisfactory to the representatives of the National Association of Owners of Railroad Securities, but in view of this action of the committee which represents the corporate officers of about 90 per cent of the railway mileage of the country the reiteration of the objections made by Mr. Warfield and Mr. Untermyer will hardly carry a great deal of weight.

At the same time, it is not out of place to emphasize the fact that the railroad executives have felt obliged to accept the contract as offered by the government, after having secured such modifications as they were able from the first draft proposed by the representatives of the director general, because it was the best they could get under the circumstances and as the only practicable course to adopt. The enlightened self-interest which the committee in its report says requires the acceptance of the contract, refers undoubtedly to the circumstance, which it mentions later, that the companies have already lost the possession and use of their properties for the period of federal control and are at present without any assurance of compensation; that their hope for compensation must be based on the federal statute and the basis for negotiation with the government which it prescribes, in other words what the Railroad Administration sees fit to offer them, or on another appeal to Congress, or on litigation. The first of these possibilities is characterized as in the highest degree unwise and the second as likely to result in ruin, because litigation would involve such uncertainties and delays, and such impairment of security values during the period necessary to carry the cases through the courts, "as to place litigation clearly outside of the range of practical remedies."

The patriotism referred to as another reason requiring the

acceptance of the contract, lies in a full recognition of the facts that the Nation is at war, that all are expected to make sacrifices and to take chances, that the government has for war purposes been invested with unprecedented discretionary powers in respect to every interest, and "that it is in any event, our government, of which we are entitled to expect that there will be no wanton exercise or abuse of power." In other words, if chances have to be taken, the risks must be assumed by private interests rather than by the government as the representative of the public interest.

Many phases of the proposed contract leave much to the fairness and discretion of the director general but there is no reason for doubting that he can be trusted not to abuse his great power.

The principal point of objection made by the railway executives at the time of the meeting to consider the draft of the contract as it stood on July 5 was corrected by the representatives of the administration in the draft of August 7 before the hearing before the director general himself was accorded. The purpose of that change was to include rentals payable for leased or operated lines among the other items, such as interest and sinking funds, in which the companies should be protected before the director general may make deductions from the compensation to pay for additions and betterments.

Director General McAdoo has made some further slight concessions after hearing the representatives of the companies and of the security owners, but their most important contentions he has denied. One of the most important of these points, on which the statements issued by the security owners' association have laid so much stress, involved the so-called acceptance clause, requiring that the companies should accept the contract compensation as full satisfaction for all claims for loss and damage to business or traffic by reason of the possible diversion to other lines. The Railroad Administration secured an opinion from the solicitor general that the compensation which the statute provides for is intended to cover such elements as loss of good will and the diversion or diversion of traffic and the law committee representing the companies has reached a similar conclusion. The committee says that if the companies are not satisfied with the amount of such compensation as they can get by agreement in full settlement they are at liberty to go into the Court of Claims for an award which would recognize such claims but that the government cannot pay more than is authorized by the federal control act.

This point, as well as the great discretion allowed the director general to order additions and betterments to a company's property at its own expense, the committee finds to be controlled by the statute and therefore they consider it of no avail to make further objection.

The final outcome of this stage of the negotiations demonstrates the foolishness of the fears expressed by some of the conspicuous former critics of the railroads that the companies were going to be treated too liberally by the guarantee of their pre-war net operating income (which has since been translated into "not exceeding a sum equivalent as nearly as may be to that amount") or that the government was going to rehabilitate their properties at public expense and then turn them back to their owners.

The contract offered by the government does virtually guarantee payment of the interest that was regularly paid during the pre-war period and sums sufficient to support the corporate organization, to keep up sinking funds and to pay taxes and rents, but the payment of even the amount of dividends regularly paid during 1915, 1916 and 1917, is made dependent upon the director general. Regular dividends are given some protection by the stipulation that "it will be the policy of the director general to so use his power of deduction from the compensation as not to interrupt unnecessarily the regular payment of dividends as made by the company dur-

ing the test period," and Mr. McAdoo says in his statement that his insistence on the right to use a part of the dividend fund if necessary to pay for deferred maintenance or necessary improvements "need not operate to embarrass any company which has paid dividends on a provident basis" and has retained a substantial surplus of its income.

Dividends of some of the roads that have felt it necessary to make payments to their stockholders in spite of the fact that the system of government regulation under which they were operated would not allow them enough for dividends and a surplus, too, will doubtless be placed on a basis even more precarious than in the past, but the power of deduction is declared to be an emergency power, to be used by the director general only when he finds that no other reasonable means is provided, and if the result works a hardship such a case would represent not only the fortunes of war but a remnant of some of the unsatisfactory conditions which prevailed in the transportation business even in time of peace.

If the contract as proposed is not completely satisfactory in all respects some consolation may perhaps be derived from the fact, to which Mr. McAdoo calls attention in his statement, that the condition of the railroad companies might have been much worse if left to work out their own salvation under such circumstances as confronted them last December. The railroad security owners could hardly have expected to have greatly improved their condition as the result of a war.

While it would be too much to anticipate that a standard form of contract could be drawn to meet all conditions and while some further negotiations will still have to be carried on in making the contracts with the individual companies, the fact that a form of contract governing a matter of such magnitude and intricacy has been offered in a form so nearly satisfactory should be a source of some gratification, and its acceptance by a majority of the roads and the consequent avoidance of protracted and dangerous litigation is greatly to be desired. The railroads have been the center of so much bitter controversy in recent years that the absence of a controversy with the government in this instance will be especially welcome at a time when the controversy with the Hohenzollerns requires all our interest.

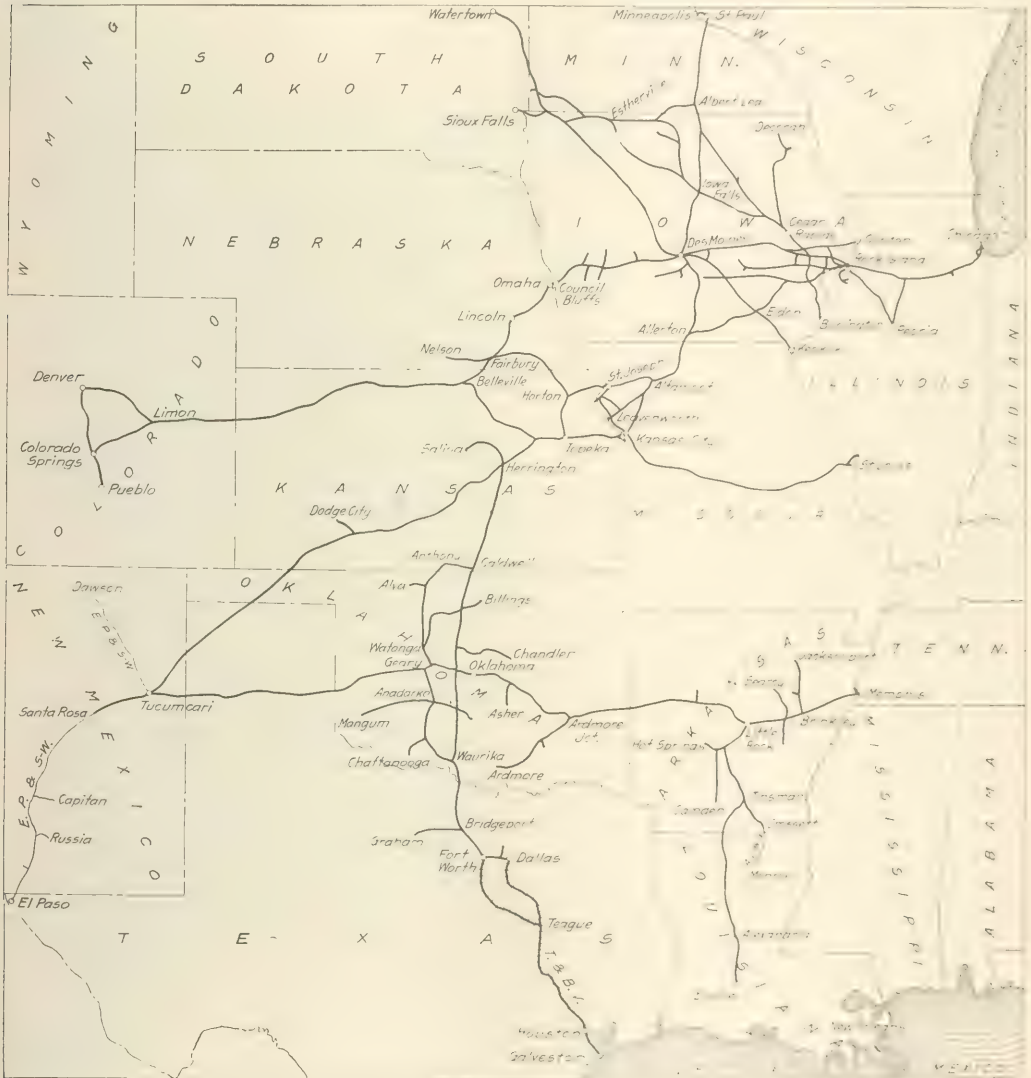
Chicago, Rock Island & Pacific

IN DISCHARGING THE RECEIVER of the Chicago, Rock Island & Pacific in June, 1917, Judge Carpenter of the Federal Court said: "The able administration of this property by Judge Dickinson as receiver, has made this extraordinary proceeding possible. This is a reorganization without a sale, the property returning to the original company, and in this the preceding is historic among receiverships. I can't say too strongly how much credit is due to Judge Dickinson and the fine co-operation he has met with from the stockholders. The Rock Island will pay its debts and it has plenty of money with which to pay them." The whole Rock Island case since the application which was made for a receiver with the consent of a part of the board of directors and without the knowledge of others on the board, up to the present time, has been unusually interesting. Controlling interests in the old company insisted that a receivership was necessary and made light of the argument of minority stockholders, led by N. L. Amster of Boston, that the company could earn its fixed charges and that all that was necessary was to do a certain amount of temporary financing and that, moreover, bankers could be found, were it not for the attitude of the controlling interests in the company, who would be willing to do this financing. The controlling interests claimed that a foreclosure under the first and refunding mortgage was a necessity.

In 1916 the Rock Island earned \$80,889,000 gross and, after

paying expenses and deducting the amounts due for interest, rental, etc., the company would have had \$8,078,000 surplus. The facts thus offered such a strong refutation of the contention of the controlling interests that they joined with the minority interests in working out a plan for a reorganization without foreclosure. Under this plan the \$20,000,000 gold 5 per cent debentures on which interest had been defaulted

000 was received in settlement of a suit against former directors. The remainder was treasury cash and interest. This cash was used to pay off \$12,875,000 first mortgage bonds with the full interest due, \$5,582,000 receivers' certificates, \$7,500,000 collateral trust notes, \$4,140,000 short term loans, \$1,958,000 interest on the \$20,000,000 debentures (making the full interest payment due up to the time these bonds were



The Chicago, Rock Island & Pacific

were exchanged for \$20,000,000 par value 6 per cent new preferred stock, and common stockholders paid a 40 per cent assessment, receiving therefor new 7 per cent preferred stock.

A total of \$35,832,000 cash was raised, of which \$29,422,000 came from the sale of 7 per cent preferred to the stockholders as described above, \$5,000,000 from the sale at par of 6 per cent preferred stock to former directors and \$500,-

exchanged for preferred stock) and \$8,777,000 for the purchase of \$2,400,000 Consolidated Indiana Coal Company bonds and for the expenses of reorganization. The retirement of the first mortgage bonds left the company with \$40,181,000 first and refunding mortgage bonds free in its treasury and \$1,958,000 first mortgage Rock Island Arkansas & Louisiana bonds and \$2,545,000 St. Paul & Kansas City short line first mortgage bonds free in its treasury. The re-

organization took place in June and the company passed out of the hands of the receiver June 24, 1917, although the receiver was not finally discharged until July 27.

On December 31, the reorganized company had \$4,104,000 cash on hand and \$3,722,000 special deposits with no loans and bills payable. As of that date there was \$128,905,000 stock outstanding of which \$74,483,000 was common and \$54,422,000 preferred. The total long term debt was \$220,378,000. This was a reduction as compared with December 31, 1916, of \$50,633,000 in long term debt besides the taking up of \$4,100,000 loans and bills payable.

In 1917 the Rock Island earnings amounted to \$89,609,000 which was 10.78 per cent more than the 1916 earnings. Expenses, however, amounted to \$66,046,000, an increase of 19.88 per cent over the previous year. Taxes were increased by \$579,000 or 15.37 per cent, so the total available for interest and dividends amounted to \$20,622,000, a decrease of \$2,806,000 or nearly 12 per cent. With the exchange of the \$20,000,000 debentures and paying off of floating debt, there was a reduction in interest charged of \$1,738,000, the total interest charges in 1917 being \$10,648,000. After interest charges and rentals there was \$7,527,000 available for dividends or only about half a million dollars less than in the previous year. The company paid out in dividends \$1,780,000, leaving a surplus to be carried to profit and loss of \$5,747,000.

The handling of the profit and loss account is rather interesting. There was a debit balance to this account of \$5,024,000 on December 31, 1916. This was somewhat more than offset by the balance carried to the account from 1917 income. The company then credited profit and loss with \$7,866,000 "expenditures for additions and betterments made prior to March 31, 1902, and charged to operating expenses instead of to capital account." The profit on the sale of Chicago terminal property amounted to more than half a million dollars and the \$500,000 received from former directors was also, of course, a credit. The book value of timber lands in Minnesota were re-appraised and the value written up \$1,685,000. There were other smaller credits, and there was a debit made of \$1,227,000, the expense of reorganization, and other minor debits, leaving the company with a credit balance at the end of 1917 of \$9,938,000.

The company spent \$3,608,000 for additions and betterments to road and a net amount of \$161,000 for additions and betterments to equipment. Of the largest expenditure there was \$189,000 spent on applying steel draft arms to freight equipment, \$135,000 spent on applying steel underframes, \$52,000 on new appliances exclusive of those required by federal and state laws, \$49,000 for applying girder beams between center sills of box cars and \$37,000 for applying superheaters and brick arches to locomotives. The value of equipment destroyed or dismantled was charged partly to this account and partly to profit and loss.

The increase in expenses was not at all out of line with the experience of roads generally except possibly that the maintenance of equipment expenditures were somewhat higher proportionately to the expenditures in 1916 than on many roads. Maintenance of equipment cost \$16,886,000 in 1917, an increase of 28.23 per cent. Transportation expenses amounted to \$33,885,000, an increase of 22.02 per cent.

The cost of fuel per ton (the Rock Island figures 147 gallons of oil equal to one ton of coal) was \$2.3472 in 1917 as compared with \$1.9541 in 1916. It cost the Rock Island a little over 10½ cents per ton for fuel station operation in 1917 as compared with a fraction over 9 cents in 1916. Locomotives ran on an average of 11.84 miles to a ton of coal in 1917 as compared with 12.27 miles in 1916.

The total number of tons of all freight carried was 33,448,000, an increase over 1916 of 4.97 per cent. The average haul of all freight was 240 miles, an increase of 6.68

miles, so that the total ton miles handled was 8,014,000,000, an increase of 7.98 per cent over the previous year. The average train load was 442 tons, an increase of 14.68 tons. A good showing was made in heavier car loading, the average load per loaded car being 21.55 tons in 1917 as against 20.34 tons in the previous year.

It will be particularly interesting to watch the effect on earnings of operation under government control of the Rock Island. The Rock Island between many of the most important cities reached by it competes with other and what under private control would have been called stronger (financially) lines, but, on the other hand, the Rock Island was at a good many places handicapped as compared with its competitors in the way of terminals. If the Rock Island lines between Colorado and Chicago are not by any means as good as the Santa Fe's lines, as is generally conceded, traffic may be transferred from the Rock Island to the Santa Fe if the Santa Fe's capacity is ample to take care of this traffic, while, on the other hand, it may be found advantageous to give traffic to the Rock Island at some terminal points where heretofore lack of the company's own terminal facilities has shut it off from this business.

In the six months ended June 30 last, the Rock Island earned gross \$43,830,983, and had operating income, available for interest and dividends of \$3,217,174, a decrease of \$4,476,248.

The following table shows the principal figures for operation in the calendar year 1917 as compared with 1916:

	1917	1916
Average mileage operated.....	8,014,000	7,524,000
Freight tonnage.....	33,448,000	31,866,000
Passenger tonnage.....	2,377,000	1,747,000
Total operating revenues.....	89,609,722	80,889,129
Maintenance of way and structures.....	16,885,552	13,168,137
Traffic expenses.....	1,795,112	1,716,087
Transportation expenses.....	33,884,630	27,769,887
General expenses.....	2,336,506	1,968,289
Total operating expenses.....	66,046,104	55,091,717
Taxes.....	4,345,202	3,766,294
Operating income.....	19,193,048	21,992,643
Gross income.....	20,622,243	23,428,685
Net income.....	7,527,145	8,078,189
Dividends.....	1,780,000	1,780,000
Surplus.....	5,747,372	8,078,189

New Books

Ports and Terminal Facilities. By Roy S. MacEltree, Ph. D.
315 pages, illustrated, 6 in. by 9 in. Bound in cloth. Published by McGraw-Hill Book Company, New York City.
Price \$3.

This is a very thorough and vigorous discussion of the subject indicated by the title, and the author shows that he is master of his job. He is lecturer in economics and foreign trade at Columbia University and the book is based on material gathered for lectures at the university; but he is much more than a lecturer. He has studied his subject carefully in Europe, as well as in America, and for six years was in charge of the Hamburg office of an American firm that built hoisting machinery. The book is full of information brought right up to date, and the illustrations are modern and instructive—though some of the half-tones are rather poor. The text also has errors here and there. Indicating the scope of the work, the titles of some of the 18 chapters are: Relative Importance of the World's Leading Ports; Port Competition; Harbor Belt Railways; Cartage, Drays and Motor Trucks; Shed Equipment; Standard Package Freight; Inland Waterways and the Seaports; The Free Ports of Hamburg and Bremen. The author was called into the national service and his work was cut short; and he intimates that possibly a second volume may be written, dealing with the financial aspect of port industry, the combination of beauty with utility in the waterfront, port administration, and other points which could not be dealt with in the present volume because of lack of time.

Strengthening Poughkeepsie Bridge Superstructure

Gauntlet Track Operation Will Permit Heavier Loading on This Noted Hudson River Crossing

AFTER NEARLY 50 YEARS of service, during which it was once extensively reinforced, the Poughkeepsie bridge over the Hudson river has again been subjected to extensive modifications which are expected to afford a material extension to its useful life. The principal alteration recently undertaken to increase the capacity of the structure for heavy train loading is a change from double-track to single-track (gauntlet) operation over the main river structure; the main physical changes comprising a renewal of the floor

Company, which awarded a contract to the American Bridge Company for the construction work. The latter started work on the sub-structure, and after completing a portion of two of the piers, experienced financial difficulties and was compelled to suspend operations in 1878. No further work was done until 1886 when a reorganization was effected and a new contract was let to the Union Bridge Company of New York, which started work the same year. The bridge was completed in December, 1888, when it was taken over for operation by the Central New England & Western Railroad, which formed a link in a through line from Campbell Hall, N. Y., to Hartford, Conn. In 1892 a reorganization took place, under which the Poughkeepsie Bridge Company and the Central New England & Western Railroad were consolidated



One of the New Floor Beams for the Main Bridge

system to permit the track to be placed in the new position. Aside from this, considerable reinforcing was added to the viaduct approaches at each end of the main structure.

Much interest attaches to the present work because of popular interest in the structure itself, one of the earliest cantilever bridges built in this country. It is the only bridge which crosses the Hudson river south of Albany and for nearly 30 years it afforded the only direct rail connection between New England and the south Atlantic states. This distinction was not relinquished until last year when a more southerly rail connection was afforded by the completion of the Hell Gate bridge, with its connection through the Pennsylvania tunnel under New York City. The structure is the

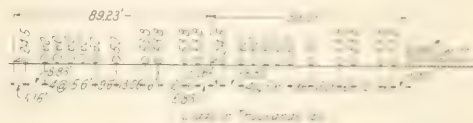


Diagram of Design Loading for Present Reinforcement

to form the Philadelphia, Reading & New England—a corporation controlled by the Philadelphia & Reading. When the latter road entered a receivership in 1893, the Philadelphia, Reading & New England was placed under a separate receivership, which remained in effect until 1899 when a reorganization took place that led to the formation of the Central New England, under the control of the New Haven.

The main structure is 3,093 ft. 9 in. long and, as indicated in the general drawing, consists of three cantilever spans of 546 ft. and 548 ft., supported by two fixed spans of 525 ft. and two anchor arms of 200 ft. 11½ in. The east approach, which is 2,640 ft. long, consists of a viaduct composed of plate girder spans 60 ft. to 85 ft. long, between 30-ft. tower spans, except near the main structure where there are several deck truss spans varying from 115 ft. to 175 ft. in length. The west approach is 1,033 ft. long, and consists of a viaduct having 30-ft. tower spans and 60-ft. clear spans for a length of 630 ft. with two 145-ft. pin-connected



Elevation of the Poughkeepsie Bridge

property of the Central New England, a corporation controlled by the New York, New Haven & Hartford, through ownership of practically all of the stock. It provides the main coal route into the New England states. Connections at Campbell Hall and Maybrook, with the Erie, the Lehigh & New England and the Lehigh & Hudson, afford access to roads reaching both the anthracite and bituminous fields.

The history of this structure commenced in 1871 when a charter for a bridge across the river was granted by the legislature of New York state to the Poughkeepsie Bridge

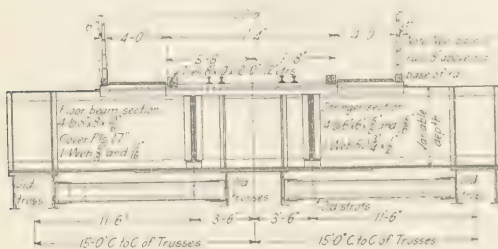
deck truss spans, also carried on towers 30 ft. long. The structure is high, the track being 212 ft. above high water level. The piers extend 30 ft. above and 135 ft. below the surface of the water, having been sunk entirely by open dredging in timber cribs. In the main structure the superstructure originally consisted of two trusses 30 ft. center to center, with the track supported on a floor system resting on the top chord. In the viaduct the superstructure consists in general of three trusses or girders, with the track supported on ties placed on the top chords of trusses and girders.

The original structure was designed for a train loading on each track of 3,000 lb. per lin. ft., preceded by two locomotives having four 24,000-lb. axle loads. In 1906 the bridge was reinforced to carry on each track a train consisting of 3,600 lb. per lin. ft., preceded by two locomotives each having four axles with 45,000-lb. loads each, 5 ft. center to center, or a total weight of 200,000 lb. on a wheel base of 22½ ft. followed by four tender axles of 28,000 lb. each. The earlier reinforcing consisted essentially of introducing center trusses, strengthening the side trusses and adding new floor beams on the main spans, and in replacing nearly all of the girders and trusses in the approach spans, as well as reinforcing the towers by adding center columns to most of the bents. The towers of the main spans, which consisted of double A-frames with two batter posts supporting each truss, were amplified by the addition of similar A-frames to carry the new center trusses. In all about 15,000 tons of new structural steel was used.

Structure Again Required Strengthening

Owing to the desirability of using the bridge for locomotives heavier than those provided for in the strengthening work done 12 years ago, it became necessary to reinforce the structure once more; this time to allow for the use of locomotives equivalent in weight to two Santa Fe-type engines having weights distributed as shown in the diagram, followed by a load of 6,000 lb. per lin. ft. of track. As this is a load very much in excess of that originally provided for, the idea of strengthening the trusses of the main spans and the long spans of the east approach to carry this load on two tracks proved impracticable, while the cost of renewing these spans under the present high cost of structural steel was deemed inadvisable. In consequence, it was concluded to sacrifice the use of one track over this distance of 4,000 ft. and substitute a gauntlet track, so that the trusses would be called on to carry only one train at a time.

This implied provision for a new floor system on these spans, which could distribute the greater load from a single track over all three trusses, with floor beams designed so that they could later serve for double track in the event of the subsequent construction of new trusses. It was concluded



New Floor System for Main Spans

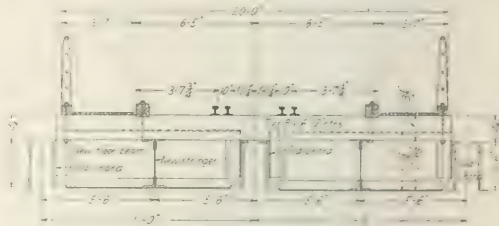
to retain double track on the approaches, except over the truss spans of the east approach. This involved strengthening the outside columns of 11 towers in the east approach, strengthening the center columns of three towers in the west approach and provide new bracing for seven towers in the east approach and five towers in the west approach, as well as strengthening practically all main members in the center trusses of the two 145-ft. spans in the west approach.

New Floor on the River Spans

The old floor on the main span consisted of floor beams at each panel point, resting on the top chords of the three trusses with four lines of stringers, two for each track, framed into them. The new floor is of the same general construction as

the old one, except that the floor beams are continuous over the three trusses and are very heavy, being designed for the condition of carrying double track loading when supported at the ends only in a future two-truss bridge. The object of the continuous floor beam is to distribute the loading from the gauntlet track to the three trusses. Only two lines of stringers were provided for the support of the gauntlet track, one on either side of the center line of the bridge, although the floor beam webs have stringer connections provided for four stringers in their future re-use.

In placing the new floor, one track was eliminated and the other was shifted to the center line of the bridge, resting on



New Floor Construction on the Deck Truss Spans of the East Approach

the two old center stringers. This was done for one-third of the length of the main spans at one time. Then the old outside stringers were cut out. The track was then broken, the rails and ties of one panel taken up and the two stringers that were carrying the traffic were removed. The old floor beams were then cut out and the new stringers and floor beams set in place, using the same connection holes in the chords. This work was repeated panel by panel, two and sometimes three panels being replaced in a day. As the new track level is above the old, owing to the greater thickness of the floor, it was necessary to make an eight-inch run-off when restoring the track. Three inches of this raise was obtained in the temporary track ties, leaving five inches to be made with blocks.

East Approach Truss Spans

About 800 ft. of the east approach adjacent to the river consists of truss spans ranging from 115 ft. to 175 ft. in length, spanning between viaduct towers with deck plate girder spans across the 30 ft. length of each tower. There are three trusses or girders in each span, the double track having been supported by 8-in. by 16-in. ties 25 ft. 6 in. long resting on the top chords and spaced 16 in. center to center. The change to single track involved provision for two lines of stringers 11 ft. center to center, symmetrical with the center line of the bridge, to be carried on floor beams supported by the top chords of the trusses. As the tops of the stringers had to be provided between the girders of the tower spans. This entailed considerably more alteration of the existing structure than was the case in the main river spans. Filler plates had to be placed over the webs of the chords and diaphragms were required between the webs at the points of the floor beam connections. Owing to interference with the pin-connections, the floor beams were offset about 1 ft. 6 in. at each alternate panel point. Consequently every second length of stringer was about 3 ft. longer than the alternate ones.

The space occupied by the new floor system had formerly contained the old lateral system, consisting of four angle struts fastened to the main pins by U-plates with rod diagonals. As these had to be removed they were replaced

by new laterals, following modern practice with plate connections to the chords.

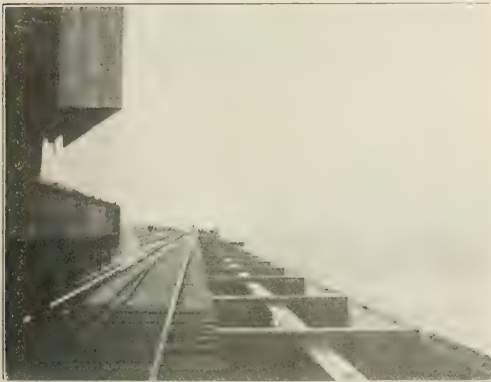
The first work was to take up the old westbound track for the full length of this change, remove the ties and cut out the old struts and laterals. These were cut out with oxy-acetylene torches and by rivet cutters. Holes were then drilled in the old chords to receive the new floor beams and filler plates. This was followed by the erecting of new floor



Placing a New Stringer on the Main Bridge

beams and stringers between the center and north chords. The track was then restored on the north side, supporting the ties on the old chords with blocks so as to clear the new stringers. With the traffic back on the old westbound track the operation was repeated on the south side. With the new steel all in, the permanent ties were slipped in between the temporary ties, the gauntlet track installed and the tracks then taken up from the old westbound location.

For this work the new steel was taken out on the bridge on flat cars. The first work was to set in two floor beams



New Floor in Place on East Approach Truss Spans

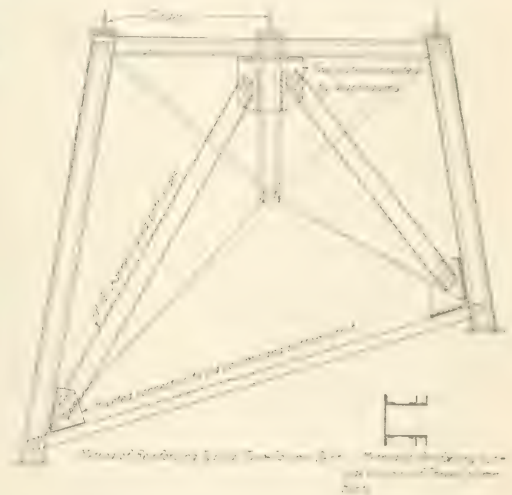
with a locomotive crane, then the stringers, then another floor beam, then the stringers, etc. On an average, 10 panels of steel were placed in this way per day.

Reinforcing the Viaduct Bents

The bents of the viaduct are of two types, high bents with three columns and low ones having two columns, the center girder being supported by a simple Fink truss spanning transversely between the tops of the two columns. The diagonals of this truss also form a part of the sway bracing

of the tower. This arrangement was inadequate for the heavier loading and imposed excessive loads on the two side columns; so after considering several plans, it was decided to provide a new support for the center girder by introducing an A-frame consisting of two diagonal struts extending from the top of the bent under the center girder to the bottom of the two columns, forming riveted connections at the intersections of the columns with the bottom tie. These struts consisted of two 15-in. channels laced together, but as the new members pass around the existing bracing of the bent, it was necessary to ship them to the field unassembled, that is, the lacing and battens for one side were shop-riveted to one channel and those for the other side to the other channel.

In the three-column bents, it was necessary to strengthen the batter columns. These are box section members consisting of built-up channels having a cover plate on the outer side and bar lacing on the inner side. As these columns were inadequate, largely because of eccentricity, rather than add flats to the free legs of the inside angles, thereby involving the temporary removal of the lacing bars, new angles were riveted to the webs just back of the old angles as shown



Method of Reinforcing the Approach Towers

in the cross section. As these angles could not be carried past the panel points in the towers, it was necessary to use $\frac{1}{2}$ in. by 4 in. bars on the inside faces of the columns for a length of 5 ft. at such points.

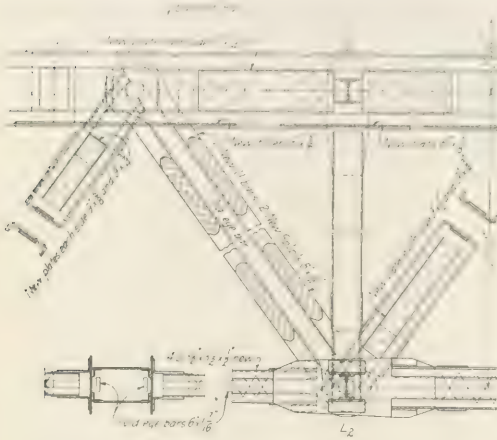
The center columns of the bents supporting the two 145-ft. spans in the west approach also required strengthening. These were of symmetrical section, consisting of two built-up channels laced on both sides. These were reinforced by side plates riveted against the webs between the edges of the flange angles.

Reinforcement of the 145-Foot Spans

One of the most interesting features of the reconstruction was the almost complete reinforcement of the center trusses of the 145-ft. spans. These trusses, which were built new during the reconstruction in 1907, are pin-connected Warren trusses having eye-bar bottom chords with eye-bar diagonals in the second panel from each end, all other members being stiff. The reinforcement of the center truss involved every member except the end panels of the top chords, the center panel diagonals and the intermediate vertical posts. The top chords and the stiff diagonals were reinforced by side

plates against the webs, except that opposite the panel points in the top chord, flats were riveted to the outstanding legs of the bottom angles.

The second panel diagonal, which is a tension member, consisted of two 1 $\frac{3}{4}$ in. by 8 in. eye-bars. This was reinforced by passing a flat U-bar over each pin and connecting them by two 8-in. by 1 $\frac{5}{16}$ -in. flat bars. The bottom chord is reinforced from end to end by a new stiff box section inclosing the old eye-bars. This consists of eight angles laced



Part Elevation of Center Truss of 145-ft. Spans of West Approach Showing Typical Reinforcement

on the two vertical sides with battens top and bottom, the battens being shop riveted to one side and were field riveted to the other side after the section had been placed over the eye-bars. These members were carried past the panel points in the bottom chord by splice plates, bored to fit over the pins and provided with connection angles for re-attaching the struts of the bottom lateral system.

The reinforcing members for the diagonal U-1, L-2 were

shipped unassembled. The upper U-members had the holes for connections with the connecting bars drilled in the shop while the lower U-members were left blank. These parts could not be connected up in the shop owing to the limited space available for slipping the U-bars over the pins. After the upper U-bars were in place, the connecting bars were riveted to them at the top end; then the lower U-bars were slipped around the lower pin ready for connection to the lower ends of the connecting bars, the holes in the U-bars being drilled in the field, using the splice bars as templates. However, as it was desirable to secure an initial tension in the reinforcing members in making connections, the two pins were drawn toward each other by means of a cable and steam boat ratchet rig before the holes in the lower U-bars were marked. The drilling was then done $\frac{3}{12}$ in. below the marks so made, bringing up the connection by means of drift pins. This same method was used in making the connections for the new bottom chords.

The entire work of reinforcing this bridge was carried on under the general direction of Edward Gagel, chief engineer of the New York, New Haven & Hartford. The investigation of the existing structure and the determination of the mode of reinforcement together with supervision of all changes was under the direction of Ralph Modjeski, consulting engineer, Chicago. The Strobel Steel Construction Company of Chicago, had the general contract for all of the reconstruction. The contract was let in January, 1917, and the first of the heavy new engines was allowed over the bridge on May 16, 1918. The work was entirely completed on August 8, 1918.

COAL TROUBLES OF A SPANISH RAILWAY.—The Great Southern of Spain, which carries in normal times upwards of 500,000 tons annually of iron ore, has had this traffic stopped since November last, owing to the company's inability to provide itself with coal at ruling prices. Arrangements have now been arrived at with the mining companies by which the latter pay an increased rate for the transport of their ore, thus enabling the railway to obtain fuel. A cargo of coal reached Spain on July 20 and the iron ore traffic was resumed on the 27th. The freight paid on the coal was \$105, this enormously exaggerated figure comparing with \$1.50 or \$1.75 before the war.—*Railway Gazette, London.*



United States Standard Locomotives Receiving Finishing Touches at the Baldwin Plant

Director General McAdoo Reports to President

Work of the United States Railroad Administration for the First Seven Months of Its Existence

WASHINGTON, D. C.

A REPORT BY DIRECTOR GENERAL McADOO to the President, under date of September 3, giving an account of the work of the Railroad Administration for the first seven months of its existence, was made public on Monday. Although the period is declared to be "a comparatively short one in which to have made such progress in working out the problems connected with the transfer and co-ordination of the railway systems and waterways of the nation" and Mr. McAdoo says the report is "necessarily fragmentary as the reconstructive work undertaken is not entirely complete and the new machinery that has been installed requires further co-ordination," he finds that "a daily increase in facility and efficiency is nevertheless noticeable" and is "confident that the railroads will shortly be in a condition to meet any demands that may be made of them if needed motive power already ordered can be secured and if the necessary skilled labor is not withdrawn from the railroads for military and other purposes." These, he says, "are very serious phases of the railroad problem."

One of the most interesting features of the report, containing information heretofore unpublished, shows that a saving of \$4,614,889 per annum has been effected in the salaries of officers receiving over \$5,000 a year. The number of such officers on individual roads has been reduced by 400, making a saving of over \$6,000,000, but this is offset by the 136 officers in the regional and central administrations whose salaries aggregate \$1,642,300, so that the net reduction in officers is 264. The expenses of the law departments have also been reduced about \$1,500,000 annually. Among other economies and improvements which may be demonstrated statistically are mentioned an estimated saving of \$23,566,633 effected by the closing of unnecessary freight and passenger offices and curtailment of advertising, the elimination of the accumulation of 180,000 loaded cars above normal on the eastern lines, and an increase of 437,976 cars of coal loaded in the first six months of the year. As a measure of the amount of freight carried, however, the report uses the figures for the month of April showing an increase of 8.9 per cent in ton miles of revenue freight hauled, although the reports for May and June, which both showed decreases, were available at the date of the report. No compilation is given of the amount of the increases in wages or in other expenses.

After giving a description of the organization of the Railroad Administration the report continues in part as follows:

Operative and Corporate Organizations Differentiated

Inasmuch as "no man can serve two masters" and the efficient operation of the railroads for the winning of the war and the service of the public is the purpose of federal control, it was manifestly wise to release the presidents and other officers of the railroad companies with whose corporate interests they are properly concerned, from all responsibility for the operation of their properties, which will be in the hands of the regional directors, the district directors, and the federal and general managers who will be directly responsible to the director general. All ambiguity of obligation is thus avoided. The officers of the corporations are left free to protect the interests of their owners, stockholders, and creditors, and the regional and operating managers have a direct and undivided responsibility and allegiance to the United States Railroad Administration.

In pursuance of this policy the regional directors, the fed-

eral managers, and the general managers have been required to sever any relations they may have had with the railroad corporations as either officers or directors, and the corporate officers have been advised that they have no function to perform with respect to government operation. Many of the former corporate officers have been appointed as officials of the United States Railroad Administration, whereas others have elected to remain as officers of their corporations. It has been made clear that the fullest possible co-operation is desired between the government officers who operate the railroads and the corporate officers who represent the stockholders.

Economies Effected by Reorganization of Official Staff

The reorganization of the operating force has been made without any impairment of efficiency and with a reduction in the number of officers required and in the aggregate of the salaries paid them and chargeable to operating expenses. An accurate computation of the saving in men and money thus effected follows. It includes all officers receiving salaries of \$5,000 a year or over.

	Number of officers		Salaries	
	Under private control	Under government control	Under private control	Under government control
Regional administration (136)	136	136	\$1,642,300	\$1,642,300
Central administration (400)	400	0	\$2,000,000	0
Total	536	136	\$3,642,300	\$1,642,300
INDIVIDUAL RAILROADS				
Eastern Region (1,000)	1,000	1,000	\$1,000,000	\$1,000,000
Allegheny Region (1,000)	1,000	1,000	\$1,000,000	\$1,000,000
Piedmont Region (1,000)	1,000	1,000	\$1,000,000	\$1,000,000
Southern Region (1,000)	1,000	1,000	\$1,000,000	\$1,000,000
Northeastern Region (1,000)	1,000	1,000	\$1,000,000	\$1,000,000
Central Western Region (1,000)	1,000	1,000	\$1,000,000	\$1,000,000
Southwestern Region (1,000)	1,000	1,000	\$1,000,000	\$1,000,000
Total	6,000	6,000	\$6,000,000	\$6,000,000
Grand total	6,536	6,136	\$9,642,300	\$7,642,300

This shows that under private control of the railroads 2,325 officers drawing salaries of \$5,000 a year or over were employed, with aggregate salaries of \$21,320,187. Under government control 1,925 officials (a reduction of 400) are doing the same work, and the aggregate of their salaries is \$16,705,298—a saving of \$4,614,889 per annum. This total includes the officers of the various regional districts as well as those of the central administration in Washington, except the director general himself, who receives no salary.

The Salaries Paid

Under private control, salaries as high as \$100,000 per annum were paid officers of railroad corporations. Under government control the highest salaries paid are to the regional directors (of whom there are but seven), and these salaries range from \$40,000 to \$50,000 per annum. This reduced compensation has been fixed for regional directors notwithstanding the increased responsibilities and duties of these directors as compared with those of the presidents of the larger railroad corporations.

The reduction of \$4,614,889 per annum in the aggregate of the salaries paid to the more responsible officials has not been effected by forcing the experienced men appointed by the United States Railroad Administration to accept salaries incommensurate with their responsibilities, although in numerous instances these salaries are substantially less than those they had been earning as officers of the railroads or could

earn in private employment. It is not only equitable but necessary that they should be justly remunerated, and that the rewards of brains, industry, and loyalty should be sufficient to continually attract able men to the service of the railroads as their life's work. It is not a question merely of operating the railroads during the period of the war—this requires, it is true, the best talent that can be secured if the present extraordinary demands are to be met—but it is a question of the post-bellum period as well, when railroad work must continue to be sufficiently attractive to draw constantly to it men of the right quality and caliber. Unless the ranks are uninterruptedly recruited with such men, it will be impossible to maintain the efficient organizations which are essential to the successful management and operation of the railroads of the country.

The salaries paid under government control to the higher officers should be sufficient to make the juniors realize that the promotions and rewards of a railroad career are still worth working for, and that they will be commensurate with those of private enterprise and industry.

The expenses of the law departments have been reduced about \$1,500,000 annually. This has been accomplished by the elimination of a number of men, the reduction of salaries of many others, and the transfer of the general counsel of various roads from the operating pay roll to the pay rolls of the corporation. It is believed that efficiency has in no respect been lessened.

Condition of Railroads When Taken Over

To plan the federal organization and select its personnel has, of course, required time. When the government took control on the 1st of January, 1918, the railroads were in a deplorable condition. Added to an unusually severe winter, the motive power was seriously crippled, and on the eastern lines traffic was badly blocked by the congestion of unloaded cars at the terminals and elsewhere. The approximate number of loaded cars above normal, on the eastern lines, was 180,000 when the director general took charge of the railroads. To relieve this situation was the first concern, and the energies of the federal organization were exclusively and successfully directed to this end. At the date of this report there are no accumulations of loaded cars on the eastern lines above the normal. That the legislation making the necessary appropriation of \$500,000,000 for a revolving fund did not become law until March 31, 1918, was another cause of delay. Prior to its enactment all plans were necessarily tentative. Much, however, has been accomplished since that date toward co-ordinating the transportation facilities of the country for the winning of the war and the service of the public.

What Has Been Done Thus Far

A list of what has been done, the report says, would be long. Among some of the more important items that it would include are mentioned the contract with the corporations, since announced, the delays in the negotiation of which are declared to have been the fault neither of the railroad corporations nor of the government but inherent in a matter of such intricacy and magnitude. After a brief description of the advances in wages Mr. McAdoo says: "These great and beneficial concessions in the matter of wages and hours of service will, I am sure, be appreciated by the employees and will be required by their loyal and uninterrupted service to the government and by a determined effort to increase efficiency all along the line." Reference is also made to the orders that women shall be paid the same wages as men engaged in similar work, and that there shall be no discrimination against negro employees.

Regarding the advance in freight and passenger rates the report says:

"It is assumed that these advances in freight and pas-

senger rates will increase the net operating revenue of the railroads by an amount that is about equal to the greater cost of operation due to increased wages and increased cost of fuel and all railroad supplies, but this assumption is more or less conjectural, as it is impossible to say whether the higher rates charged will have the effect of reducing the traffic. Thus far such an effect has not been noticeable, at least in the case of the passenger traffic, which shows a substantial increase on the lines traversing the industrial districts of the country and serving the military camps. This is due to the higher wages paid to workers who have been constantly changing their places of employment as well as to the traveling of our soldiers, who have been granted a special rate of one cent per mile when on furlough, and the journeys made by friends and relatives on visits to the soldiers at the various cantonments throughout the country."

Reference is also made to the uniform freight classification, under which it is declared, "when it becomes effective, it will be practicable to compel a closer compliance with car-loading standards, so preventing the underloading which in the past made the intensive employment of rolling stock difficult. Under competitive conditions this was impossible, because in an effort to hold or get business each competing railroad was disposed to favor the shipper by permitting him to underload cars when it was to his interest to do so."

The Abandonment of Competition

Regarding the saving in traffic expenses the report says:

Inasmuch as there is no longer any competition for freight or passenger traffic between the various divisions of the government railroad system, I have ordered that solicitation of traffic and special exploitation of passenger routes shall be discontinued. In pursuance of this policy the soliciting forces of the various railroads have been either relieved from duty or assigned to employment in connection with the operating departments, and the separate ticket offices formerly maintained in most of the larger cities have been consolidated. In the metropolitan cities, such as New York, Chicago, etc., several consolidated offices in widely separated but equally important districts may be established for the greater convenience of the public. The saving that will be effected as a result of this policy is estimated at \$23,566,633, as per the following statement prepared by the Division of Traffic:

ESTIMATED SAVING EFFECTED BY THE CLOSING OF UNNECESSARY FREIGHT AND PASSENGER OFFICES AND CURTAILMENT OF ADVERTISING

Closing "on-line" offices:

Eastern region—		
Freight	\$3,209,170	
Passenger	496,276	
		\$3,705,446
Southern region Freight and passenger.....		1,937,000
Western region—		
Freight	\$2,000,000	
Passenger	500,000	
Joint	4,000,000	
		6,500,000
Total		\$12,142,446

Consolidation of "on-line" city ticket offices and saving in rent from removal of "on-line" offices:

Commercial freight offices to railroad property—		
Eastern region—		
Freight estimated	\$80,000	
Passenger	709,187	
		789,187
Southern region—		
Freight	\$10,000	
Passenger	155,000	
		165,000
Western region, freight and passenger.....		3,250,000
Total		\$4,424,187
SAVING TOTAL		
Consolidation of offices and curtailment of advertising, \$9,500,000 savings		\$2,000,000
Consolidation of offices		\$23,566,633

Under this head reference is also made to the abridgement of time-tables, the plans for utilizing the services of women as ticket sellers and the elimination of unnecessary and duplicate passenger service. In the territory west of Chicago and the Mississippi river passenger trains traversing

an aggregate of 21,000,000 miles a year have been done away with. In the Eastern district unessential passenger trains that used to travel 26,420,000 miles per annum have also been eliminated and in other regional districts superfluous trains have been annulled. Through travel is being directed to the natural routes. The hauling of special trains or needless private cars has been discouraged, and the schedules are being revised so that connections will be closer. Other reforms being worked out in the passenger service referred to include the common use of the same terminals by railroads formerly in competition and using separate terminals. The same principle is also being applied as rapidly as possible in the consolidation of freight terminals. The necessary readjustments, it is stated, may have caused some temporary dislocation, but the ultimate results will be increased efficiency and capacity.

Shortening Freight Routes

Concerning the shortening of freight routes the report says:

Recognizing the fact that a straight line is the shortest distance between two points, extensive studies have been made with the purpose of developing well-graded routes for the transportation of freight that will be shorter than those previously in use. Great progress has been made in this direction, especially in the West, and many new through lines are being developed. One of them from Los Angeles to Dallas and Fort Worth is over 500 miles shorter than the routing via the Southern Pacific lines formerly much used. Another from the oil fields at Casper, Wyo., to Montana and Washington State points is 880 miles shorter than the route formerly used. Fruit from southern California to Ogden is hauled 201 miles less than by the route previously used. Still another route between Chicago and Sioux City is 110 miles shorter than the one previously used. A new route between Kansas City and Galveston has been developed which is 289 miles shorter than the 1,121 miles previously traversed. Eighty-eight miles have been saved by devising a new route between Mason City and Marshalltown, Iowa, and 103 miles by a new route between Fort Dodge, Iowa, and Chicago. The route from southern California to Kansas City has been shortened by 234 miles.

As one example of the economy that has thus been made possible it may be mentioned that recently during a period of about 60 days some 8,999 cars were rerouted in a certain western territory so as to effect a saving in the mileage traveled by each car of 195 miles, equal to a total of 1,754,805 car miles.

Abstracts of other paragraphs of the report follow:

Store Door Delivery and Intensified Use of Freight Cars

On the 1st of January, 1917, the railways of the United States owned about 2,400,000 freight cars. Delay in loading and unloading these cars and their use by both shippers and consignees as warehouses has very seriously diminished the carrying capacity of the roads. If each car makes one trip a month only and is loaded and unloaded so as to save one day a month of the time that it was formerly idle, the result would be equivalent to an addition of 80,000 cars to the aggregate equipment.

Probably there is an unnecessary delay of more than one day a month in loading and unloading cars. To diminish this delay the free time hitherto allowed for loading and unloading has been shortened and a cumulative increase in the demurrage charge hitherto made for unnecessary use has been ordered. As prompt unloading of cars upon their arrival at public terminals presupposes that congestion at the terminals shall be avoided, what is known as the "store door" system of freight delivery has been introduced in Philadelphia and New York and will probably be extended to

other large cities. If the plan shall vindicate the claims of its authors the congestion of inbound freight, which has hitherto prevented the prompt unloading of cars, will be a thing of the past, and it is suggested that ultimately it may be possible to collect outgoing freight by the same trucks which deliver to stores and factories incoming freight hauled from the terminals.

Standardization of Freight Cars and Locomotives

It has long been admitted that the standardization of the engines and freight cars in use on the American railroads was highly desirable, but not until governmental control became a fact has it been possible to secure an effective agreement as to which types of cars and engines should be adopted. It is said that 2,023 different styles of freight cars and almost as many different descriptions of locomotives were included in the equipment of American railroads prior to the war. The facts are not known, but nearly every important railroad had its own specifications for cars and engines. None of these was identical, and they were generally changed in some detail when new orders were placed. There were box cars of both steel and wood, gondola cars, flat cars, hopper cars, refrigerator cars, tank cars, automobile cars, furniture cars, cattle cars, and many other sorts of cars suited to the different varieties of traffic. The lack of standardization increased the difficulties of repair when these cars were off the lines of the roads which owned them. Parts were not interchangeable and often had to be telegraphed for.

In a general way the same thing was true of the locomotives in use. Complete standardization will of course be impossible until the rolling stock and engines now in use shall have been entirely replaced by standardized types. Progress has, however, been made. Some 12 standard types for freight cars have thus far been agreed upon, and it has also been decided that hereafter only six types of locomotives of two weights each shall be purchased. The parts of these various types of locomotives and freight cars will be interchangeable. Their construction will be uniform and when repairs are needed they can be made with the greatest possible promptitude.

One hundred thousand freight cars of the agreed upon types have been ordered, and it is expected that the manufacturers can commence delivering them early in September. One thousand four hundred and thirty locomotives of the new type have also been ordered, in addition to about 2,100 that had been contracted for by the railroads prior to January 1, 1918. Of the total of about 3,600 locomotives, some 1,185 had been delivered up to August 1. The equipment of all the railways December 31, 1917, included about 2,400,000 freight cars and 64,750 engines. The ratio which the newly ordered cars and engines bear to the total is not as large as is to be desired, and other orders will be placed as rapidly as the manufacturers can accept them. Just at present, however, the war department is taking a large number of the new engines and cars for use on our railroads in France, and these with the orders placed by the Railroad Administration will more than absorb the entire manufacturing capacity of the equipment and locomotive plants in the immediate future.

Capital Expenditures for Improvements and Betterments

On February 2, 1918, all lines under federal control were directed to prepare and send in budgets of improvements immediately required to increase capacity and efficiency and to promote safety in operations. The budgets submitted in response to this called for expenditures chargeable to capital account—that is, exclusive of large sums chargeable to maintenance—amounting in the aggregate to \$1,328,493,609, which, upon careful revision by the director of the Division of Capital Expenditures, was reduced to \$975,105,416. This

amount has been increased from time to time by new and unforeseen requirements, and particularly by large orders for freight cars, until the improvements definitely authorized to this date amount to \$1,151,967,240. Of this amount, \$441,604,460 is for additions and betterments, \$666,824,180 for equipment, and \$43,538,600 for construction of extensions, branches, and other lines.

Appropriations have been directed to work necessary to facilitate indispensable transportation, rather than those improvements which, while desirable and even necessary, are yet more for convenience and economy than for capacity and efficiency in the actual movement of traffic. This is indicated by the very large appropriations for equipment—almost wholly for engines and freight cars; and of the additions and betterments, much the largest item was for additional yards, sidings, etc.; next, shop buildings, engine houses, and appurtenances; and, third, additional main tracks. In view of the great necessity for conserving capital, materials, and labor for war purposes, it does not seem unreasonable to ask our people in various communities to continue to submit, during the present emergency, to inconveniences hitherto endured for lack of facilities that might reasonably be required in normal times.

Purchases of Supplies

The material and supplies annually purchased by the railroads have hitherto cost between \$1,500,000,000 and \$2,000,000,000 a year. When the carriers were in competition for traffic they were also in competition for the supplies required. This competition has been for the most part eliminated and a substantial saving has been effected as a result of the supervision over all purchases exercised by the director of the division in charge of them. He is aided by an advisory committee of three composed of the general purchasing agents of the three leading divisions of the Federal Railroad System and acts through regional purchasing committees, with headquarters in New York, Chicago, and Atlanta, to whom the larger part of the buying that is done for account of the railroads is intrusted. It is planned shortly to enlarge the advisory committee by including a representative from each regional district.

The Government Its Own Insurer

In line with the established policy of the government to insure its own risks, the Railroad Administration will become its own insurer and meet any fire losses for which it may be liable out of its own funds; a section to be known as the Insurance and Fire Protection Section has been established. In an effort to minimize losses an adequate and vigilant fire-inspection and fire-prevention service is being organized. This policy has been adopted after a careful study of the past experience of the railroad companies in the matter of insurance. While many of them in the past have carried a part of their liability uninsured, reports from all but five of the more important railroads show that during the three years ending June 30, 1917, the premiums paid insurance companies aggregated \$16,021,369, while the total losses incurred during the same period were but \$12,460,639, making an excess of premiums over losses for the three-year period of \$3,560,730. The three years under consideration included the Black Tom disaster in New York harbor, resulting in a very heavy and exceptional loss to the companies, and it is believed that a very substantial saving will be effected by the policy of noninsurance that has been adopted.

Compensation, Insurance and Pension Plan Under Consideration

Plans for the uniform and equitable compensation of injured employees or the dependents of employees who may be killed in the service of the railroads are being considered,

and it is hoped that it may also be possible to arrange for the retirement of employees upon pension at a given age, as well as to provide for their purchase of life, health, and old-age insurance at reasonable rates. Time will, however, be required to perfect these plans, which must be reconciled with the widely varying pension and insurance systems now in existence on not a few of the railroads.

Results Thus Far Secured

This comprises some of the more important reforms already applied or under immediate consideration. Their effect in increasing the efficiency of the service and enlarging the capacity of the existing facilities can not be definitely stated or approximated as yet. Many of the changes made have been effected within the last two months and under private ownership at least 60 days have been required for the compilation of informing railroad statistics. Arrangements are being made to collate and publish them more promptly, but until this can be done it is impossible to promptly and properly co-relate innovations in methods with results.

Speaking generally, however, there is good ground for believing that substantial progress has been made in accelerating the movement of traffic, employing the available equipment more intensively and running trains more nearly on time.

The number of tons of revenue freight carried one mile, commonly known as revenue ton-miles is the ultimate measure of service in railroading. Applying this measure we find that the revenue ton-miles of 94 per cent of class 1 railroads (i. e., those having an operating income in excess of \$1,000,000 per annum) was 34,250,247,814 miles in April, 1918, as against 31,464,837,365 miles in the same month in 1917. The increase is equal to 8.9 per cent. The average number of freight cars in service had increased by 5.1 per cent, being 2,387,670 in April, 1918, as compared with 2,271,359 in 1917.

The number of tons hauled per train shows an increase of 6.9 per cent, being 696 tons in April, 1918, as against 651 tons in April, 1917. The percentage of increase in the carload is even greater, being 14.4 per cent, the average carload in April, 1918, being 29.4 tons as against 25.7 tons in April, 1917. The revenue ton-miles for freight locomotives shows an increase of 7.9 per cent, being 1,125,875 in April, 1918, as against 1,045,921 in April, 1917.

Coal Movement

These figures all show encouraging progress. Just at present strenuous efforts are being made to speed up the movement of coal so as to preclude the recurrence of the distressing experience of last year. In both the production and transportation of coal 1917 was a record year. Including bituminous, lignite, and anthracite the production was 650,000,000 tons. Of this some 11,563,056 cars, containing about 558,000,000 tons, were transported by the railroads. During the bad weather in January, 1918, there was a reduction of 79,131 cars in the number of cars of coal loaded and moved as compared with the year 1917. Notwithstanding the continued bad weather in February, 1918, the railroads got on their feet and increased over February, 1918, 31,250 carloads of coal. In March the increase was 46,613; in April, 73,408; in May, 84,998; in June, 88,840; and for the first four weeks of July, 113,198 cars. It will be seen, therefore, that for the last six months the increase in coal carried by the railroads has been 437,976 cars of coal—equal to about 21,998,800 tons.

One of the great advantages of governmental control is that the transportation facilities of the country can be concentrated upon the quick performance of an urgent duty. The energies of the Railroad Administration are now being largely devoted to moving the coal mined as rapidly as the Fuel Administration can deliver it.

Of late cars have frequently been supplied to the coal mines more rapidly than they have been able to load them and it is probable that adequate transportation for the fuel requirements of the Nation will be available provided the coal production during the warm weather can be maintained at a point that will fully employ the cars requisitioned. The country has been led to believe that coal production is limited entirely by transportation and that any shortage is due to the railroads. This is erroneous. The maintenance of an adequate coal supply depends in the first instance upon production which in turn is restricted by shortages of labor and other causes aside from transportation.

Volume of Traffic

Some idea of the volume of the eastbound freight traffic is to be had from a recent report of the Pennsylvania, which shows that 250,000 freight cars moved past Columbia, Pa., during the month of June. Practically all the through east and west bound freight is routed via this point. The average daily movement was 8,544 cars or an average of about one car every 10 seconds. On June 20, 9,531 cars passed Columbia, exceeding all previously reported one-day movements on the Pennsylvania and establishing what is believed to be the world's record for the greatest number of freight cars that ever passed a given point in 24 hours.

Similar reports are being received from other districts. The reports from the Eastern District indicate that the average anthracite and bituminous coal dumped at tidewater ports per calendar day in January was 2,233 cars. By May this average had risen to 3,345 cars. The average daily movement of anthracite and bituminous coal into New England in February was 794 cars per day. By May it had risen to 1,109 cars. On January 1 there were on hand at North Atlantic ports approximately 41,000 cars of export freight at piers, and on the ground. By the 8th of May this had been reduced to approximately 28,000 cars, since which time a further reduction has been affected. The movement of coal via the Great Lakes shows an increase of 26 per cent over last year in cars dumped in vessels up to the end of May this year, but it is hoped that a still greater gain may be shortly secured.

Troop Movement

For many reasons it is not perhaps in the public interest that a complete statement of the traffic that has been handled for the government should be published at present, but some idea of the service performed may be had from the statement that from May 1, 1917, to July 31, 1918, about 6,455,558 troops had been moved on orders from the war and navy departments. Of this number 4,304,520, or nearly 68 per cent were carried between January 1 and July 1, 1918. These figures do not include soldiers, sailors, and officers traveling at their own expense.

Transcontinental Lumber Movement

Another movement of government traffic that it is permissible to mention is the shipment of lumber for ships, aeroplanes, and other government requirements, excluding railways, across the continent. Some 177,000,000 feet were shipped from the Pacific coast to Atlantic or intermediate points in this way between January 1 and July 18, 1918, and when speed was essential delivery on the eastern seaboard has been frequently made within 15 days after shipment from the Pacific coast.

Mention is also made in the report of the formation of the Bureau for Suggestions and Complaints, the universal mileage book, the advances to the railroads of sums necessary for the payment of authorized dividends and the redemption of maturing obligations, the taking over of the Pullman service, the consolidated express service the introduction of through waybilling, the harmonizing of accounting systems and the

establishment of a clearing house for the settlement of intercorporate balances, the order directing that suits against carriers must be brought in convenient districts, the abolition of car mileage and per diem rentals, the simplification of interline passenger revenue accounting, the co-ordination with other governmental departments, the creation of a safety section, and the prohibition of the sale of intoxicants on trains and in railroad restaurants and stations.

In describing the organization it is stated that while the regional directors are, of course, subject to the authority of the director general, as they are all men of experience and distinction as railway executives "the policy is to give them large discretion and thereby free the members of the central staff for a more careful study of the important questions that come before them and the essential administrative work they must perform." The policy is said to be to keep the Washington organization as small as possible and avoid the creation of an unwieldy and expensive central administrative bureau.

The description of the regional organization refers to the individual railroads as "divisions." An explanation of the plan for the grouping of the eastern lines gives the following reason:

"Thus it has been deemed wise to put the Pennsylvania lines and the Baltimore & Ohio lines east of the Ohio river in the Allegheny District, and those west of the Ohio river in the Eastern District, which contains the whole of the New York Central Division. This course has been followed in pursuance of a policy that contemplates the preferential use of the more northerly trunk lines for fast through freight and passenger traffic, between the Chicago District and the East, thereby releasing the lines in the Allegheny District for the distribution of the enormous traffic that originates in the Pittsburgh District where congestion of local and through freight in the past has created some of the most costly and exasperating blockades that have been known in the history of American railroads."

In conclusion Mr. McAdoo acknowledges the services of the officials and employees who "have worked with such loyalty and zeal to accomplish what has already been done that it is a genuine pleasure to make acknowledgment of their splendid work. It is a constant satisfaction to be associated with them. You can rely upon their patriotic enthusiasm and alacrity in the work of winning the war, in which they as well as the soldiers at the front have enlisted with such laudable determination and patriotism."

RAILWAYS IN "GERMAN" AFRICA. The total length of the railways in the formerly German colonies in Africa is about 2,488 English miles, of which 757 miles are in East Africa, 328 miles in the Camerons, 201 miles in Togoland, and 1,201 miles in South-West Africa. The standard gage of these lines is one meter, but in all cases where they are in the vicinity of the South African lines the Cape gage of 3 ft. 6 in. has been adopted.

TRAVEL CONCESSION TO THE WOUNDED.—The British Ministry of Pensions announces that the Railway Executive Committee have issued to all railway companies instructions regarding the carriage by rail of invalid or mechanical chairs in possession of men who have been disabled as a result of injuries received during the war. Bath, invalid, mechanical, or other chairs accompanying disabled soldiers and sailors will be charged at 25 per cent of the ordinary public rate, with a maximum charge of 2s. (\$48). This arrangement will apply to discharged men in civilian clothes as well as to men in uniform. When men are in civilian clothes they must produce proper credentials to the railway authorities. The concession has also been granted to officers.—*Railway Gazette*, 7 September.

Officers of the North Western Region



R. H. Aishton,
Regional Director



M. J. Gormley,
Assistant Regional Director



J. G. Woodworth,
Traffic Assistant



L. C. Gilman,
District Director Puget Sound District



L. S. Carroll,
Chairman Regional Purchasing
Committee



J. H. Brinkerhoff,
Terminal Manager Chicago Switching
District



A. C. Johnson,
Chairman Western Freight Traffic
Committee



P. S. Eustis,
Chairman Western Passenger Traffic
Committee



H. J. Bell,
Regional Supervisor of Safety

N. W. Region; a Group of Well-Managed Roads*

Northwestern Railway District Ranks High in Earning Capacity and Operating Efficiency

IT IS NOT SURPRISING that the Northwestern railroad region, which includes roads developed by Hill, Hughitt, Harri-man and other capable executives, should compare favorably with the rest of the country from the standpoint of operating efficiency and net revenues. Comprising about one-fifth of the area of the country, with one-fifth of the operated railway mileage and one-seventh of the rolling stock, this territory produces approximately one-fourth of the net revenues from railway operation of the roads in the United States.

Laying aside the overlap of the various regions, this district comprises Wisconsin, one-tenth of Illinois bordering on Wisconsin, the upper peninsula of Michigan, all of Minnesota and North Dakota, three-fifths of Iowa, one-half of South Dakota, five-sixths of Montana, one-third of Idaho, two-thirds of Oregon and all of Washington, or approximately 593,000 sq. miles. The roads under federal control in this region operate over 51,000 miles of line. While the railway mileage and area of the territory are in approximately the same proportion to the total mileage and area of the country, the equipment of the railways is considerably less in relation to the total equipment of all roads. The northwestern lines own about 340,000 freight cars, or 14 per cent of the freight car equipment in the United States, 10,000 locomotives, or about 15 per cent of the total number in the country, and 8,000 cars in passenger service, or 14 per cent of all passenger equipment.

As previously indicated, the northwestern lines compare more favorably with the remaining roads in the country from the standpoint of operating income. According to the latest statistics published by the Interstate Commerce Commission, the operating revenues of the carriers included in the Northwestern region amounted to about \$530,000,000, or 18 per cent of those of all roads; operating expenses were \$323,000,000, or about 15 per cent of those of all American railways, while net revenues from railway operation were \$207,000,000, or 24 per cent of those of all lines.

A Region of Relatively Prosperous Lines

In general, it may be said that the northwestern railroads are, and have been, prosperous as compared with other American lines. This prosperity is due in large measure to good railroading, not only in the sense of efficient operation but also of foresight and initiative in locating and constructing extensions to open the way for further development of the country. In fact, the railway companies played a large part in building up the Northwest. They projected lines far into the unpeopled wilderness, and then attracted settlement by observing a paternalistic policy toward newcomers. The extent to which he opened up untapped territory and fostered development won for James J. Hill the name of "empire builder."

District Consists Mainly of a Few Large Roads

The Northwest region consists mainly of a few large systems. There are 10 roads with an operated mileage of over a thousand miles each, and these constitute 88 per cent of the entire mileage of the region. In order of length they are the Chicago, Milwaukee & St. Paul, the Great Northern, the Chicago & North Western, the Northern Pacific, the

Minneapolis, St. Paul & Sault Ste. Marie, the Oregon-Washington Railroad & Navigation Co., the Chicago, St. Paul, Minneapolis & Omaha, the Minneapolis & St. Louis, the Chicago Great Western and the Southern Pacific lines north of Ashland, Ore. In general, there has been, under government control, little division of northwestern lines for operating purposes. Likewise, there have been no combinations of important lines or sections thereof, under common federal managers such as took place in other regions, and particularly in the Southwest. All the large northwestern roads have their own separate managements under federal control, thereby preserving their identity.

The Trend and Character of Traffic

The ruling direction of the lines in the Northwestern region is east-and-west. Three of the largest roads, namely the St. Paul, the Great Northern and the Northern Pacific, connect the North Pacific coast with the Middle West. Among the other prominent roads, the North Western system penetrates far into the West and receives much transcontinental traffic from connections; the Soo follows a northwestern route from Chicago through the Twin Cities to Canada where it connects with the Canadian Pacific, of which it is a subsidiary; and the Great Western connects Chicago with the Twin Cities, Omaha and Kansas City.

The direction of the lines conforms with the trend of traffic which is governed by the economic character of the region. The Northwest and the Far West produce raw materials which are transported to manufacturing centers of the Middle West and East. West-bound traffic consists largely of manufactured products and merchandise to supply the needs of the agricultural, lumber and mining regions of the Northwest or for shipment beyond to supply the trans-Pacific trade. In addition, large shipments of coal go to the West, which produces only a small percentage of its own fuel supply.

By far the heaviest traffic of the nine largest lines is in products of mines. In the fiscal year ended June 30, 1916, these roads hauled over 68,000,000 tons of this class of freight, which was 37 per cent of their total tonnage. Ore alone accounted for 17 per cent of the total freight tonnage for the year. The North Western and the Great Northern handle the greatest part of this traffic, with a tonnage in excess of 12,000,000 each. The heaviest ore carrier in the region, however, is the Duluth, Missabe & Northern, a relatively short line not included in the list of large roads. In 1916, this railway moved 20,580,000 tons of ore. Another important ore carrier is the Duluth & Iron Range with a tonnage of nearly 11,000,000. Coal and coke traffic is also heavy. In 1916 the nine largest northwestern lines moved 24,565,000 tons of coal and coke, or 13 per cent of their entire freight tonnage for the year.

Agriculture is second to mines as a source of tonnage. In the fiscal year 1916 the nine largest roads hauled 40,755,000 tons of agricultural products, or 22 per cent of the entire tonnage handled during the year. Of this traffic grain is the most important single item, 27,260,000 tons of this commodity having been transported in 1916, or 15 per cent of the entire freight tonnage of the roads. The North Western led as a grain carrier, with 5,477,000 tons, the St. Paul was second with 5,063,000 tons, and the Great Northern and Northern Pacific were third and fourth with 4,913,000 tons and 3,435,000 tons, respectively. Forest products are third

*This is the third of a series of articles, describing the characteristics of the seven operating regions into which the railways of the United States are now divided.

in rank as creators of tonnage. In 1916, 29,560,000 tons of lumber and other forest products were transported, or 16 per cent of the entire freight tonnage of the nine roads. The tonnage of manufactured products in the fiscal year 1916 amounted to 23,650,000, or 13 per cent of all the freight handled, while the tonnage of animal products amounted to 7,236,000, or about 4 per cent of the total tonnage of the nine lines.

Traffic Density of Region Low

The northwestern region is one of great distances and of long hauls. This is particularly true of the three transcontinental lines. The average haul of revenue freight on the Northern Pacific in 1916 was 334 miles; that of the Great Northern was 270 miles, while that of the St. Paul was 262 miles. The traffic density is low compared with that of eastern lines. The ton mileage of revenue freight per mile of road averages between one-fifth and one-sixth of that on the roads in Eastern Trunk Line territory.

Previous to government control there was keen competition for freight in the Northwestern region. Between Chicago and St. Paul, for instance, there are six separate direct routes, and there were likewise six competing lines between Chicago and Omaha. There was also a strenuous struggle for transcontinental traffic which was shared in by the Great Northern, Northern Pacific, St. Paul and the North Western in conjunction with the Union Pacific system. It cannot be said of this region as it can of the Allegheny operating district that any one road dominated traffic. On the contrary, all of the larger northwestern lines were strong and won their fair share of business.

Competition was no less acute in the passenger field. Exceptionally well-equipped trains were operated between the large cities of the region and particularly between the Middle-West and the coast. This policy naturally led to considerable duplication of train service which was one of the first conditions to attract the attention of the Railroad Administration in its campaign to conserve transportation facilities during the war. Accordingly, last May two northbound daily passenger trains and three southbound trains were removed from the service between Chicago and St. Paul. Three daily trains each way were discontinued between Chicago and Omaha and between Portland and Seattle, and like reductions were made between other cities. Of the reductions in passenger train service made at this time the greatest on any individual road in the region was on the St. Paul. The service of this line was reduced to the extent of 1,012,000 passenger train miles per year. The reductions on the North Western amounted to 816,000 train miles per year; on the Omaha, 299,000; on the Northern Pacific, 236,000, and on the O. W. R. & N., 179,000.

Operating Economies Introduced by Regional Staff

The staff of the Northwestern region is practically the same as that of the old Western region and has the distinction of introducing successfully new operating methods made possible through unified control of the railways. The train-lot system of handling freight and the marked economies effected through the short routing of cars were covered in considerable detail in articles of the *Railway Age* of May 24 and July 12.

The officers of the Northwestern region are now making an intensive study of possible economies in the handling of l. c. l. freight. The sailing day plan is being introduced in all the larger cities and merchandise is being consolidated over specified routes for designated destinations in order to insure the full utilization of cars and to eliminate unnecessary transfers. The staff of the region is also making a careful investigation of the terminal situation. Each large terminal has been put under a single manager and switching and freight-house facilities are being consolidated where prac-

ticable. The Northwestern region does not contain the network of terminals which one finds in the East, and, as a result, has been generally free from congestion. It does, however, contain the greatest railroad center in the world, namely Chicago. Such congestion as has been experienced has originated in that city. Railway operation in the Chicago switching district constitutes a most complex problem which is now being studied by the Railroad Administration.

The Regional Officers and Their Qualifications

The regional director and his staff are all men thoroughly familiar with the Northwest by virtue of years of experience on roads in that territory. The major officers of the region are R. H. Aishton, regional director; M. J. Gormley, assistant regional director; J. G. Woodworth, traffic assistant; L. S. Carroll, chairman of the regional purchasing committee; H. J. Bell, supervisor of safety; L. C. Gilman, district director of the Puget Sound district, and J. H. Brinkerhoff, terminal manager of Chicago terminal district. In addition to these regional officers there are several officers of the former western railroad region who still retain their jurisdiction over the roads in all three western regions. These include A. C. Johnson, chairman of the western freight traffic committee, and P. S. Eustis, chairman of the western passenger traffic committee, both of whom have headquarters in Chicago.

R. H. Aishton, regional director of Northwestern railroads is an executive whose rise has been particularly rapid in the last few years. After five and a half years as vice-president in charge of operation and maintenance of the Chicago & North Western, he was elected president in May, 1916, to succeed W. A. Gardner, deceased. In the spring of 1917 following the creation of the Railroads' War Board, he was appointed chairman of the central department district committee. His work on this committee put him in close touch with operating conditions on all the roads in the Central West and gave him experience that proved invaluable to him when, in 1918, he was placed in charge of all lines under federal control west of Chicago and the Mississippi river, as regional director of the Western region. When the western district was later subdivided he retained the northern third as regional director of the Northwestern region.

M. J. Gormley, assistant regional director, has been closely associated with Mr. Aishton as his assistant for many years. He first entered railroad service with the North Western at Eagle Grove, Iowa, in 1893, and was employed in various capacities in the track and building departments of that road for four years, following which he became stenographer to Mr. Aishton, who was then division superintendent at Boone, Iowa. He later accompanied Mr. Aishton to Chicago when the latter was appointed general superintendent. After service as chief clerk and five years as trainmaster he again became chief clerk to Mr. Aishton, then general manager. He subsequently served with Mr. Aishton as chief clerk and assistant to the vice-president and assistant to the president. During 1917, while Mr. Aishton was chairman of the central department committee of the Railroads' War Board, Mr. Gormley acted as general agent of the American Railway Association at military headquarters, Chicago, where he was responsible for the proper handling of troops and military supplies in that territory. When the railroads were taken over by the government and Mr. Aishton was placed in charge of the Western region as regional director, Mr. Gormley was appointed operating assistant. When the Western region was divided into three parts and Mr. Aishton was given charge of the Northwestern operating district, Mr. Gormley was formally given the title of assistant regional director.

J. G. Woodworth, traffic assistant to the regional director of northwestern railroads, has been for 13 years traffic man-

ager and vice-president in charge of traffic of the Northern Pacific. Thoroughly familiar with rates and rate structures in the Northwest, he was well fitted to assume his present duties.

L. S. Carroll, chairman of the regional purchasing committee of the Northwestern region, has for eighteen years been purchasing agent of the Chicago & North Western, with which road he has spent his entire railroad career. He still retains his position as purchasing agent of the North Western.

H. J. Bell, regional supervisor of safety, has been active in safety work on the Chicago & North Western for a number of years and was safety inspector at the time of his appointment to the Railway Administration. He has also been active in the National Safety Council and at present is chairman of the Steam Railway Section and a member of the executive committee of that organization.

Luthene C. Gilman, district director of the Puget Sound district in charge of operation in Oregon and Washington, is thoroughly familiar with transportation conditions in that

territory by virtue of years of experience there. Before taking his present position he was president of the Spokane, Portland & Seattle, the Oregon Trunk, the Pacific & Eastern, and the Spokane & Inland Empire with headquarters at Portland, Ore.

James H. Brinkerhoff, terminal manager of the Chicago terminal district, has been general superintendent of the Belt Railway of Chicago for the past five years, during which period he acquired a detailed knowledge of operating conditions in the Chicago terminals.

A. C. Johnson, chairman of the western freight traffic committee, with headquarters at Chicago, has been in the traffic department of the Chicago & North Western for nearly twenty years.

P. S. Eustis, chairman of the western passenger traffic committee, with headquarters at Chicago, has had 42 years of railroad traffic experience in the West. For 14 years he was general passenger agent of the Chicago, Burlington & Quincy, and since April, 1902, has been passenger traffic manager of that road. He was appointed chairman of the western passenger traffic committee early this year.

Railway Executives Advisory Committee's Report

Unqualifiedly Recommends the Acceptance of the Contract As Finally Approved by Director General McAdoo

THE FOLLOWING is the full report made to the railroad companies by the Railway Executives Advisory Committee on the standard form of contract between the government and the railroads. The report is signed by the chairman of the committee, Thomas DeWitt Cuyler.

The federal control act was approved by the President March 21, 1918, and immediately thereafter the Railway Executives Advisory Committee undertook, through its counsel, to negotiate with the representatives of the director general a standard form of contract between the government and the railroads. After more than five months of continuous negotiations, I am now able to lay before you the results. These are embodied in a draft of proposed "standard clauses," printed under date of September 5, 1918, and promulgated as the offer of the director general to the railroads. With this draft, I also transmit to you the reports of the law committee, which has been charged with the direct responsibility of conducting the negotiations. These reports, together with the draft of proposed contract, will give you an adequate conception of the course of the negotiations and of the results attained. You will, of course, appreciate that the problem was not an easy one, either for the representatives of the government or for the representatives of the railroad companies.

For more than 30 years every conceivable question relating to railroads had been the subject of political agitation and discussion and of sharp differences of opinion. There had thus grown up two distinct schools of thought, neither of which was willing to measure its conception of justice to the railroads by the standards of the other. Consequently the public official who was to act for both, had a wide divergence and acute conflict of opinion to reconcile and was confronted by a most delicate and difficult task. The problem was one not alone of business judgment and expediency. It had to be determined with due regard to a variant and critical public opinion.

Charged with these delicate and important responsibilities, the representatives of the government had a right to expect the utmost frankness and a broad conception of justice on

the part of the railroads. To indicate how this situation was met by our representatives, I make the following quotation from Mr. Thom's [A. P. Thom, counsel for the committee] letter of transmittal of the latest draft, which indicates the spirit which actuated Mr. Thom and his associates in the negotiations and their views and advice as to the result:

"At the outset we were confronted by the necessity of establishing with the representatives of the government a basis for successful negotiations. We realized that we could expect to make no progress if we adopted an attitude of narrow, exacting and irritating contentiousness, nor unless we established in the minds of the government conferees respect for the legal and moral soundness of our proposals and for the justice and reasonableness of our contentions. We did not conceal from ourselves the difficulty of securing from any governmental body the consideration of questions relating to railroads free from the prejudices and antagonisms engendered by 30 years of political agitation and discussion. We kept constantly in view the fact that the possession and use of our properties had, for the period of federal control, gone from us, and that the only chance, of practical value to us, to secure compensation from the government, depended on the federal control act, approved March 21, last, and on these negotiations. We felt it a very solemn duty to prevent the destruction incident to a rejection of the act as unconstitutional and to escape the chaos of litigation, in place of agreement, under it.

"We knew that the creation of an *impasse* between the government conferees and ourselves might eventuate in one or other of these results. We likewise knew that in the negotiations the railroads did not occupy a plane of equality with the government; that, in any matter of radical and irreconcilable difference, the public would be likely to accept the government's, rather than the railroads', point of view, and, under the patriotic impulse growing out of the war, would in all probability view with suspicion and would earnestly condemn any demands of the railroads which were rejected by the government as extreme and as indicating an unwillingness on their part to participate in the general sacrifice which the

war is imposing on every individual and on every business interest.

"We have, therefore, tried, throughout the negotiations, while adhering to a wise insistence on matters regarded by us as essentials, to avoid all unnecessary friction and, no matter how wide the differences at any moment were, to keep them within the possibilities of continued consideration and negotiation. Of course, matters of such momentous consequence and of such infinite detail, have called for great patience both on the part of the government conferees and ourselves. There is hardly a line in the proposed contract which has not been the subject of careful consideration, thorough discussion and deliberate negotiation. For more than five months we have been engaged almost daily on the matter. We have been obliged at times to put aside a special subject of negotiation as apparently unattainable, with the purpose of coming back to it at a later and more favorable opportunity. We have been good naturedly accused by the representatives of the government of using a concession made by them to us only for the purpose of pinning the matter down at that point and making it a new point of departure to secure additional concessions. We have been forced to admit the justice of this accusation, for naturally in many cases we have been obliged to depend on a growing and gradual appreciation of the justice of our views and of the validity of our contentions.

"In this way we have secured the proposal of a contract." [See *Railway Age*, September 6, page 435.]

Some Desirable Features Not Included

"It is true the contract as proposed does not contain a number of features which are desirable from the standpoint of the railroads. For example:

"(a) It does not reserve to the carriers a right to recover for a diversion of their traffic or a disruption of their working organization during federal control.

"As you know, we have never thought it possible, under the law, to sustain the proposition that we are entitled to such a reservation. In our opinion the agreed amount of compensation in contemplation of law covers these elements of damage, and, if we are not satisfied with the amount of the compensation we can get by agreement, we are at liberty to go into the Court of Claims where claims of loss from these causes will be considered and an award made which will recognize them. If we prefer an agreement, the President cannot, in cases which are not exceptional, give us more than the maximum prescribed by the statute, no matter how just our claim for a greater sum. In either event, the compensation, whether agreed upon or awarded by a court, covers and, in contemplation of law, pays for damage from loss or diversion of business and also from disruption of the company's working organization, which is of vastly more importance, if the properties revert to their owners, than the diversion of traffic. The legal question here involved has been referred by the railroad Administration to the department of justice and Solicitor General Davis has given a careful opinion, which is in harmony with the legal conclusions reached by the law committee and above stated.

"(b) It would be very desirable, from the standpoint of the railroads, to set a limit on the power of the director general to order additions and betterments for the company's property at its expense. The practical difficulty is that the power is conferred by the statute, and is not dependent upon contract. The director general declares that he does not feel it consistent with his duty as a public official to attempt to contract away a discretion in respect to so important a matter which Congress deemed it necessary in the public interest to confer upon him.

"(c) The most dangerous situation which, in our opinion, will confront the railroads at the end of federal control is a

large accumulation of indebtedness represented by demand or short term paper.

"With this danger in mind, we endeavored to secure the inclusion in the contract of a provision substantially as follows:

"It is the policy of the government to secure the permanent stability of the company's financial condition, to facilitate before the end of federal control the resumption of the company's normal operations in such a way as to place the company upon a sound, easy and safe financial basis.

"While it was not considered appropriate to make in the contract a declaration of policy on this subject, we have every reason to believe that the director general is fully alive to the necessity for dealing helpfully and constructively with this financial problem.

"With the results now known of the negotiations which have been so long pending, the law committee must meet the responsibility of advising either the acceptance or the rejection of the proposed 'standard clauses of the contract between the government and the railroads,' as set out in the print of September 5, 1918. We approach the subject on the assumption that it is proposed to pay, except in the cases for which the statute contemplates a more liberal treatment, the maximum amount permitted by the statute, namely, the average railway operating income for the three years ended June 30, 1917.

"On the one hand, the railroads are confronted with large discretionary powers in the government which we cannot get rid of or subject to reasonable limitations in the contract, and which, if unwisely or unjustly exercised, are great enough to result in very hurtful, or even destructive consequences to these properties. In estimating these uncertainties, we must remember that our government is engaged in a great war; that all of our people are expected to make sacrifices and take chances; that the government has, for war purposes, been vested with unprecedented discretionary powers in respect to every interest, individual and corporate; and that it is, in any event, our government, of which we are entitled to expect that there will be no wanton exercise or abuse of power.

"On the other hand, we must realize that we have already lost the possession and use of our properties for the whole period of federal control; that at present we are without any assurance whatever of compensation; that our hope of compensation must be based on this statute, or on another appeal to Congress, or on an attempted litigation outside of this legislation.

Appeal to Congress or Courts Inadvisable

"We cannot escape the conclusion that a new appeal to Congress is beset by such dangers of unfortunate and disastrous consequences as render that course in the highest degree unwise, and that litigation, either under the federal control act or outside of it, would involve such uncertainties and delays, and such impairment of security values during the period necessary to carry these cases through the courts, as to place litigation clearly outside the range of practical remedies. We cannot become responsible for the ruin likely to be the outcome of litigation. In this case a resort to the courts is no remedy.

"In our judgment we are impelled, by every consideration of prudence and wisdom, to find a solution of our problems in an agreement. We think it fair to assume that, after five months of unremitting effort and negotiation, and after the questions at issue have been carried before and personally passed on by the director general after argument, the standard clauses now presented embody all we can reasonably hope—certainly within any reasonable time—to secure by agreement, and we, therefore, without reservation advise the acceptance of the proposed contract."

"The Railway Executives Advisory Committee has given.

as the importance of the subject required, earnest consideration to the draft of the proposed contract and to the reports of counsel. The committee fully appreciates all that has been, or may be, said as to the extent and unrestricted character of the powers conferred upon the railroad administration by the federal control act; as to the disorganization of business and of the working personnel which may and probably will follow a period of prolonged governmental control and operation; and as to the financial problems which will have to be met in the period of recovery and reconstruction afterwards. These considerations, however, no matter how important, must not cause us to lose sight of the great and controlling facts of the situation.

"We must not forget that the powers referred to were conferred by an act of Congress and cannot be gotten rid of except by a judicial declaration that the act is unconstitutional. But the act furnishes the only method yet devised to secure the railroads compensation for the possession and use of their properties, which have gone from them for the period of federal control. They are, therefore, interested beyond all others in having the act stand and in avoiding all assaults upon its validity.

"Nor must we forget, in respect to the claim of damage for disruption of business and disorganization of the working personnel, that the government's contention holding that such damage is, in contemplation of law, included and paid for in the amount of agreed or awarded compensation, is sustained by the highest legal authority of the government itself and by the unanimous opinion of our own legal representatives. These lawyers have attained their present positions in competition with the entire American bar, and their opinion cannot be lightly disregarded. A governmental contention, sustained by such convincing authority, can scarcely be considered as palpably unjust or unsound. Controversy in respect to it is not inviting. Even if the claim for damages were valid, it would be of little practical value, because, in the first place, of the difficulty of proof, and, secondly, if a judgment were obtained, of securing an appropriation from Congress to satisfy it.

"The alternative of receiving, pending litigation, 90 per cent of the estimated standard return, with the privilege of having the amount of the compensation determined in the Court of Claims does not, in the opinion of this committee, afford a practicable remedy. In the first place, by the terms of the act, it is entirely within the discretion of the director-general whether or not to allow the 90 per cent. If it be accepted, the acceptance constitutes also an acceptance of all the terms of the act. If the director-general does allow it, in pursuance of his discretion, it becomes subject to any offset or deduction the government may at any time elect to make to reimburse itself for debts due it for additions and betterments or otherwise.

"It is hardly to be expected that the director-general will pay the full 90 per cent if he is to be confronted with claims to be asserted in litigation against him for unknown amounts.

"Very few of the companies can stand a deduction of 10 per cent, even temporarily, on their standard return without serious embarrassment. And the time required to carry several hundred of these complicated cases through the courts will cause infinite delay in arriving at a final conclusion, and meanwhile the whole financial structure of the railroads will be subjected to a period of most harmful uncertainty with its destructive consequences.

"The financial problems which will have to be met when the properties are returned to us must receive serious consideration. They, however, naturally arise out of the situation, except as they are, in some degree, the outgrowth of the excessive powers conferred upon the railroad administration by the act of Congress. As these powers were not conferred for purposes of oppression, but were deemed necessary for the

efficiency of the railroads in a time of great national peril, we must assume that they will be fairly and considerably exercised. There is nothing in the declared attitude nor in the record of those responsible for the administration of the railroads, to justify apprehension of a reckless disregard of justice or of sound financial principles. Indeed it may be doubted whether the financial uncertainties which confront the railroads are, under the conditions mentioned, notably greater than those which every other business interest and every individual has to face in these times of universal danger.

"We must remember that the nation is engaged in a great war. War cannot be successfully conducted without concentration of power. When, in the national interest, every household is entered by the national authority and the treasures of its manhood are commandeered for the national safety and defense, no business interest can expect or desire to stand immune and demand absolute safeguards before it is content to assume its share of the risks and sacrifices which in fairness should be universal.

The Advantages of the Contract

"It is true that the railroads have been taken from their owners for the period of the war and a reasonable time thereafter. But Congress promptly passed an act to assure the owners of compensation for the possession and use of their properties thus taken over. We are offered a contract guaranteeing us an amount of compensation equal to the best results we could ourselves secure from the management of our properties on the average during a test period of three years. It cannot be denied that we are thus relieved, to an appreciable extent, of business risks and uncertainties, with which war conditions had confronted us.

"In the contract we are assured that, no matter how great our indebtedness to the government for deferred maintenance which we should have, but did not, put upon the property while we were charged with the responsibility of operation, or for additions and betterments which we should provide for our properties to meet our public obligations, the government will not exact payment for itself until after our corporate organization is supported and our sinking funds, taxes, rentals and interest (which together may be classed as our current mortgage obligations) are provided for.

"It gives us the government's obligation to maintain our properties during federal control up to the same standard we ourselves adopted when we were charged with the duty, and to return them at the end of federal control in like good order and condition.

"It provides remedies by means of which we may recover for any loss sustained through an ill-advised governmental requirement as to additions and betterment expenditures.

"It gives us guarantees against forfeitures and loss arising out of contracts or duties violated because of federal control or other government action or omission.

"It creates a working system of accounting and payments, of supervision and inspection, and methods and details for the restoration of our property and the payment to us of debts at the end of federal control.

"It is needless to undertake to recite all the contract provisions or to go into them more in detail. The proposal of the government sets them out in a way in which they can be readily understood and from which their merits or demerits may be readily judged.

"It does not give us in the way of contract protection all that we deem ourselves entitled to have, but the matters not conceded to us lie within the region of a fair difference of opinion and are negligible in comparison with the larger interests which have, to a substantial extent, been safeguarded.

"We have the choice between the acceptance of this contract and the guarantee it gives of immediate compensation, on the one hand, and its rejection and a resort to litigation on the other. This committee cannot regard litigation, with its

attendant uncertainties and delays, as a practical remedy in the circumstances, and cannot consent to become responsible for the disorder in our national finances and the weakening of the nation's financial power which would inevitably follow. If there is to be litigation the responsibility for it must rest elsewhere.

"In the opinion of this committee, enlightened self-interest and the dictates of patriotism alike require the acceptance of the proposed contract, and the committee without doubt or hesitation so advises."

Employers Asked to Co-operate in the Selective Draft

PROVOST MARSHAL GENERAL CROWDER has addressed a statement to employers throughout the country, enlisting their cooperation in connection with the classification of the men who will register September 12, in part, as follows:

"The time has come when I must address to you some recommendations as to your share of responsibility in the classification of the new registrants under the selective service act. I have noticed, in the general expressions of the public attitude which reach this office, two frequent features which lead me to the present comments. One of these features is the belief that the process of awarding deferred classification to a registrant requires merely the filling out of the questionnaire, and that the selective service boards will perceive the propriety of making the deferment, without the assistance furnished by the registrant's formal claim indicating the deferment desired. The other feature is the employer's failure to realize his responsibility to intervene in aiding the board's determination, and therefore to inform himself fully on all the considerations which should affect the decision as to deferment. Both of these features are due to a single larger fact, viz., a failure on the part of many to reflect on the industrial considerations governing deferred classification.

1. As to the first mentioned belief, it must be pointed out that if it were universally acted upon, the process of classification would be seriously hampered and delayed. Some one must indicate that the individual case is one which should arrest the special attention of the boards in respect to the registrant's occupational status. The boards do not possess a superhuman omniscience. Nor are they permitted by circumstances to devote unlimited time to the search of questionnaires for possible grounds of claim. In 1917, out of more than 3,000,000 registrants called, only 140,000 filed occupation claims, or 4.7 per cent; thus 95 per cent of all registrants raised no question of such deferment. Under the questionnaire system the exact scrutiny of every page of this 95 per cent of questionnaires presenting no occupational claims would have been an intolerable expenditure of time, involving a delay fatal to the speed and decisive action necessary for filling the army.

The boards will do all that they possibly can, on their own initiative, to reach a just decision by a complete examination of the questionnaire even where no claim is expressly made. A registrant is therefore at liberty, if he sees fit, to trust to the scrutiny of the boards to discover the necessity for his deferment. Nevertheless, the boards will welcome and will need all the aid that can be furnished by the indication of a claim made for deferment. With this aid, the process will become a simple and speedy one. Time and labor will not be wasted on needless search; and ample time will be gained for thorough attention to those cases explicitly raising a question of occupational deferment.

But who is to make that claim? Ordinarily, the registrant himself will indicate the claim on his questionnaire. But if, through mistaken chivalry, he should fail to do so, another

may make it for him. In industry, agriculture, or other occupations, this other person will naturally be his employer or some other representative of his associated group. And this brings me to the second feature above mentioned.

2. Why should the employer, or other third person, in such cases, make the claim? Because the employer in this situation represents the Nation—because (in the statutory phrase) "the maintenance of the military establishment or of national interest during the emergency" requires that some well-advised third person should look after that national interest, which the registrant himself may not have sufficiently considered.

It is at this point that I wish to address to employers (and other representatives) the suggestion that they charge themselves, more systematically than hitherto, with this responsibility. I have above referred to such third persons as "well-advised," and this is the place to emphasize to employers the importance of making themselves well advised for the execution of this duty.

How many employers, having charge of some industrial or other occupational group, have hitherto taken pains to inform themselves systematically which of their employees are registrants and which are not? How many have studied carefully the required conditions for occupational deferment, as laid down in the President's regulations pursuant to the statute? How many have made it a point to survey their entire plant so as to single out the really indispensable individuals? With the oncoming of a more extensive registration, an even larger outlook is necessary. The general industrial conditions, the supply of skilled men in the industry at large, the possibilities of training substitutes, the availability of women workers—these are some of the considerations which bear directly on the need of occupational deferment as related to the need of the army.

Moreover, it is often forgotten that the selective draft is only one element in the depletion of a particular industry's man-power. A second and large element is found in the voluntary withdrawals for enlistment; how large this is may be seen from the circumstance that the total inductions by draft have reached some 2,000,000, while the total enlistments in army and navy amount to some 1,400,000—nearly three-quarters as many. A third element, very large, but unknown as to its precise extent, has been the transfer of labor power from one industry to another, i. e., into the distinctively war-industries offering the inducement of higher wages. How relatively small, in actual effect, has been the effect of the selective draft is seen in the fact that, for all the occupations represented in the 8,700,000 classified registrants of January, 1918, the percentage of the entire industrial population represented by the Class I registrants amounted to only 6 per cent. It ran as low as 3 per cent for some occupations, and correspondingly higher for some other occupations; but the national average was only 6 per cent. Any notably larger depletions in particular industries must therefore have been due, partly to enlistments, and in probably greater degree, to voluntary transfers into other industries.

These other influences are therefore to be kept in mind by employers and others, in weighing the question whether the best solution, in the national interest, is to ask for the deferment of individuals or groups of men. Such deferments may assist the immediate situation in the particular establishment; but they merely force the army and the navy to seek elsewhere for the same number of men thus deferred. The quantitative needs of the military forces are known and imperative; and any given quantity of deferments will ultimately have to be made up by the depletion of some other occupation. Thus, it becomes the employer's duty to consider these largest aspects of deferment, in seeking that solution of his own problem which best comports with the national interest.

My present object is to urge upon employers the duty and responsibility of becoming well advised in all these matters;

of equipping themselves with full information as to the extent to which their particular establishment is affected by the liability of registrants to military service; of observing the extent to which other influences of depletion have affected it, and the degree in which other methods of supply can relieve that depletion; and of laying these facts and other pertinent ones before the industrial advisers now to be placed at each district board, to the end that those individuals or groups who are indispensable and irreplaceable would receive deferment,

whether or not they have made claim for it, and that the army and the navy should not be deprived of its proper supply of man-power by ill-considered deferments not absolutely demanded by the national interest.

General Crowder has issued complete regulations for the handling of claims for deferred classification for industrial reasons and has also announced that the first calls will be from the age classes 19 and 20 and 32 to 36 years, inclusive.

Valuation Report on the Winston-Salem Southbound

Decision of the Interstate Commerce Commission Follows Previous Findings on the Texas Midland

THE INTERSTATE COMMERCE COMMISSION has issued a report on its decision of August 8, with respect to the valuation of the Winston-Salem Southbound. The general trend of the decision follows very closely that previously given on the Texas Midland, and frequent references are made to the earlier decision. An abstract of the earlier report appeared in the *Railway Age* of August 30, page 377. However, certain matters of controversy not enlarged upon in the earlier report are discussed at some length in the Winston-Salem decision.

The commission found the original cost to date of the property to be \$5,197,452. The cost of reproduction new was placed at \$5,356,836 and the cost of reproduction less depreciation at \$4,966,922. The investment in road and equipment, as stated in the books of the carrier on June 30, 1915, was \$5,598,557.73. By certain adjustments this was reduced to \$5,526,187 for road and equipment, including land, and \$29,357 representing non-carrier land. The cost of reproduction values are shown in greater detail in the following table:

SUMMARY, ENTIRE LINE—87.700 MILES OF MAIN AND 2.98 MILE BRANCH LINE

Act. No.	Classes	Cost of reproduction, new	Cost of reproduction, less depreciation
I. ROAD			
1	Engineering	\$30,534	\$2,534
3	Grading	1,705,276	1,243,858
6	Bridges, trestles and culverts	1,013,889	541,809
8	Ties	189,970	96,916
9	Rails	521,678	492,481
10	Other track material	104,586	87,498
11	Ballast	766,635	258,363
12	Tracklaying and surfacing	151,884	163,786
13	Right-of-way fences	768	477
15	Crossings and signs	133,385	140,649
16	Station and office buildings	121,168	110,898
17	Roadway buildings	19,484	12,658
18	Water stations	37,833	33,848
19	Fuel stations	12,987	9,278
20	Telegraph and telephone lines	37,319	31,197
27	Signals and interlockers	11,284	10,111
35	Miscellaneous structures	41,670	35,420
37	Broadway machines	715	265
38	Roadway small tools	1,827	827
48	Other physical property	665	499
Total, 1 and 3 to 48 inclusive		\$4,743,308	\$4,367,041
II. EQUIPMENT			
51	Steam locomotives	87,075	65,283
53	Freight-train cars	175,365	145,598
54	Passenger-train cars	14,120	10,583
57	Work equipment	15,605	11,162
Total, 51 to 58, inclusive		\$292,165	\$232,626
III. GENERAL EXPENDITURES			
76	Interest during construction	\$290,813	\$271,301
All other general expenditures accounts		70,550	65,964
Total, 71 to 77, inclusive		\$361,363	\$337,265
Grand total, 1, and 3 to 77, inclusive		\$5,356,836	\$4,966,922

As in the earlier report, the large part of the space was devoted to a discussion of the protests of the carrier and others. Portions of the report are abstracted below.

Original Cost to Date

It is claimed by the carrier in its protest that the amount of original cost to date stated is less than should be shown by reason of the failure to include certain items of actual expenditure, e.g.: (1) Road and equipment; preliminary surveys; services of the general officers of the proprietor companies; superintendence; use of work equipment, interest and other costs, furnished and paid by the proprietor companies and not charged on the books of the carrier, and (2) Land: Proportion of salaries and expenses of general officers in connection with the purchase of land, and proportion of salary and expenses of attorney in right of way matters.

It is shown in the accounting report that the carrier presented a claim that the survey in question was made in 1892, some 13 years before the carrier was chartered. Many years have intervened since these claimed costs were incurred; they have never become an account stated. Nor, as far as this record shows, have either of the proprietor companies ever presented a claim against the carrier for any part of the sums stated. We see no reason to set aside the contemporaneous interpretation placed upon the transaction by the parties.

It is protested by the carrier that the tentative valuation excludes any allowance for working capital, and that \$70,000 should be included for this purpose. The accounting report, which is a part of the tentative valuation, shows that on valuation date the carrier had on hand \$58,468.25. The character and amount of the carrier's other current assets also appears in its general balance sheet, which we will carry from the accounting report into the final valuation.

Cost of Reproduction New

The carrier protests the use of quantities as of 1915, in connection with unit prices as in 1914. The prices employed by the bureau of valuation are not the exact prices which were necessarily in effect upon the precise date, June 30, 1914, but were fixed with relation to that date in such a way as to produce normal prices for periods ranging from 5 to 10 years prior thereto.

We can not shut our eyes to the fact that the effect of the breaking out of the European war was to demoralize the markets for labor and material, so that prices current on that precise date, June 30, 1915, or over a period of time which would reflect the effect of a war which has largely monopolized the labor and material market to the exclusion of private industry, can not in any sense be said to represent normal or fair values.

With respect to lands, however, as to which the cost-of-reproduction theory is not applied, the values of which do not fluctuate wildly with war, and as to which present value is

the criterion, a different situation is presented, and we have employed values as of the date of valuation.

Railroad Crossings

It is protested by the carrier that the tentative valuation omits certain items of property owned or used by the carrier. These are detailed as (1) property owned or used, constructed at the carrier's expense, such as overhead crossings with other railroads, 50 per cent of the grade crossings with another carrier, and a certain spur and coal trestle, and (2) property owned or used, but not constructed at carrier's expense, of which the tracks and facilities of other carriers at certain points, equipment of other carriers, private car lines, etc., are specified.

It has been the practice of the bureau of valuation to apportion the estimated costs of reproduction in accordance with any agreement as to ownership of property of this character which the interested carriers may make. Failing such agreement, the cost of reproduction estimates of the junior carrier omit, in the case of under-crossings, anything for the assumed reproduction of structures used entirely for the passage of the trains of the senior companies; but the cost of reproduction estimates of every junior carrier includes the estimated cost of reproducing the property exclusively used by it. One-half of the estimated cost of reproducing property commonly used by both carriers, such as crossing frogs, is carried into the tentative valuation of the southbound company. Such practice has been followed in the tentative report in this case.

The carrier contends that if it be assumed for purposes of determining the cost of reproduction that other railroads exist as of valuation date, then as a matter of theory it must be assumed that the identical structures which the Southbound company as the junior carrier was obliged to construct would likewise have to be constructed in reproduction. The method followed in the tentative valuation does in fact contemplate the assumed existence of the railroads as crossed, and gives full credit in the cost of reproduction estimates for whatever is shown to be owned by a carrier, or occupied and used by it, while showing, as a historical fact for whatever it may be worth, the expenditures in fact made by the carrier in original construction.

Contingencies

The general nature of the contingencies for which claims are made may thus be stated: (1) Amounts paid the contractor for a release of contracts when, after construction had begun, the manner of doing the work was changed; (2) disputed items of yardage not calculated in certain cases; (3) yardage of earth rehandled because an apparently suitable borrow pit, partially utilized, was found to be unsuitable; (4) change in alignment found desirable after work had been started on the location originally fixed; (5) grading commenced, but not completed, for connection with another carrier, upon land owned by the carrier, the project being indefinitely deferred; (6) a trestle which was started for drainage purposes and which the carrier was afterwards permitted to fill. The protest also excepts to the omission to take into consideration as a necessary item in the reproduction program property which in fact was acquired in original construction but was abandoned by reason of proper and reasonable changes of plans due to changed conditions during construction. It is not contended by the carrier that all such items, so far as they relate to the construction of the carrier's property, are not taken into account in the statement of original cost to date.

Obviously it can not be assumed that in theoretical reproduction of the property these contingencies would occur, and no sum should be included in the estimate of cost of reproduction now in the valuation, because of such past occurrences.

Interest During Construction

The carrier protests that the engineering program for reproduction, adopted as the basis for the tentative valuation, is too short. The length of the construction program assumed bears directly upon the amount which is to be included in the reproduction estimates for interest during construction. This railroad has a main line about 88 miles in length, with a branch about 2 miles long. The carrier claims that to reproduce the railroad would require approximately eight years. Construction was in fact completed in about two years. It appears from the record that except for reconnaissance and preliminary surveys, for which nine months was estimated as necessary, the road could be constructed, from the letting of contracts to the putting into operation, within two years. The interest shown in the reproduction estimates in the tentative report was reckoned for one-half of the construction period assumed by the engineers of the commission. Interest was computed on the equipment accounts at the same rate for a period of 3 months.

Subsequent to the service of the tentative valuation, in view of the desirability of a railroad under construction having on hand a certain amount of money upon which to draw for its expenditures during such process, the bureau of valuation recommended that interest during construction should be computed upon the road accounts enumerated and general expenditures at the full rate for half the construction period plus three months. Equipment being usually brought only when the road is practically completed interest was estimated in the tentative valuation for three months, and the recommendation of the bureau did not change this amount.

No interest has been included in the reproduction estimates contained in the tentative report on account of the cost of land. The non-allowance of interest on the present value of land in the reproduction estimate conforms to the holding of the Supreme Court in the Minnesota Rate Cases, 230 U. S., 352, 455.

Development Cost

It is contended by the carrier that in correctly estimating the cost of constructing, completing, and equipping a going railroad there must be added to the cost of construction and assembling an amount to cover the cost of developing the business. Computations were presented which purported to show that after the road was opened to traffic in 1911 until the date of valuation, June 30, 1915, the results of operation had been a deficit of more than \$410,000, which deficit did not include all the interest actually paid. Computations were also presented, representing the total development cost claimed by the carrier, amounting to \$853,591. It is insisted that this figure must be added to the cost of reproduction, in order that the result will reflect the true cost of reproducing the property in the condition existing on valuation date.

The valuation amendment requires us to ascertain the cost of reproduction new, and not the cost of reproduction in any other condition. By the method pursued by the bureau of valuation in ascertaining quantities, such costs in the early years of the enterprise as resulted in permanent increases to the property, are all discovered and taken into account.

It appears from the offer of testimony by the carrier as to development costs that all the data requisite to the computation thereof appear in the accounting report appended to the tentative valuation.

Whether, in fixing a value for purposes under the act to regulate commerce, we should increase the cost of reproduction by the amount of deficit which the carrier may have incurred during the early years of the enterprise, will be a proper consideration when we come to state a single sum as value of the common-carrier property for such purposes. That question we leave intact. As stated, in the final valuation herein made we have the basic facts. The record herein shows no other values or elements of value.

Efficiency in the Handling of Railway Supplies*

PART II. Line Stock, Ordering Material, Surplus and Obsolete Material, and Inventories

By Charles E. Parks

Assistant Editor, The Santa Fe Magazine, Chicago.

Line Stock

THE VALUE of all material on the Santa Fe is carried in the store department accounts until it is actually applied, that is, instead of charging it direct to operating and addition and betterment accounts in large amounts when it leaves the storehouse or is shipped to the work by outside firms, it remains in the store department account until it is actually used and so reported by the foremen doing the work. This situation has given rise to what is known as line stock, so called because the material is distributed at various points along the line for the convenience of the operating department.

Line stock corresponds to the mechanical department working stock and consists of the following material: Steel bridges, lumber, and track material, including frogs, switches, switch stands, guard rails, tie plates, rail anchors, rail joints, bolts and switch ties. While this material is widely separated and not directly under the supervision of the storekeeper, he is as responsible for the condition and accounting of it as though it were in the storehouse. On some divisions this line stock is located at a dozen or more points; on others it is located in two or three material yards, but it is the general policy to have it located near section toolhouses and in material yards. These material yards correspond with the mechanical department's substores.

The difficulties connected with line stock are largely of an accounting nature. They include the inability to make a proper inspection due to the inaccessibility of the material and the time which must be consumed in checking it. This is usually done by the storekeeper on a local train, the supply train or on a motor car. Other difficulties met with are the failure of track and bridge and building foremen to report the material used; the delay in receiving requisitions, resulting in a failure to include in the current month's accounts; and the failure of those interested to keep the material properly piled and free from surplus and worn out articles.

The first difficulty has been met by concentrating the main items at central points, leaving only the tie plates, and necessary bolts and spikes at section headquarters. These are sorted, piled, marked and located near the section toolhouse. This permits the storekeeper to check the main items monthly and a complete check of each section is made conveniently at each inventory period. The second difficulty is met by educating section foremen on the importance of rendering accurate reports. The division superintendent's approval is final and the requisitions are now forwarded to the storekeepers on time.

Accounting for Line Stock

Line stock was established with a view of determining when and where the class of material covered may have been used—whether in main or yard tracks and what weight and kind of material was released. This information is required for three principal reasons:

(1) To determine the increased weight or cost of track material applied over that released as a basis for the charge to additions and betterments.

(2) To separate the cost of track material applied to yard

tracks from main and passing tracks so as to comply with the requirements of the Interstate Commerce Commission in respect to dividing operating expenses between freight and passenger.

(3) To obviate the objection of charging the value of material to the accounts at the time it is issued from stock, when in reality it may be on hand unapplied at the end of the current month or even the current year.

It had been the general practice of the Santa Fe to charge out the value of this material when issued from stock, with the results that operating accounts for the current month or year were charged with the value of material still on hand unapplied at the close of the month or year. It is the custom of many other railroads to charge material to superintendents' or master mechanics' suspense accounts to be distributed by them. While this plan has the advantage of including the charge in the accounts for the month in which the material is used, it has the disadvantage of taking the material out from under the custody and supervision of the storekeeper. The stock books under this arrangement do not reflect all unapplied material on hand, do not permit of diverting the surplus material, and, as a rule, require large inventory adjustments.

In order to overcome the objections from the accounting standpoint of charging out the material when it was issued from stock of this class of material, the "line stock" account was authorized. It is not intended that the reserve stock of track material held at storehouses be carried in this account, but only that held for immediate use located in material yards, tool houses and other places along the line. Spikes are not carried in this account except for large addition and betterment jobs, nor broken kegs of bolts on hand at section toolhouses, but all other track material mentioned is carried in the account.

Section and bridge and building foremen's timebooks reflect the material used and requisitions are made from the information contained therein. They are then sent to the division storekeepers after being approved by the superintendent. Division storekeepers keep a stock record of all material carried in line stock on their territories. This record is based on an inventory and shows the location of the material, the quantity, the receipt, issues and balance on hand. As the monthly requisitions are received, the requisition numbers are recorded as well as the material issues. In this way a complete record of the material carried in the line stock is had.

Inventory of line stock is taken three times a year. Division storekeepers handle the adjustment by securing requisitions covering any shortages and submitting forms showing material returned to stock for any serviceable material released, or, in the event of new material, seeing that shippers' invoices are passed in the current inventory month and that invoices are received covering any transfers between divisions.

Tie plates are charged out by the general stores, a tie plate statement covering all tie plates inserted during the month, received, transferred and on hand, being submitted monthly to the general line storekeeper, together with requisitions covering all tie plates inserted during the month.

*The first article was published in the issue of September 6, 1918, page 4-5.

Ordering Material

Accurate methods of ordering material have a very appreciable effect on the net operating income of a railroad and result in the economical use of supplies, the lessening of waste and the consequent reduction in operating cost. The failure of a store department to supply the necessary material when it is needed is the cause of untold amounts of concealed loss annually and one of the principal contributing factors to this delay is faulty methods of ordering. Accuracy in delivery is perhaps the principal element of successful store-keeping and this is directly dependent upon accuracy in ordering.

Requisitions. The connecting link between the store department and all other departments of a railroad is the requisition. On the Santa Fe there are only three forms of requisition, as follows:

Form 1071: This is originated by the mechanical department for material required for shop and roundhouse use.

Form 1109: Largely used by the operating department for material required in maintenance of way and structures, addition and betterment and construction work, and by the mechanical department for all tools required.

Form 1110: A store department form for use by division storekeepers in ordering material from the general store, and by the general line stores in ordering from the system stores.

A correctly written requisition is the first step to a prompt and accurate delivery and one of the gravest problems of a railway store department is to secure from the maker of requisitions accurate specifications, correct blue prints and pattern members and proper catalogue reference. This information is necessary whether the material is supplied from stock or whether it is purchased.

In order to insure complete information being shown on requisitions submitted to the store department the only method which the Santa Fe has been able to develop is to conduct intermittent campaigns of education with this end in view. This has been done by letter, by personal instructions, bulletins, meetings and publicity of the question in the employees' magazine. While the results produced have not approached the millenium in requisition making, nevertheless a great improvement has been made in the character of the requisitions submitted.

Errors due to incorrect blueprint references are a great source of trouble in delivering material. It is necessary for the store department to recheck all requisitions, not only to insure correct pattern numbers, but also blueprint references. In order to do this properly all general stores are equipped with a blueprint room containing a complete set of locomotive, car, bridge and building, and track drawings, also shop cards, indexed and filed in the order of subject matter. This facility enables the general stores to expedite the checking of requisitions received from local stores that are not provided with drawings, as well as enabling them to check the finished material when received.

Substituting Material. When requisitions lacking proper catalogue reference for material to be ordered are returned to the originator, such actions result in delay to the material and additional expense in handling. The Santa Fe store department does not make a practice of substituting material without first obtaining the consent of the originator of the requisition, it being a policy of the department to meet all demands as to kind, character and quality of material wanted. This has been found to be the best and most economical practice, giving satisfaction to the user of the material and at the same time permitting the store department to work off a surplus and thus preventing it from becoming scrap. By substituting material where practicable, the Santa Fe has materially lessened the value of the material that had been bought and paid for but which it would ordinarily have to throw into the scrap pile.

Surplus and Obsolete Material

A railroad store department is equally as interested in preventing a collection of surplus and obsolete material as it is in preventing a shortage. Surplus is merely a synonym for extravagance and obsolete for waste. The value of this class of material is only a part of the unnecessary expense connected with it, as it must be handled, stored, hauled, insured and taxed, all of which are additional charges.

The problem of preventing and disposing of this material has been thoroughly investigated on the Santa Fe and on foreign lines with the result that the store department is now handling it in a very satisfactory manner. The accumulation of surplus and obsolete articles in storehouses is due to several conditions, among which are the transferring of power, changes in standards, the lack of co-operation received from the other department heads, and the failure of local storekeepers to keep in touch with their stock books and surplus reports.

Surplus due to transferring power from one division to another has been remedied by receiving advice of such transfers from the mechanical department, so that the material now used to protect certain classes of power on one division is transferred when the power is transferred. Changes in standards brought about by weakness of material, retrenchment, legislation or other causes have been a prolific cause of surplus and obsolete material. This condition has been largely remedied by notice in changes in standards being submitted to the store department by department heads interested at the time the changes are first contemplated. The storekeeper then prepares a list of the material which will become obsolete and submits it to the other department interested. The latter then decides whether to use the old stock, remake it or scrap it. If it is decided to use the old material before introducing the new, the requisitions are closely watched and delivery of the new material refused as long as any of the old material is available. In order to insure this being done, report is made to the general storekeeper covering the articles on hand that have been made obsolete. In many cases the major portion of the stock is transferred to the general store as soon as information of the change of standards has been received.

When it is decided to apply the new standards as soon as the material is obtainable, the store department generally has no discretion as to the handling, except to ascertain whether or not the old material can be converted to other uses.

Disposing of surplus and obsolete material is not difficult. Storekeepers report monthly to the general storekeeper all surplus and obsolete material on hand. The latter is then in position to transfer the surplus where a shortage exists on another division, or he may apply it on requisitions. If no disposition can be made of a local surplus, if standard material, it is concentrated at the general store of each system line and special items concentrated at the general system store in Topeka. This permits of it being closely watched and checked with all purchasing agents' orders and often the material can be substituted for something that had been ordered purchased. The saving effected on only a few items thus substituted will more than pay the transportation charges of the surplus material. Some obsolete material is scrapped, especially locomotive and car castings and brass. Some of it is re-worked when the cost of re-working does not exceed the cost of a new article. When no disposition can be given of obsolete material it is reported as being on hand continually, until it eventually finds its way to the reclamation plant.

By these means most gratifying results have been attained in reducing the amount of surplus and obsolete material on hand. The stock on the Santa Fe is clean and used, rather than simply inventoried from year to year.

Material Returned to Stock

A vast saving is effected on the Santa Fe each year through the practice of returning to stock all new and second-hand material unapplied and not required for immediate use, and by a systematic accounting for this class of material. This saving is represented by the difference between the cost of the new or second-hand material and its scrap value. A careful check is made by the store department of all material offered for credit to prevent an accumulation of obsolete stock and the burdening of the store accounts with worthless material. For this reason no obsolete material or material requiring too expensive repairs is accepted for credit but is scrapped. In case of controversies over the value of material offered, a joint inspection is made by the storekeeper, master mechanic, superintendent or the superintendent of shops, but the store department reserves the right of final decisions as its accounts must bear the burden of the article.

Accounting for material returned to stock differs from accounting for directly purchased articles in that payment is made in the form of a credit entry in the account to which the value of the article had been previously charged instead of a payment in money. All material returned to stock must be accompanied by a transmittal notice properly made out. This notice is used by the store department as an invoice and is given the same care and attention as is given a manufacturer's invoice. It performs the same functions as an invoice, as the stock it represents stands as an asset to the store department the same as new material bought from manufacturers. This form is required to be made as complete as a requisition, showing a list of the material offered for credit, the pattern number, size, quantity, and catalogue reference, and also the date, division, account or engine to receive credit. If the material is accepted by the storekeeper the form is priced and a copy of it returned to the head of the department in which it originated to be included in his monthly credit bill. If the material is not accepted the form is returned with a proper notation. At the end of the month all these forms are charged to the store stock account.

The practice of returning serviceable material to stock has so improved under correct management that, whereas a few years ago 60 per cent of the material received at the reclamation plant was serviceable, now only about 6 per cent can be so classified.

Inventories

Inventory of all material carried in stock on the Santa Fe, with the exception of line stock and mechanical department working stock, is taken annually. These latter stocks are taken three times a year. Inventory of miscellaneous material and supplies, including material in storehouses, storage platforms and material yards, material in process of manufacture on shop orders, stationery, ice and fuel is taken by actual count, measurement or weight of every item carried in stock and recorded on printed inventory sheets in triplicate. Printed inventory sheets offer the same advantages as printed stock books, as they are arranged according to the standard classification and in the order in which the stock is stored. They contain a description of the article, the unit of measure, price, quantity, weight and amount.

The prices used on inventories must be supported by entries in the standard price book which are based on the latest invoices, and must show clearly whether based in price per pound, hundred-weight, dozen, etc. All pricing, extensions and footings are made by the store taking the inventory, except on special inventories when the pricing and extension are done by the general store. A recapitulation of inventories is made by sections, followed by a grand recapitulation of the sections. Adjustment sheets showing material paid

for prior to inventory but not received until later, material issued from stock prior to inventory but not charged out, and material received prior to inventory but not paid for must accompany the inventory sheets.

The inventory of rail and new cross ties is taken by section foremen under the supervision of the division superintendent. All rail, whether new, second-hand or scrap, is inventoried by length and sectional weight, the number of pieces of each length of each sectional weight being shown. New cross ties are inventoried under four or five classifications based on the kinds of wood. After the inventory has been taken by section foremen and recorded by them on special blanks provided for this purpose it is checked by division storekeepers, roadmasters, and division accountants. That is, the inventory books are collected personally by these officials and the entries verified by actual count on each section. Any discrepancies found are adjusted on the spot. The books are then forwarded to the superintendent, where they are footed and extended, a recapitulation by sections, districts and a general recapitulation of the rail and ties on the division made. An inventory of line stock is taken at the same time as the inventory of rail and ties and is checked and recapitulated in the same manner.

All inventories are forwarded to the line or general storekeeper, who checks all footings and extensions, investigates all discrepancies between the inventories and book balances, makes general recapitulations and certifies as to their correctness. The inventories are then forwarded to the auditor of disbursements and all adjustments of stock books is made on the inventory basis.

Modification of Contingent Fee Warranty Expected

THE RAILWAY BUSINESS ASSOCIATION, through its secretary, Frank W. Noxon, has sent to its members a letter entitled, "Railroad Administration Will Ask for Modification of Contingent Fee Warranty." The letter follows: "H. B. Spencer, chairman of the Central Advisory Purchasing Committee, authorizes me to say that the Railroad Administration has decided to urge upon the Department of Justice a modification of the warranty against contingent fees which would enable the railroads to deal with regularly accredited commission agents.

"The law department of the Railroad Administration is preparing a proposal designed to meet the complexity and decentralization that distinguish conditions in railroad buying from those affecting commodities already exempted from the warranty—namely, textiles for the army quartermaster and coal for various departments. Probably the plan to be submitted will provide for a certificate from the manufacturer that the commission agent is his bona fide representative.

"The attorney general has maintained the position that he could consider requests for modification only when the petitioner was the government department involved. It was upon the motion of the War Department and of the Fuel Administration respectively that the modifications already made were sanctioned."

THE CEUTA-TETUAN RAILWAY was officially opened in the third week of May. The line is narrow gage and has a total length of 25 miles between Ceuta, Morocco, and Tetuan, mostly over a level plain; five tunnels of a total length of nearly half a mile, and five small bridges had to be constructed.

Traveling Engineers' Association Convention

A Most Successful Meeting—Patriotism, Service and
Action the Keynote—Over 1,400 in Attendance

THE TRAVELING ENGINEERS' ASSOCIATION opened its twenty-sixth convention on September 10, at the Olympic Theatre, Chicago, with President B. J. Feeny presiding. After an invocation by Bishop Fallows, the president delivered his address.

Address of President Feeny

The government of the United States has taken control of the railroads and has placed the Hon. W. G. McAdoo in charge of them as director general of the United States Railroad Administration. This association stands absolutely loyal to him first, last and at all times.

It has been decided by the Railroad Administration that it is to the best interests of the railroad world that the Traveling Engineers hold their convention this year on account of the greatly changed conditions brought about under government operation and this will be a win-the-war convention. We are all in the service of the government and we must render our service to the greatest extent. This association through its Council of National Defense Committee pledged itself to the fullest co-operation and support, and each and every one of us must do all in our power to obtain the maximum efficiency from men, material and supplies. It, therefore, becomes the sacred duty of every true and loyal American to concentrate his thoughts, his energy and his very life, if necessary, to the supreme task of winning this war. If we fail to win this war the liberty so dear to the hearts of the American people will be a thing of the past.

In entering this war we have taken upon ourselves a great responsibility, and one which will command the labor and service of every citizen. We must contribute the men and material necessary to reach a turning point and to keep that point behind us forever. Our heroic boys over there (among whom are many members of this association) are giving their thoughts, their capacity for endurance and their lives for you and their country, and it is gratifying to note that beneath the Flag of Freedom they are as brave men as ever faced a foe. They are looking for us to support them in every way possible as their success on European battlefields depends on the backing they receive from the patriotic and loyal citizens of these United States. You and I cannot sit still with folded hands and see someone else make the supreme sacrifice in our behalf. We are in the war and we must win the war!

This association is one of the vitally important factors in

winning the war, for without good transportation our men, money and munitions would be useless. Man power and motive power will win the war. They are today the two greatest necessities, and any preventable waste in this world's crisis is inexcusable and indefensible. Upon members of this association rests a great responsibility in conserving men and material, and for the part you are playing in this war you are not alone answering to yourself and your government, but you are answering to the boys over there who are winning the war. Conservation is of prime importance—conservation

of every kind. Conservation of fuel is of vital importance.

This one factor means more to our country than any other one thing. With the expansion of our war industries, the increased demand for fuel for our navy, shipping board and railroads, the most drastic fuel economy must be enforced if this country is to escape a most serious fuel shortage next winter.

Greater efficiency must be obtained than ever before and this must be done by education and co-operation. It is possible to get better results from nearly all railroads with practically no additional expense, if every one will profit by his experience and put the knowledge so gained into effect. We should analyze what can be done under present conditions on the railroads which we serve and then make such recommendations as will be justified under win-the-war conditions.

Our government wants conservation—willing conservation if possible. It will enforce conservation if necessary and

from now on let every man of this association who loves America and liberty say "I will conserve. I will put my best efforts forth every day in order that my country will win this war."

In reviewing the requirements and duties of traveling engineers on the various roads, I find that there is a lack of uniformity as to just what is required of them. Standardization of the duties of traveling engineers is necessary to render efficient service. Familiarity of its detail is essential on account of the large number of inexperienced men that are being placed on the locomotives due to the great number of experienced men who have responded to the call of our country to take up arms, and I earnestly recommend to

you—

First—To apply yourselves entirely to the management and operation of locomotives.

Second—To co-operate with the various operating departments.



B. J. Feeny
President, Traveling Engineers' Association

Third—By making suggestions for the improving of conditions which come to your attention in the performance of your locomotive duties.

The Railway Supplymen's Association has arranged for our benefit a splendid exhibit of interesting locomotive supplies and their representatives are here to explain the merits of their material and devices. Much credit is due to the supplymen for their educational work, for we have learned from them the most successful way to apply and operate the material and devices which increase the efficiency of the locomotive. All members should spend as much time around, and give as much attention as possible to, the exhibits. It is far more necessary than ever before on account of the distribution of government standard locomotives.

On the twenty-eighth day of this month every man in the United States will be facing a financial obligation. A little forethought now, a little economy, a little inconvenience, will enable you to meet this obligation and it will give you a warm feeling in your heart when you have fulfilled it. The obligation I refer to is the Fourth Liberty Loan.

I recommend that our secretary be authorized to send a telegram to the President of the United States, Hon. Woodrow Wilson, and to the Hon. W. G. McAdoo, director general, United States Railroad Administration, informing them we are in convention to help win the war and reaffirm our pledge of full support.

Address by Frank McManamy

There has never been a time in the history of American railroads when the motto of the Traveling Engineer's Association, which is, "To improve the locomotive service on American Railroads," meant as much as it does today. And there is no man in railroad service who can do more to improve the locomotive service on American railroads than the traveling engineer, if he is given proper support. The convention of the Traveling Engineer's Association was therefore authorized by the Railroad Administration because of the value men who are on the firing line of railroad operation obtain from a convention of this kind, where they can interchange ideas and discuss problems and difficulties which all of us must meet and overcome if the national railroad system is to be successfully operated.

Under government operation the work and the difficulties of the traveling engineer have been greatly increased. He is apt to be called upon to look after every known type of locomotive and is expected to obtain equally good results out of all of them.

When I issued instructions to increase shop hours to 70 per week, which roughly speaking meant an increase of 20 per cent in shop efficiency and shop output the response of the railroad employees was extremely gratifying and we have yet to find the first instance where after knowing that it was the desire of the government that the shop hours be increased, that the men refused or failed to work the desired number of hours. The same is true of the men in road service, and men in hundreds of instances gave up their rest period to prevent locomotives, which could not be properly housed, from freezing up and thereby being disabled. The increase in hours in railroad shops has enabled us to increase the number of locomotives repaired about 500 each week over the corresponding week last year and to decrease the percentage of locomotives which are out of service for repairs requiring more than 24 hours from over 18 per cent to a fraction above 14 per cent.

Everyone knows the difficulty of building up the condition of motive power during a period of heavy business, and particularly when there is a shortage of skilled labor at the same time; but this has been accomplished by the govern-

ment during the most trying period in the history of the American railroads.

When the director general assumed control of the railways it became possible for the first time in the history of the country to adopt and enforce standards. The necessity, during the past winter of transferring locomotives from one line to another and the difficulty experienced in making repairs to such locomotives, when away from their home lines, emphasized the importance of standardizing locomotive construction and this was at once started through the medium of a committee composed of well known mechanical department officials from different sections of the country. As a result of the work of this committee 12 standard specifications for locomotives were agreed upon and 1514 United States standard locomotives have already been ordered and the locomotives are now being constructed at the rate of about 50 per week.

That the standardization of locomotives will facilitate not only the repairs to locomotives and the building of new ones has already been demonstrated, because when standard drawings and patterns have been made it eliminates further delay either in the drafting room or in the pattern shop and enables larger quantities of material to be ordered. Mechanics also work to better advantage on locomotives of the same general type and dimensions.

President Wilson, on April 15, 1917, said:

"To the general public, it is a matter of course that the railroads are the backbone of the nation's life and that the nation's safety and prosperity depend upon the efficient operation of these great lines of transportation. It is the duty of the government to see that the railroads are operated in a manner which will insure the most efficient and economical use of the motive power, and that no inefficiency or slackened power."

The traveling engineer comes more closely in contact with the men who operate the locomotives of the country than any other railroad official and can do more to prevent the "inefficiency and slackened power," referred to by President Wilson than any other railroad official.

While the duties of the traveling engineer can be subdivided into a multitude of different items they can be broadly covered under two heads. First, to see that the motive power is kept in good condition for service. Second, to see that it is efficiently and economically operated. Do not understand from this that the traveling engineer is supposed to look after the operation of shops and roundhouses because that is a different line of work, but he should see that all defects which develop in service which prevent economical and efficient performance, should be properly reported and he should insist that repairs be made before the locomotive is returned to service; to carry this out successfully his orders to hold a locomotive for repairs should be observed the same as the orders of federal inspectors. Locomotives should not be offered for service unless they are in a condition to make a successful trip and the traveling engineer should, as far as possible, see that they are not permitted to go into service unless in good condition. The traveling engineer should know the condition of every locomotive under his charge and should see to it that they are shopped for repairs before their condition becomes such that they might reasonably be expected to cause failure on the road. Instructing enginemen as to the proper and efficient performance of their work is not the least of his duties, and the man who is most successful in having the locomotives properly maintained will obtain the greatest degree of co-operation from the enginemen under him and without this his road will be exceedingly rough.

The economic use of fuel is one of the things that is usually under the direction of the traveling engineer and to bring this about he must have the co-operation of the shopmen, the engineers and the firemen. Instructing enginemen as to the proper use of the fuel and the operation of the locomotive,

How Can the Traveling Engineers Best Aid in the Maintenance of Locomotives

By F. P. Roesch

Fuel Supervisor, Northwestern Region, U. S. Railroad Administration.

There is no question but what the demand for power will be equally as great if not greater this winter than it was last, and to meet this demand it is imperative that all lend their best and united efforts to put and keep the power in the best possible condition.

Those whose duty it is to overhaul and maintain power are up against a hard proposition. Skilled shopmen are scarce and hard to get. The railway shops have been depleted by draft, enlistments and by mechanics entering other fields holding out the promise of a higher remuneration; therefore the time of every shopman is worth much more to the Railroad Administration than is represented in mere dollars and cents. Every hour spent in doing unnecessary work, every hour spent in repairing an avoidable defect or breakdown, is just that much of a setback to another locomotive waiting to be turned out of the shop or roundhouse.

Here is where the traveling engineer can help in maintaining power. The first requirement will be unqualified and undivided loyalty to the United States Railroad Administration. Get the full meaning of this statement. Beyond doubt, during the coming winter it will be necessary to transfer power from one road to another as the demands of the traffic require. If a traveling engineer thinks and acts for his home road only, is it not natural that when he sees a locomotive lettered P. D. Q. Railway or even U. S. A., he will say: "That is not one of our engines, so I won't bother my head with it"? And does it not follow that his attitude will be reflected in the work of the enginemen? It may extend even to the roundhouse men as far as the wipers.

Forget the X. Y. Z. Railroad and remember only the U. S. A., because one engine is just as valuable to the Railroad Administration as another engine, and all should receive exactly the same amount of care and attention on your part and that of the men under your supervision as the engines bought for and owned outright by the company directly employing you.

Remember that in order to correct a defect it must first be known. Terminal inspectors are invaluable and find many defects, but the real place to inspect a locomotive is on the road and in service. Suppose, for instance, a follower bolt was working out of a piston head, could any terminal inspection locate it? Are there not many other defects that only manifest themselves when the engine is running that no terminal inspection, no matter how thorough, can locate?

It is a short job to replace a follower bolt, but it takes time to patch a cylinder. If shopmen don't have to spend so much time repairing avoidable breakdowns they will have more time to make repairs due to normal wear and tear.

Is it not clear that you can materially assist in maintaining power by carefully noting each defect in every engine you ride and in reporting it immediately, before it results in a breakdown?

There are at present 50 federal inspectors to cover 250,000 miles of railroad. When we look back and see what these 50 men have accomplished toward improving the general condition of all the locomotives in the United States, we can appreciate what 1,300 traveling engineers working along the same lines can do.

After you have convinced yourself that you are working for the U. S. A. and not the X. Y. Z. Railroad, line up the men under your supervision in the same way. Show your men that all locomotives are U. S. A. locomotives, and that

it is their duty to get the very best there is in them out of them; that when laying on sidings waiting for other trains, they should, if they would deserve the name of enginemen in every sense of the word, get down and inspect their engines, tighten up any loose nut or bolt they may find, put a nail or piece of wire in place of any missing cotter or split key, fill a grease cup or set up a wedge, if necessary, or do anything else that they can do to help matters along, regardless of any contracts or agreements they may have relieving them of this duty. And have them make notes of any defects they cannot repair, and report them on arrival, even though they are not required to make work or inspection reports.

Think how much of the time of shopmen they can save by a little timely attention to such small details, and how at one stroke they can increase the number of federal inspectors from 50 to 65,000. The enginemen are now giving us much in faithful and efficient service, but if the matter is put before them in the right light they will give even more. There are no slackers among them.

You can help by being optimistic. Next winter when things are coming tough, kicking or whining will not help matters. Therefore, radiate cheerfulness, smile and make the others smile too. Encourage the enginemen; when they make a good run or save a breakdown, tell them about it. If they are doing wrong, show them the right way, not in a fault-finding manner, but as Robert Quayle put it, "in a big brotherly way," so that the men will see you are trying to help them to help the cause.

But go farther yet with your encouragement. A kind word to an engine watchman or hostler helper may save a bursted branch pipe next winter. Above all things preach the doctrine of U. S. A., not only among road men, but roundhouse men also. You have no authority over roundhouse or shopmen, but do not hang back on that account. Visit the roundhouse, anyway, and cheer up the roundhouse foreman occasionally. He needs it and deserves it. If he has taken the slam or the blow out of an engine, following one of your reports, tell him about it. If a machinist has filed a brass or a truck man has packed a box and has done a good job, tell him. Let them know their work is noticed and appreciated. There is nothing that sets work back as much as all blame and no praise.

If the traveling engineer will work along these lines, put his whole soul and energy into his work, and encourage all others to do likewise, he can do as much toward aiding the United States Railroad Administration toward maintaining locomotives as a whole army of mechanics. Remember always that the man who does not at this time give all that is in him is as much of a slacker as the man who turns his back on the Hun in the trenches.

DISCUSSION

H. M. Curry (Nor. Pac.) spoke of the need of an esprit de corps among the enginemen in the present emergency, and stated that in his opinion nothing would be of more assistance in keeping locomotives in good condition and saving fuel than thorough wiping at terminals. Keeping the engines clean would not only facilitate inspection but would also make the working conditions more pleasant for the enginemen and incite them to greater efforts to keep the power in good condition.

J. B. Hurley (Wabash) spoke of the waste of fuel which often results from the improper use of the injector. He stated that in his opinion the injector should always be operated by the engineer.

One of the members spoke of the desirability of avoiding the unnecessary shifting of power due to the trouble experienced in operating classes of engines with which the men are not familiar. He cited the instance of a class of locomotives which gave so much trouble due to loose follower

bolts that it was found advisable to remove the cylinder heads and inspect the pistons at the end of every round trip.

H. C. Woodbridge, fuel supervisor, Railroad Administration, called attention to the fact that it would barely be possible to get all the locomotives in good condition under the present circumstances. It is therefore essential that the roads face the conditions as they exist and make plans to utilize the motive power to the best advantage.

Several members spoke of the hearty co-operation received from the enginemen. The lodge halls of the brotherhoods had been used by the traveling engineers for meetings with the men. Appeals for economy in the use of fuel had met with a hearty response.

J. C. Petty, (N. C. & St. L.) urged that the more experienced engineers should take upon themselves the duties of the traveling engineers and by making close inspection of their engines and complete work reports enable the traveling engineer to devote his time to instructing new men.

Mr. Hurley called attention to the necessity of properly maintaining the wedges and binders. Well maintained wedges saves the driving boxes and properly maintained binders will reduce the number of broken frames. The traveling engineers should do all they can towards keeping the locomotives in good condition.

Mr. Roesch in closing the discussion said that the traveling engineer belongs in the cab instructing the engine crew. He should see that it does what it can to properly care for the engine. The traveling engineer should work to his utmost covering as many locomotives as he can and to the best of his ability see that they are in proper condition for the engine crew to run. Time and material are of the greatest value to the nation at the present time. He spoke of the possibility of a general pooling of power, particularly if conditions arise similar to those of last winter. The men must be made ready for such an emergency. Pooled power has been operated successfully on some roads and there is no reason why it could not be as successfully operated on all roads. Locomotives transferred from one road to another may give trouble at first but if they are taken in hand promptly these troubles can soon be overcome. They must be overcome and the engines properly maintained for the sake of the nation which is now the paymaster for all railway men. It will cause inconvenience but the war creates inconvenient conditions.

Superheater Locomotive Performance

Superheating as adapted to locomotive service established itself as practical, simple and economical several years ago. So much evidence has been presented from time to time, showing the benefits derived from superheating, that the case is well proven, and further substantiation here is out of place. Our problem is one of maintenance and operation, one of getting full measure of return out of the 25,000 superheater locomotives in service in the United States. They are capable of returning or saving 20 per cent to 25 per cent in coal per unit of work done; they are capable of doing 25 per cent to 30 per cent more work per locomotive than similar saturated steam locomotives, either by hauling heavier trains at given schedules, or given trains at faster schedules. These are positive and direct returns that have been established under day by day operating conditions and are to be expected at all times.

Now, more than any time in the past, is it imperative that locomotives should be kept in a condition to sustain 100 per cent operating load. Every hour of high-priced labor must be made to produce the most, and not wasted in working out some uncertain guess. In the same way every pound of expensive material must be made to earn its high cost; that is, locomotives should leave the freight yard fully loaded to a

rating of higher authority than that provided by the ability of a poor fireman. The emergency of the times demands that full measure be returned from every unit employed. Incompetence and carelessness have no place in the present emergency. Locomotives must be operated and maintained by those who *know* and who *will*. The full measure of the superheater locomotive is 100 per cent of its rating at all times on a minimum consumption of coal and water.

To illustrate more clearly what is meant, the committee takes the liberty of abstracting a recent paper by C. M. Darden, read before the Southern & Southwestern Railway Club. Tests of a Mikado type locomotive developed that a change of $\frac{3}{8}$ -in. in the diameter of the exhaust tip increased the firebox temperature about 400 deg. by increasing the draft, thereby providing more complete combustion, with a resultant saving of \$57,000 in coal per year. The locomotive seemed to be performing satisfactorily before the change, with no complaint from the crew. Adjustment in the valve gear showed an increase of 7.8 per cent in draw-bar horsepower; thus permitting this locomotive to haul the same tonnage at a



Distorted Ends of Superheater Units, One Result of Stopped-Up Flues

higher sustained rate of speed or a proportionate increase in tonnage rating at the same rate of speed. There are several engines of this type in the same class, which multiplies the benefit to the railroad.

Similar investigation of a ten-wheel locomotive which had been converted by the application of a superheater, indicated changes which, when carried out, improved the coal economy 9.8 per cent and also resulted in making up 34 min. on a schedule previously involving delays of over 50 min. The engine is now hauling three additional cars and burning less coal.

Just as any machine requires care and attention to keep its production at a maximum, there are certain fundamentals in maintenance and operation which are essential to the 100 per cent performance of the superheater locomotive. They are easy to comprehend and simple to carry out, but to insure 100 per cent performance they must be kept constantly in mind and continuously carried out by both shop and enginemen.

Importance of Correct Maintenance

Correct maintenance in the back shop and the engine house is essential to the best operating results on the road. Unless a locomotive is turned out in first-class condition, first-class performance, from an operating standpoint, cannot reasonably be expected from it. The superheater requires a minimum of attention to keep it in good condition. If it is not given this attention, the superheater *may* be injured; but the performance of the locomotive certainly *will* be injured.

Clean Flues

Correct flue cleaning must be a matter of shop routine. Don't wait to clean the flues until there is a steam failure and

a delayed train. Keep them clean all the time and prevent the failure. It is not only the cheapest in the long run, but it is the easiest. To knock a little clinker off one or two units, and blow a small accumulation of soot and cinders through into the front end with a $\frac{3}{8}$ -in. pipe on the end of an air hose is a small job. However, with 15 or 18 large flues and 40 or 50 small ones plugged solid with cinders for several feet and the cinders embedded around the superheater units so that a bar has to be used to loosen them, the job of flue cleaning assumes considerable proportions. It is prevention that is needed; not cure.

Dampers

Consider for a moment what happens in the locomotive with a hot fire in the firebox if the crown-sheet is permitted to become dry. A similar condition exists with the units when the throttle is closed in a superheater locomotive which has no damper. The same condition applies when the throttle is closed and the damper has been fastened in the open position. When the throttle is closed, steam ceases to flow through the superheater units and there is then nothing to absorb any heat which may be delivered to the unit pipes. If the hot gases continued to flow through the large flues, particularly with the locomotive drifting at high speed, the units would become overheated. While damage might not be evident after a single occurrence of this kind, continued overheating will break down the structure of the material and damage the units.

The Effects of High Water

In the operation of superheater locomotives, the water should always be carried as low as the service conditions will permit. It should be impressed on hostlers and others who move locomotives around shops and terminals that flooding the boiler is bad practice. It will result in water going over into the superheater under conditions favorable to the formation of scale; it also encourages leaky units, both of which are followed by a falling off in the performance of the locomotive when it is on the road.

Lubrication and Drifting

The successful lubrication of superheater locomotives presents no very difficult problem. Careful study of conditions will generally indicate their cause and suggest means of overcoming it. So-called carbonization of oil in the cylinders is caused by the admission of air when the cylinders are at temperatures above the flash point of the oil and by unconsumed gases being drawn into the valve chambers and cylinders through exhaust. The practice of drifting with a slightly opened throttle should always be followed. The use of oil having a flash point above the temperature of the steam is also recommended. Experience has demonstrated that the admission of oil to the valve chests only does not provide the necessary lubrication for the cylinders as satisfactorily as when oil is fed directly to them.

The Problem and Its Solution

Clean flues, dampers in good operative condition, units well maintained, water carried at the right level—all of these *must* be. And they can be, easily, if every one will do his share. *Prevention* must be borne in mind and acted on by all. There is no other machine of which it is more true than of the locomotive that "an ounce of prevention is worth a pound of cure." *Prevent* plugged flues by cleaning them regularly, when cleaning them is only a little job; *prevent* disabled dampers and damaged units by reporting and having completed the little jobs; carry the water at a reasonable level and *prevent* a loss in superheater capacity; drift with the throttle cracked and *prevent* lubrication difficulties. *Prevention* is easy and is economical. *Cure* is difficult and expensive;

it means overtime, delay and loss of service engine-hours.

The items that have been considered for the most part, pertain in particular to the superheater, but the importance of other things must not be overlooked. Correct steam distribution, absence of steam leaks, good maintenance of machinery and proper drafting are all matters of as vital importance to the superheated as to the saturated steam locomotive. But in these, as well as in those features which are more closely related to the superheater, the policy of prevention by overcoming small difficulties when they are small, is the simplest and easiest way to produce the results which must be obtained. On the roads which followed this policy, there was a minimum of difficulty experienced last winter. Their example lies before us and all must begin to profit by it now in order to realize the best performance from the superheater locomotive during the winter ahead.

The report was signed by Joseph Keller (Lehigh Valley), chairman; Frederick Kerby (Baltimore & Ohio), Hugh Gallagher (Atchison, Topeka & Santa Fe), J. A. Cooper (Erie), and W. A. Buckbee (Locomotive Superheater Company).

Discussion

Joseph Keller, chairman of the committee, after reading the report spoke of some tests that were made regarding the lubrication of superheater locomotives which were not completed in time to be included in the report. A vacuum gage was applied to the valve chamber at the point where the relief valve is usually located, to determine the amount of vacuum obtaining under varying conditions. The tests were made on Pacific and Mikado locomotives having a 1 inch and a $1\frac{1}{4}$ -in. steam pipe leading to the cylinders for the purpose of admitting steam while drifting. In a test at 45 m. p. h., with the drifting valve wide open, the vacuum varied from 26 to 36 per cent. With the valve closed it increased to 50 and 66 per cent. In some cases a vacuum of about 80 per cent was obtained with the drifting valve closed. In every case the amount of vacuum was considerably greater with the drifting valve closed than when the steam was being admitted to the cylinders through the drifting valves. This indicated that regardless of the fact that drifting valves are used there is an opportunity for the cylinders to suck in gases from the smoke-box. An analysis of the carbonization found in the valve chamber of the Mikado locomotive showed that 27.72 per cent was oil matter, 23.17 per cent was iron and 59.11 per cent was coke. This shows that the walls are abraded and iron fillings contribute to the carbonization matter. It also shows that some of the smoke is drawn back through the exhaust nozzle. These tests indicate the necessity of preventing a partial vacuum forming in the cylinders.

F. P. Roesch, fuel supervisor of the Railroad Administration, spoke of some tests made on the El Paso & Southwestern in which it was found that it required a 2-in. steam pipe to keep the cylinder drifting valves closed while the locomotive was drifting, and that the supply of steam for this purpose was very large. He suggested that steam be admitted to the exhaust side of the piston in an endeavor to break the vacuum and at best to dilute the gases drawn into the cylinders. As an example of this he referred to the operation of the old time water brake. He spoke of the necessity of properly maintaining superheaters and of the importance of not carrying the water in the boiler too hot.

F. Kirby, Baltimore & Ohio, called attention to the fact that a leaky front end door or steam pipe will greatly affect the efficiency of the superheater. He was very much in favor of the use of pyrometers in order that the engine crew may better watch the performance of the locomotive. It also gives an indication of the condition of the locomotive. If the proper degree of superheating is to be obtained, the efficiency of the locomotive will be greatly diminished by

keeping the water too high in the boiler. This not only reduces the efficiency of the superheater but injures the superheating joints. The hostler is responsible for a great deal of this trouble. The proper level for the water should be found and marked on the glass. In commenting on cylinder lubrication he has found by tests that unless the valves are in good condition the cylinders will not be properly lubricated. He has found that it is best gradually to close the throttle on superheater locomotives when coming to a stop. The maintenance of the superheater will be greatly increased if the locomotive is not handled properly. On the Baltimore & Ohio each fuel supervisor is provided with a pyrometer which is applied to locomotives not performing properly as the occasion demands.

Other members spoke of the necessity for proper maintenance of superheater locomotives if the full efficiency of the superheater is to be obtained. One member has found that the cooling of the fire in order to prevent popping reduces the degree of superheat sufficiently to affect materially the efficiency of the locomotive.

Railway Fuel Conservation

By Eugene McAuliffe,

Manager Fuel Conservation Section, Division of Operation,
United States Railroad Administration

There is no governmental function of greater importance in existence today than that of the United States Railroad. Men have said that food would win the war; that fuel, that men and munitions, that ships would win the war. They will, after the United States Railroad has gathered the grain, the coal, the iron, the lumber, and all the other raw materials, and transported them to the mill, furnace, and factory, to again move the finished product to ship-side. I am wondering whether or not we have measured up the job that remains for "the second line" to complete! Perhaps we do not all realize that the first two million were largely made up from the ranks of college students, the younger professional men, and those who were not closely tied into the world's affairs. The call for 2,000,000 more men which was just issued will cut deeper into the ranks of industry than did the first call. That means that there can be no slackers in the office, the shop, the cab or caboose; no slackers in the mine or the factory; it means a full day, a full hour, and a full moment for us all. It means work and save, and that is our duty, and to you who lead and plan and direct, it means double duty.

I have consistently said that the men officering and operating the railroads, knew how, could, and would save fuel. It is simply a question of how to do the most with the means at hand. To take a skilled man out of service as an instructor, creates a demand for an unskilled or partially skilled man to take his place; to make extensive changes in locomotives, shops, coaling stations, etc., means heavy drafts on labor and material. All this should be done, but done in an orderly way. The real issue is that of getting every man to do the things he knows best how to do, with the means at hand. Saving fuel means saving everything else chargeable to locomotive operation; it means the expenditure of skill that decreases boiler and machinery repairs, decreases maintenance costs, decreases overtime losses; the wasteful use of fuel means the opposite.

The trouble with the fuel end of the railroad where it is given any measure of consideration at all, is that it is generally looked upon as a mechanical department function, when in fact it really reaches into and overlaps every department of the railroad. The conservation of railway fuel begins at the mine, thence over

the track scales, on to the coaling station, through the breaker bar into the pockets, thence to the tender and the furnace door, not to end at the stack mouth but to begin again at the drawbar and sweeping back it embraces the trainmen, the dispatchers, the yardmasters, the signal men, the men in charge of air brake maintenance, the men in charge of lubrication, the maintenance of way men, from the chief engineer down to the trackmen, the superintendent and his assistants. They too save fuel and waste fuel with the rest. The fuel job is an operating department job and just so long as it is looked upon as an annex of the locomotive department, just so long will its economic possibilities be dwarfed and stunted.

The man who is responsible for the operation of the road should seize this greatest of opportunities for increased efficiency by organizing a fuel department, drawing on the mechanical department for the best men it can spare, mechanical department training alone fitting a man for the most important work. This man should be big and broad enough to do justice to the mechanical department which has in times past been combed for results while other departments went free. To save fuel, work must not alone be done with the men in the cab and the shop, but with all the men on the whole line and back to the coal mine. This man I would call a Superintendent of Locomotive Operation and he should have an assistant for each seventy-five locomotives, such an assistant to be a man of the capacity of a first class traveling engineer to help cover the field I have mentioned. In addition a sufficient number of skilled firemen should be detailed as firemen instructors to admit of giving each new fireman a proper measure of training when road service begins. The fireman instructor should also be given charge of the work of training the fire cleaning force at terminals, which duty will bring him in touch with the real pulse of the locomotive end of fuel economy, the dirty fire. The motive power department may need one or more traveling engineers for work other than fuel economy; the superintendent may require one or more assistants to pursue investigations, etc., but these men should be apart from the locomotive operation organization whose function should be, the conservation of fuel in all its collateral relations.

The supervisors attached to the Fuel Conservation Section, the department I speak for, find in many places certain outstanding conditions requiring correction, I will enumerate a few only:

Things are never quite as well as the men who live with them daily think they are; for example: nozzle and front end standards are not maintained; this is frequently due to front end leaks, stopped up flues and superheater tubes, dislocated brick arches, dirty boilers, etc. Try opening the front end of a dozen locomotives, then look down the stack.

The stationary steam plants of the average railroad are badly designed and indifferently maintained; air leaks in brick settings; cracks in fire walls and behind fire arches with short circuiting of gases; lack of stack dampers; an unwholesome disregard of radiative losses, both on boiler sheets and steam lines; leaking water and steam valves, no attempt made to use exhaust steam for heating feed water or buildings; fuel supply exposed and wasted; no facilities for cleaning tubes, etc. I will not speak of the general disregard of the value of gas analyses and CO₂ determinations in the larger plants.

Open fires in switch and roundhouse yards, the best of lump coal used.

Overloaded tenders with coal littered all over coal chutes, roundhouse and freight yard tracks; look your hump yard over, it will surprise you.

Cars leaving coal chutes with from 500 to 2,000 lb. of coal in pockets.

Tenders that leak coal through the side and gangway and through holes around the grate rigging; shop tenders standing half filled with coal for weeks; road and yard engines that carry coal on sides of tank and over water cistern to mix with cinders and become valueless.

Caboose stored with lump coal, the stove red hot with the

doors open; steam heated coaches cooled by opening windows and ventilators; switch shanties with open doors and red hot stoves; coal piled outside on the ground in a pile so profuse as to shout "welcome."

Badly made up trains, box cars moving in trains with open doors, increasing train haul resistance.

Excessive standby time at initial and destination terminals, resulting frequently from lack of co-ordination between mechanical and transportation men.

Wasteful firing of engines on roundhouse tracks; fine coal losses through grates when firing up engines, and the dumping of half consumed coal put in fireboxes just before engine is placed on cinder pit tracks.

A disposition to let the brick arch saving and the superheater saving carry distorted steam distribution, defective valve and cylinder packing rings, and dirty boiler losses.

Indifference to fuel and other losses chargeable to improper lubrication of moving parts, including the internal lubrication of the locomotive as well as freight train journals.

Train line leaks. Men who should know say freight train line leaks absorb ninety-five per cent of the air made by locomotive compressors and consume six million tons of coal annually; a six-pound per minute, leak under a fifty car freight train consumes, when supplied by single stage compressors, 800 or 900 lb. of coal in ten hours; a fifteen-pound leak will require the service of two single stage air compressors and consume 2,600 lb. of coal in ten hours. I have reports of seventeen pounds leakage on the engine and tender, and sixteen pounds per minute under a train of 46 freight cars. The remedy lies in the repair shop and yard; with the switchmen who fail to cut hose by hand and in the crash and bang that takes place in switching and hump yards. The single stage compressor should give way to the cross compound using one-third the steam, and producing more air, with decreased radiative losses. Let me impress on you that the single stage air compressor with the air end running at a temperature of 200 to 400 degrees Fahr. is the most extravagant steam user ever constructed as measured by results obtained; this fact alone should be sufficient justification for reducing train line leakage losses.

The heroic women of France are rationed on fuel, a family of five or six get a wash basin full of coal daily, with which to cook, to heat, to cleanse. Coal like liberty has been so free with us that we find it hard to attach a sense of value to it; the value is there, however; not alone a money value, but a value that flows from an insufficient supply and we must recognize the fact.

It is not the function of the Fuel Conservation Section to do the work of conserving fuel, that work like everything else connected with the operation of the railroads goes to make up the work of the men who man and officer the several lines. We will point the way and help you all we can.

Progressive managers are in many cases forming fuel saving organizations of the character outlined above; only a few have not as yet moved. On the whole the awakening to this situation is startling. I am arranging to make every paid railroad fuel inspector a representative of the United States Fuel Administration Inspection force, increasing their authority and usefulness. Where information reaches me that a railroad is being discriminated against in its fuel supply an immediate investigation is made and a remedy applied. The United States Fuel Administration is working hard for cleaner coal and the effort is bearing fruit. What we want is interest, human interest, individual endeavor, a certain and defined recognition of the fact that coal and fuel oil today, while more costly than ever before, have a value beyond price.

For the past few days the name of Lens, a coal mining town in northern France, has stood out sharply in the war news headlines. For three years, the contending armies have surged back and forth on the outskirts of this city, the center of the most important coal field in France. French guns stationed behind the refuse piles surrounding these deep coal pits yielded reluctantly to the enemy. The surrounding terrain is a grave yard, twenty-five thousand allied troops falling there in one battle. For what was this toll of human life? For coal. The Allies are in Lens again. When you hear the name of Lens, think of coal.

Fuel Economy

Never before in the history of the nation has there been a time when the fuel supply was generally inadequate to the demand, and never before was it so essential that our industries should be maintained at their maximum rate of production. It is realized now that upon the United States rests the hope of all the free people of the world, and it is not too much to say that the realization of this hope depends in no small degree upon the effective distribution and use of the available fuel supply.

According to the official figures in 1917 the railroads consumed 158,000,000 tons of coal. Estimates of the Fuel Administration indicate that the consumption in 1918 will aggregate 166,000,000 tons, an increase of 7 per cent over last year. It is believed that this entire estimated increase can be avoided and a substantial saving effected over last year if the earnest co-operation of every railroad employee can be enlisted in the application of individual economies.

A few weeks ago the United States Fuel Administration in an official statement said that "a saving of 60,000,000 tons of coal was the one possible avenue of escape from national disaster. The necessities of war must be supplied. The coal deficit must inevitably come out of the necessary fuel for non-war industries. These industries employ millions of our population and furnish the backbone of our national wealth. Factories will shut down and men be out of work in proportion to the coal deficit. Every ton of coal saved will keep fifty workmen from idleness and permit additional creation of several hundred dollars of national wealth."

Of the 60,000,000 tons of coal that the Fuel Administration states it is necessary to save, a million and a quarter tons per month could be saved by simple methods of economy that any man using fuel on a railroad could at once apply, without a minute's delay for additional appliances or personal instruction. These men have only to be impressed with the importance of the subject to make this potential saving a practical reality, and the committee believes that every road foreman, supervisor, traveling engineer and fireman should be acquainted with the situation so that its importance may be understood by every engine crew in the country.

But this probable shortage in the supply is not the only factor that demands our consideration. The fact is, that in the opinion of the fuel administrator it is physically impossible to transport all the coal needed so that it may fairly be concluded that the difficulty is mainly one of transportation. This means that for every pound of coal saved, a pound of another needed commodity may be transported and in the same proportion may the present traffic situation be relieved and subsequent congestion avoided.

In its first report the committee provoked some discussion because of its comments in respect to the purchase of coal to specifications naming a definite standard of quality. The necessity for utilizing all the coal in the ground was then emphasized and to this principle there can be no dissent. In the past three years, however, the increasing demand for coal has unquestionably resulted in a deterioration in the average quality, while in the face of actual shortage, industrial plants have accepted a grade of fuel undeniably inferior to previous averages. This has resulted in correspondingly reducing the quality furnished the railroads. The shipment of slate, bone, rock and other impurities familiar particularly to users of bituminous coal reduces the available units of transportation, increases the cost of labor per ton of combustible transported, unloaded and utilized, reduces the efficiency of power plants, increases the necessity for excess plant capacity, not infrequently actually reduces plant output and always impairs locomotive performance both directly by reducing operating efficiency and indirectly through the consequent increase in

the cost of repairs. For these considerations, a reasonable improvement should now be demanded in the quality of all coal loaded for railroad use. It would not be unreasonable to require the pre-war competitive standard.

There is not an element of locomotive maintenance that does not in some degree affect fuel consumption. One of the most frequent causes of poor steaming locomotives is a leak in the boiler front door or frame, which is frequently compensated for by a reduction in the area of the exhaust nozzle, thereby placing a double burden upon the boiler and the coal supply further back. Every report of a poor steaming locomotive now requires immediate and special attention. We should so organize and instruct our forces as to insure prompt investigation and the application of the proper remedy in every instance.

In addition to the physical condition of the locomotives and their efficient operation, there are a number of particulars in which the motive power department may prove the effective agency for fuel conservation. These may be grouped under two headings: Those relating to the locomotive and those to engine-house conditions.

Probably there is no single source of immediate and absolute waste as great as the ash-pit. Every pound of unconsumed combustible that finds its way to the ash-pit is a direct loss and the total aggregates huge proportions. It is impossible to eliminate this waste entirely, but it can be minimized by proper firing methods so that the locomotive will reach the pit with a light fire, by dumping the engines as soon as possible after arrival at the ash-pit so that the use of green coal may be avoided, and by prompt movement from the pit to the engine-house. Another prolific source of ash-pit waste is caused by defective crane buckets and careless crane operation. Coal is lost through the buckets into the ash-pit. There are frequent instances where the boiler washing program is not transmitted to the engine despatcher so that locomotives are dumped and fired up again before it is decided that they are to be washed, thus necessitating a second trip to the ash-pit. It is safe to estimate that with a modern locomotive a loss of not less than four tons of coal is involved in this proceeding. Cars unloaded with a clam shell bucket are frequently reconsigned to the mines with coal in the hopper amounting to a ton or more. Our transportation necessities now demand that empty supply coal equipment be examined by the coal pocket foreman and every pound removed before the cars are reconsigned.

Two other factors require mention; unnecessary movement of engines, and excessive use of air pumps.

There are innumerable particulars in which engine-house auxiliaries may increase the fuel cost. Relatively, the coal consumption is small compared to that of locomotives, but the necessity for economy should lead us to investigate every avenue of waste.

Some of the essential points that will in some measure aid in economy of fuel are brought out in the following suggestions:

1. The selection of fuel that is clean and of as high a heat value as can be obtained on the line of road or as close to the line of road to be supplied as possible.

2. All fuel should be inspected to see that it is reasonably free from slate, sulphur, shale bone and other impurities that are non-combustible. Such impurities only take up room in cars, coal pockets and on tenders that should be occupied by clean coal, help to fill up the firebox and form clinkers which in turn are responsible for engines failing for steam and delays that thoroughly disorganize despatching, keep crews out on the road many hours after they should have arrived at the terminal and in many cases cause crews to be tied up between terminals on account of the hours of service law. In addition, there is the effect of dirty, clinkered fires on firebox sheets and boiler tubes.

3. Locomotives should be equipped with modern fireboxes with brick arches and combustion chambers so that when coal is applied to the fire the gases that are given off will burn and aid in steam-making instead of passing out to the atmosphere unburned. The installation of a combustion chamber results in an increase of both volume and heating surface, but the added heating surface is of little value if the firebox volume is not to be utilized and filled with the flame. With a restricted air opening or a heavy fire, much of the fixed carbon is burned to carbon-monoxide and this combustible gas must then be burned in the space above the fuel bed, in addition to the hydro carbons. With a fair grade of bituminous coal or ordinary firing methods, fully 50 per cent of the heat generated in the firebox is due to the burning of combustible gases above the fuel bed, and in order to burn them completely it is necessary to have an adequate supply of oxygen above the fuel bed. The more intimate the mixing of the gases and the greater the supply of oxygen, the quicker will the flame burn and the shorter will be its length; otherwise combustion is apt to be incomplete. It is therefore apparent that to produce perfect combustion, it is as necessary to provide for air above the fuel bed as below.

4. Coal should be prepared by having it broken to the proper size for firing and thereby eliminate the wasteful habit of some firemen of throwing large lumps of coal into the firebox or throwing them off along the right-of-way.

5. It has been the habit of a large number of roundhouse foremen on many roads to fire up engines as soon as it is seen that whatever work there is to be done on an engine is near enough done that they may accept an order for the engine, regardless of whether the engine is ordered out or not. Almost any engine can be gotten ready for service, even after a wash-out, in not to exceed one hour and thirty minutes, and no engine should be fired in excess of this amount of time before a call. Some yardmasters are also prone to order engines when they know the train to be handled will not be ready on the call, and sometimes hours elapse before such trains are ready, but the engine is burning coal all the time.

6. In coaling up engines at terminals or at coaling stations along the road, care should be taken in regard to overloading tenders, as this is not only wasteful, but very dangerous to employees and others. Coal chutes should be installed of such a design that tenders can be coaled without the liability of trouble with the chute that would cause coal to be spilled on the ground. Coal that is spilled on the ground should be kept cleaned up.

7. Engines should be drafted, if possible, to burn one grade of fuel, and a reasonable effort should be made to keep that grade of fuel on the division to which the engine is assigned. Draft appliances should have a standard setting for each class of engines and the grade of fuel to be used. It too frequently happens that, if a certain crew has steam troubles, changes are made in draft appliances when there is nothing wrong except improper firing or improper operation of the engine. Changes are also made in draft appliances to overcome such defects as leaky steam pipes, leaky exhaust stands, leaky units or air leaks around the smoke-arch door and steam pipes where they pass through the smoke-arch shell, etc.

8. Engines should at all times be operated with the idea of doing the work assigned as economically as is consistent. A watchful and consistent engineer can accomplish much that will aid in fuel economy if he will at all times note any defects that would increase the consumption of fuel and have necessary repairs made on arrival at the terminal. Conditions that cause the engine to burn an excessive amount of fuel should always be given due consideration by both engineer and fireman and the foreman in charge at the terminal where such work is to be done. Steam leaks at steam pipe joints, exhaust stands, header and unit connections, pop and

whistle valves, piston rods and valve stems or any leak that will permit steam to pass out to the atmosphere without first aiding in the "pull at the drawbar" should at all times be kept to a minimum.

10. Valves, valve rings and cylinder packing blowing are liberal contributors to excessive fuel use. Superheater and small tubes partially or wholly stopped up with ashes or clinkers are responsible for cutting off a great deal of heating surface and changing the effect of the draft on the fire.

11. Permitting excessive brake pipe leakage to exist causes air compressors to use far in excess of the amount of steam they should use to maintain the desired pressure. If brake pipe leakage were reduced to a reasonable minimum, it would aid materially in fuel economy.

12. The valves and cylinders of the locomotive should be kept well lubricated to avoid operating the engine against dry valve seats and cylinder walls.

The problem has been and perhaps always will be the educating of firemen. Lack of proper supervision or the necessary interest on the part of the fireman himself, and sometimes both, are in a great many instances responsible for men being wasteful as long as they remain firemen and when promoted they are unfit to educate new men.

Almost every man firing a locomotive today, with careful, consistent firing, could save at least one scoop full of coal for every mile run. With this accomplishment, we would save many thousand tons of coal every year, which would in turn furnish steam to haul many thousand tons of food stuffs, clothing and amunitions.

War conditions have wrought many changes that have made it necessary for the railroads to sacrifice many of their most efficient firemen for military service, leaving their places to be filled with unskilled men, who for a time, with the best of supervision, are bound to be expensive men. A large number of these men are also subject to military service and about the time they become fairly efficient firemen they are called to the colors and another place is left vacant again to be filled by an unskilled man. The committee fully appreciates the necessity of these men responding promptly to the call of duty in a time like the present, but speaks of these conditions to indicate the necessity for closer supervision over men newly employed as firemen, to properly educate them along the lines of economy in the use of fuel.

Let us not forget that to win the war and shorten the time of its winning, we, who have been left at home, must use every ounce of energy we possess, both individually and collectively, in producing the necessary commodities to accomplish the end in view and conserve in every way possible any commodity that will assist in winning the war, especially food stuffs and fuel.

The report was signed by E. Hartenstein, chairman, and N. E. Preston, F. R. McShane, W. L. Robinson, and A. G. Turley.

DISCUSSION.

Eugene McAuliffe spoke of the poor quality of the coal supplied in 1917. The ash content increased five or six per cent over 1916, which resulted in a great deal of trouble in operating locomotives. The Fuel Administration has been trying to improve the quality of the coal as well as increase the production. There has already been a marked improvement in the situation.

F. P. Roesch, fuel supervisor, Railroad Administration, mentioned the waste of fuel due to drifting down long grades with steam on. He also spoke of the importance of saving fuel which is now an end in itself aside from the question of saving money.

V. C. Randolph, fuel supervisor, Railroad Administration, stated that in his opinion economy in the use of fuel could only be effected by the individual efforts of the engineers and

firemen. Their efforts will save more coal than all the appliances that can be put on a locomotive.

H. H. Schulte, Lehigh Valley, told of the decreased fuel consumption that had been brought about by increased supervision.

H. M. Curry, Northern Pacific, spoke of the waste of fuel due to raising steam on locomotives without sufficient time for doing the work without forcing the fire.

T. F. Lyons, New York Central, called attention to the importance of reducing brake pipe leakage. By fastening the brake cylinder and auxiliary reservoir rigidly to the underframe, the leakage can be greatly reduced and much fuel can be saved.

L. R. Pyle, fuel supervisor, Railroad Administration, urged the men to give coal the attention which its importance justified. On the majority of roads fuel is handled carelessly, as if it were of slight value.

W. G. Tawse, Locomotive Superheater Company, told of a case where $4\frac{3}{4}$ tons of coal per trip was saved on a 127-mile division by cleaning out superheater flues which were stopped up.

J. Keller, Lehigh Valley, spoke of the utilization of silt from the anthracite culm banks by mixing it with bituminous coal.

J. B. Hurley, Wabash, mentioned the saving of fuel secured through the elimination of boiler scale and the attendant increase in the flue mileage; he also spoke of the benefits of using brick arches, particularly where the coal has a large percentage of slack.

A. N. Wilsie, Burlington, expressed the opinion that a pyrometer was of great assistance in saving fuel and aided greatly in securing the full efficiency from stoker fired engines.

Robert Collett, fuel supervisor, Railroad Administration, called attention to the need of determining what the fuel conditions on the railroads actually are. He also spoke of the futility of putting fuel-saving devices on locomotives and not maintaining them properly. Other members talked of the necessity of preparing fires correctly at the terminals, of the waste due to steam leaks, and the loss of fuel at ash pits. Several of the speakers described systems of accounting for fuel and organizations developed for the purpose of securing co-operation of all departments in saving coal.

Maintenance of Air Brakes

[The exact title of this report was "How Can the Traveling Engineers and General Air Brake Inspectors Best Co-operate to Improve and Maintain the Air Brake Service?"]—Editor.

It is hard even for those who have been in constant touch with railroad development to realize just how fast the tonnage handled by the railroads has been increased during the last few years, and what efforts have been necessary on the part of the railroads and manufacturers of railroad equipment to meet the requirements of safely, promptly and economically handling this increased tonnage. The increased weight of locomotives and cars, as well as the increased number of locomotives used to handle a train (as many as five locomotives are used on one train on some of our mountain roads), has resulted in a constant increase in the length of trains and the tonnage handled per train, all of which has exacted more care in handling and greater efficiency in the maintenance of air brakes.

The air brake manufacturers, to meet the more exacting conditions imposed on the air brakes, have made every effort to improve and change the equipment to meet the requirements. Although the improvement in brake equipment for both locomotives and cars has been rapid, it is doubtful if it has kept pace with the requirements, and a higher state of

maintenance than was required a few years ago is now necessary if we expect to get the desired results.

We believe that practically all air brake troubles that cause delay and damage to equipment are avoidable; also, that they are due either to a poor condition of maintenance or improper handling. Where improper handling is the real cause, a continuation of the trouble is almost inexcusable, as most men handling equipment are glad to handle it properly if the right way is pointed out to them. As the traveling engineer and general air brake inspector are looked to by the men for proper instructions, it follows that close co-operation regarding the best methods of handling is absolutely necessary on the part of the traveling engineer and general air brake inspector. Where such co-operation does not exist it will generally be found that the men have little confidence in instructions given by either, and they will handle the equipment according to their individual ideas.

It is the general opinion of men coming in close contact with road delays that can be directly traced to air brake defects, that such delays are avoidable and in most cases can be traced to poor terminal inspection and failure to make proper repairs or to a poor general condition of maintenance. This applies particularly to freight service.

The incoming test of trains as a remedy for yard and road delays caused by air brake defects is one that has been advocated by general air-brake inspectors for years, but up to the present time their recommendations have been disregarded. This fact may be due in part to their failure to make the importance of the incoming test realized by operating officials, but surely the mistake of allowing a car that arrives at a terminal or repair point with a defective brake to be switched into an outgoing train, is as inexcusable as allowing a defective engine to remain in the roundhouse without inspection and discovering the defect after coupling to a train or after an engine failure occurs on the road. We believe that if the traveling engineer and general air brake inspector would co-operate in keeping the importance of the incoming test before the operating officials it would result in a practical system of incoming inspection being adopted in all yards, that would materially decrease delays and damage to equipment and lading.

The use of inferior low-cost material in air brake repairs is responsible for more or less air brake inefficiency, and under the present cost of labor there is no doubt that the use of such material is much more expensive than the use of the best material, even at a higher price. While the traveling engineers and general air brake inspectors do not, as a rule, have much to say regarding the purchase of material, we believe that their co-operation in keeping the attention of higher officials on the quality of material being used would in many instances result in the best material being furnished; this in most instances would result in more lasting repairs being made, which means a higher efficiency and lower total cost of maintenance.

It has not been the intent in preparing this paper to go into detail regarding the best methods of obtaining the desired results, as local conditions have much to do with the details of maintenance of equipment, and the rules of most of the large roads already require the following of recommended practice as laid down by the Air Brake and Master Car Builders' Association. Closer co-operation between traveling engineers and general air brake inspectors would assist in such rules and recommended practices being more closely followed, which would result in improving and maintaining the air brake service.

The report was signed by E. F. Wentworth (New York Air Brake Company), chairman; W. V. Turner (Westinghouse Air Brake Company), A. G. Huston (Virginian Ry.), J. B. Hurley (Wabash Ry.), and L. R. Pyle (United States Railroad Administration).

DISCUSSION

The keynote of the discussion was that the traveling engineers and the airbrake inspectors must co-operate to the fullest extent. The duties of each of these classes are so extensive that it is impossible for each to excel in the field of the other. Airbrake problems must be referred to the air-brake men and train operation problems to the traveling engineer. A great deal of the trouble in handling trains is due to excessive train pipe leakage. This should not exceed eight pounds per minute and in any case it should not exceed the capacity of the feed valve to charge the line. By keeping train line leakage down the trains can be moved much faster over the division and less fuel will be used. Stuck brakes caused by train pipe leakage has made double-heading necessary in some cases. The leakage should be traced back to the repair tracks and no car should be released until the air brakes are tested and repaired regardless of the cause for which the car was sent to the repair tracks.

A great deal of time will be saved and the equipment better maintained if a thorough test of the brakes is made when a train reaches a yard. On this incoming test minor repairs can be made by the inspectors and the cars requiring heavier repairs should be set out immediately for the necessary repairs. This will reduce the delay of the outgoing test. Locomotives have been found having a leakage of 16 lb. and this should not be tolerated.

A great deal of trouble is caused by the manipulation of the brakes. Many cases were reported where the brakes were not brought to full release before starting, an effort being made to release them with the engineer's valve in the running position. It is the duty of the traveling engineer to teach the enginemen properly to diagnose the air brake troubles in order that detail and explicit reports of repairs can be made. One of the most common causes of train pipe leakage is pulling hose apart and the ramming of cars together in switching yards. The former destroys the hose and the latter destroys the brake pipes and causes the joints to leak. The difficulty of operating passenger trains having P. M. and L. N. air brake equipment, with the supplementary reservoir of the L. N. equipment left in service, has been obviated on the Baltimore & Ohio by using only one train pipe reduction in making a stop, the first application being split to a 10 lb. reduction and then any amount of reduction is permissible. In giving instructions to the enginemen enough information should be included to show them the reasons for such instructions. Difficulties in obtaining proper and sufficient labor to repair the cars were mentioned but it is expected that the increase in wages will hold the men.

Locomotive Cab and Cab Fittings

The many types of engines make a universal design of cab hardly feasible, but it is felt that the following suggestions could be very well adapted to any design of locomotive cab.

Body of Cab.—The overhang of a cab should be of dimensions such as will insure protection from the elements to the fireman. This really necessitates its extension to a point approximately over the coal doors on the tender.

It is the opinion of the committee that the front windows of the cab should be as close as consistent to the engine crews' usual and proper position in the cab. This is to provide a broader view for the engine crew.

The side windows provided for locomotive cabs are as a general rule of the sliding type, and we believe that a sash should be constructed in such a manner as to provide for small panes of glass, for the reason that the portion of frame between window panes forms a brace lessening the liability of breakage, and in case of breakage it reduces the cost of

replacing, and lessens the opening in case of a broken window pane while in service.

Ventilators should be provided and so constructed as to exclude cinders.

Gutters on sides of cab should be located immediately over the windows in such a way as to afford all of the protection possible to the engine crew. The opinion of the engineman is that it should be maintained immediately over the cab window.

Cab Fittings.—Receptacles should be provided for signal appliances, such as lanterns, fusees, flags, torpedoes, etc. Torches, oil cans, hand tools, shaker bars, broom and other portable cab equipment should have convenient receptacles or hangers provided so that they may readily be located by the engine crews.

Boiler Appurtenances.—The steam manifold has been given various locations. Some are inside of the cab directly on top of the boiler, and where two are used they are usually located in the cab on the sides of the boiler near the top. Those located outside of the cab are just forward of the cab on top of the boiler and are provided with rods that extend through the front of cab for the purpose of operating the steam valves on the steam turret. This last mentioned arrangement, that is outside the cab, has numerous advantages over those located inside. It produces a cooler cab in warm weather and a drier cab in the cold season; it lessens the number of steam pipes in the cab and correspondingly decreases in number the pipe holes in cab that are generally hard to seal and keep tight against severe weather.

It is believed that better provisions could be made for the securing of the injector to the boiler. It is suggested that it be provided with a bolting flange similar in a way to the bolting flange on an air pump with a bed plate on the boiler. In cases where injectors are located outside of the cab substantial rods equipped with durable joints and suitable brackets that will keep the rod from turning and thereby change the capacity at times when it should remain constant, should be provided. The operating handles should be located conveniently within reach of the engine crew.

There is no question but that the "Bull's Eye" type of lubricators is most desirable, but the manner in which they are secured deserves greater attention.

Throttle and Reverse Lever.—It is desirable to have the throttle lever so located that it can be readily handled by the engineer and at the same time have his head outside of the window in order to observe signals from either front or rear of engine.

Where a power reverse gear is used an indicator should be provided to indicate the position of the valve gear. When air reverse gear is used, the steam connection globe valve should be located within handy reach of the engineman in the cab, so that the steam pressure may be readily turned on in case of an air failure.

Brake Valves.—Automatic and independent air brake valves in cabs should be located in a manner to provide ample clearance with the handles in any position and so they may be easily operated from the engineman's usual and proper position in the cab.

The report was signed by: J. H. Desalis, chairman; W. H. Corbett, W. W. Shelton, H. H. Schulte and H. F. Henson.

Engine Failures, Causes and Remedies

It has been said that the engine failure reports form one of the best barometers of the efficiency of the mechanical department, and this is indeed the case where all detentions and reported failures are carefully investigated *before* they are recorded. Where the engine failures charged depend, however, on the reports of conductors or on interpretations of the rules by the dispatcher's or trainmaster's clerk, the accuracy of the charge is often open to question.

An engine failure on the line of road is an expensive proposition, more far-reaching in its effects on the movement of trains than is generally realized by mechanical men who have had no road experience, often so upsetting the dispatcher's pre-arranged schedule that we cannot be surprised if he loses his temper and feels like charging every delay, regardless of cause, as an engine failure.

Definition of What Constitutes an Engine Failure

1. All delays waiting for an engine at an initial terminal, except in cases where an engine must be turned and does not arrive in time to be despatched and cared for before leaving time.

2. All delays on account of engines breaking down, running hot, not steaming well, or having to reduce tonnage on account of defective engine, making a delay at a terminal, a meeting point, a junction connection, or delaying other traffic.

Delays That Should Not Be Considered an Engine Failure

1. Do not report cases where engines lost time and afterwards regain it without delay to connections or other traffic.

2. In cases where a passenger or scheduled freight train is delayed from other causes, and an engine (having a defect) makes up more time than it loses on its own account, should not be called an engine failure.

3. Do not report delays to passenger trains when they are less than 5 min. late at terminals or junction points.

4. Do not report delays to scheduled freight trains when they are less than 20 min. late at terminals or junction points.

5. Do not report delays when an engine is given excess of tonnage and stalls on a hill, providing the engine is working and steaming well.

6. Do not report delays on extra dead freight trains if the run is made in less hours than the miles divided by ten.

7. Do not report engine failures on account of engines steaming poorly, or flues leaking, on any run where the engine has been delayed on side-tracks other than by defects of engine, or on the road an unreasonable length of time—say, 15 hr, or more per 100 mi.

8. Do not report an engine failure for reasonable delays in cleaning fires and ash-pans on the road.

9. Do not report failures against engines that are coming from outside points to the shops for repairs.

10. Do not report cases where an engine is held in the roundhouse for needed repairs and called for by the operating department, they being informed that the engine will not be ready until a stated time. Failure to provide that engine before the stated time should not be called an engine failure.

11. Do not report broken draft rigging on engines and tenders caused by air being set on train, account of bursted hose or breaking in two.

12. Do not report delays to fast schedule trains when the weather conditions are such that it is impossible to make the time, providing that the engine is working and steaming well.

13. Do not report delays when an engine gets out of coal and water, caused by being held between coal and water stations an unreasonable length of time.

If rule No. 2 is correctly interpreted there is no need for the 13 qualifying rules. However, if an engine apparently fails on the line of road, it is charged as an engine failure, although the engine may be in perfect condition and the delay due entirely to other causes, such as mishandling on the part of the crew, either engineer or fireman, excessive tonnage, weather conditions, or any of a hundred possible causes any of which may result in a poor engine performance and for which the engine or its condition is least of all responsible.

The true cause of the poor performance should be deter-

mined by a full investigation, which, however, may not be possible immediately and, consequently, when determined several days may have elapsed before the cancellation of the charge is requested. This being the case, it appears to this committee, in justice to the mechanical department, it would be much more equitable were all doubtful cases simply shown as delays on the "morning report" and these delays then promptly investigated and where the failure is established it be so reported on a subsequent report, or else a monthly report compiled, showing all failures and delays.

Any criticism to be of value must be constructive; therefore, as a first step toward the elimination of engine failures, we would recommend a closer relationship between all departments of a railroad, "get-together" meetings about once a month where engine and train performance can be freely discussed and wrong practices corrected.

We would also recommend that the mechanical department be kept advised as far ahead as possible of any power requirements, so that fitting preparation can be made; where no such system obtains the roundhouse foreman will sometimes take a chance when pressed for power and let an engine go on the assumption that perhaps it can make just one more trip.

A check of the various engine failures extending over a period of two years shows as follows:

Failures	In Year	Per 1,000 Miles
Air brake and pump	100	1.0
Air pump and engine	100	1.0
Axle, driving, broken	100	1.0
Brake engine	100	1.0
Brake rods	100	1.0
Brake wheels	100	1.0
Blow-off cocks	100	1.0
By-pass valve	100	1.0
Cylinders, packing	100	1.0
Crossheads	100	1.0
Cylinder heads broken	100	1.0
Crank pins broken	100	1.0
Drift gear	100	1.0
Flange loading	100	1.0
Frames broken	100	1.0
Followers, bolts	100	1.0
Graining	100	1.0
Gates and tie-rope	100	1.0
Gears and guide bars	100	1.0
Headlights	100	1.0
Hoists, air and water	100	1.0
Insulators	100	1.0
Journal, hot	100	1.0
Lubricator	100	1.0
Pins, hot	100	1.0
Piston and crosshead	100	1.0
Relief valve	100	1.0
Stokers	100	1.0
Spikes and tie-rope	100	1.0
Wire clips	100	1.0
Tramway, class	100	1.0
Valve gear, Stephenson	100	1.0
Valve gear, Walsby	100	1.0
Wire pins and nuts	100	1.0
W. steam	100	1.0
W. water	100	1.0

In the list above presented it is not clearly established that if the provisions of the federal inspection laws were fully complied with in letter and spirit at least half of these failures would have been eliminated, and by the same token would it not appear that one of the logical remedies for engine failures is a strict compliance with the federal inspection rules? An analysis of the above reported failures shows that at least 50 per cent should have been preventable in so far as mechanical failures are concerned and practically all of the man failures likewise.

Let it be understood that this report is not intended to reflect discredit on the enginemen, but rather on the methods in use on too many of our railroads. New devices are continually being applied and too often men are expected to familiarize themselves with these with no other instructions than that contained in descriptive pamphlets. One ounce of ocular demonstration is worth a pound of reading in such cases, and we feel that enginemen should not be condemned for lack of knowledge where no adequate means for instruction obtains. We feel that all new methods or devices should be thoroughly explained and demonstrated to the men whose duty it is to operate or work with them, before we can place

ourselves in position to criticize. Every roundhouse where repairs are made can be fitted up with instruction rooms, containing charts or models, or both, and certain hours or dates can be set when instruction will be given. Then if the men do not avail themselves of the opportunities offered, action can be taken in case of man failure.

The report was signed by F. P. Roesch (United States Railroad Administration), chairman; J. R. Scott (St. Louis-San Francisco), J. N. Rafferty (Atlantic Coast Line), C. W. Irving (Norfolk & Western), and W. F. Perkins (Norfolk & Western).

The Railways in the War

By Samuel O. Dunn

Editor of the *Railway Age*

On the first occasion when I addressed you (in 1911) the two subjects pertaining to the railway business which were uppermost in the public mind where those of advances in rates and of operating efficiency. The Interstate Commerce Commission had just recently decided the first important case which the railway companies instituted to secure general advances in rates. You will recall that the Commission refused to permit the advances upon the ground that they were unnecessary.

The decision rendered at that time affords a striking contrast to certain steps which recently have been taken, and which have resulted in passenger rates being advanced about 50 per cent. and freight rates about 25 per cent. One cannot help wondering what would have been the course of developments in the field of transportation if the Interstate Commerce Commission had seen the light at that time, and granted the advances in rates which subsequent developments have conclusively demonstrated were needed.

Recalling that decision of the Interstate Commerce Commission caused me to recall also the most sensational development which occurred in the hearings in that case. This was the attempt of Mr. Louis D. Brandeis, an attorney for the shippers, to show that the railway managements, by the application of the principles of so-called "scientific management," could reduce their operating expenses one million dollars a day. The railways are now being operated as a single system by the Government. Expenses are increasing more rapidly than ever before. This, therefore, would be a most opportune time for those in charge of their management to put the principles of Mr. Brandeis to the crucial test. But they are not doing so—one circumstance among many which indicate that the attacks which were made upon the railway companies for alleged operating inefficiency were as unjust as many attacks which have been made, and are still being made on them upon other grounds.

While, however, the railways did not display much alacrity in applying the principles of Mr. Brandeis, they did show great alacrity and energy in adopting every feasible means for increasing the efficiency of operation. The statistics of the Interstate Commerce Commission reflect in a striking manner the results obtained. In 1911 the number of tons carried one mile per freight locomotive was 6,913,259. In 1915 the figure had been increased to almost 10,000,000, or almost 50 per cent. In 1917, the last year of private operation, the average number of tons of freight carried one mile by each locomotive was 12,636,545, an increase over 1911 of 85 per cent. This enormous increase in the amount of freight traffic handled by each locomotive was due both to increases in the average tons hauled per train, and in the average miles made per locomotive. The average tons per train increased from 383 in 1911 to 649 in 1917, or 59 per cent. The average miles traveled per locomotive per day increased from 55½ in 1911 to 67 miles in 1917, or 20 per cent.

It is impossible accurately to estimate the amount of saving in operating expenses which was caused by this great

increase in locomotive efficiency, but it amounted to literally hundreds of millions of dollars annually. There is now a tendency manifested in some quarters to attempt to make it appear that the inefficiency with which the railways were being operated made it necessary for the Government to take them over. I do not criticize the Government for taking charge of railroad operation. As an American citizen, I should feel deeply gratified if under Government control the operation of the railways should be made far more efficient than it was under private management. The highest efficiency in railroad operation is essential as one important means to winning this terrible war for democracy and humanity. At the same time I challenge as without foundation the allegation that the inefficiency of private management made necessary the adoption of Government control. The facts demonstrate beyond question that in the last year of private operation the power of the railways as a whole was more efficient and was operated more efficiently than ever before. The same thing may be shown as to every branch of operation.

How was this great increase in locomotive efficiency attained? It was attributable partly to the work of the managers and officers of the railways, including the members of this association, who have direct charge of the operation of the locomotives. It was partly due to the work of the builders of the locomotives and of the numerous concerns which are engaged in the manufacture of the specialties used on equipment. The best type of locomotive will not produce good results unless it is skillfully operated. On the other hand, the most skillful railway motive power officer cannot get the best results except with locomotives that are well designed, well built, and equipped with the most modern devices. The increase in locomotive efficiency has been due to the fact that, on the one side, there has been constant progress in the design of locomotives and in the invention and introduction of new devices to make them better machines, and that, on the other hand, there has been constant improvement in their operation. The work of those who have operated the locomotives and of those who have engaged in inventing and perfecting new devices for improving them have constantly reacted, one upon the other, and the result has been the wonderful progress to which I have referred.

This co-operation between the railways, on the one side, and the locomotive builders and specialty manufacturers on the other, will be as essential to continued progress in the future as it has been in the past.

We have heard a great deal within recent months about standardization of locomotives. I do not intend to discuss that matter here. There is, however, one thought regarding it which I desire to leave with you. This is that progress in design is far more important than standardization of design. I question very much whether, if an extensive program of locomotive standardization had been adopted by the railways of this country ten years ago it would now be possible to show, as I have shown, that there was such a great improvement between 1911 and 1917 in the design, equipment and operation of locomotives that the amount of freight handled with each locomotive was increased on the average 85 per cent.

Of all the changes which have occurred in the railroad business since it was my privilege to address your association before, the greatest, of course, are those which have been caused by the war in Europe and by the final entrance of our country into it. It is questionable if there is any class of American citizens engaged in industrial pursuits who have felt the effects of this war more than the railway officers.

It caused an enormous increase in railroad business in this country in 1916, the last year before we entered it. It caused a still greater increase in railway business in 1917, the first year that our country was in it. The organizations and facilities of the railways, after a long period

of restrictive regulation were inadequate to cope with this enormously augmented business. There is no part of the record which has been made by our country since we entered the war which affords more just ground for pride and gratification than the way in which the officers of the railways have risen to the demands of the occasion. During the first nine months that the United States was in the war the roads, in co-operation with the War Department, raised regiment after regiment of engineers to be sent to France, and they gave 70,000 of their officers and employees to the army, many of these going "over there" as members of these engineer regiments. Under the direction of the Railroads' War Board they handled a traffic which two years before it would have been inconceivable that they could have handled with the facilities at their disposal. Finally, there came the terrible winter of 1917-18. The weather experienced was the most severe ever known. One of the great trunk lines in the most congested eastern territory spent as much for removing ice and snow in that winter as it did in all the previous six winters combined. That simple fact strikingly illustrates the conditions with which the operating departments of the railways had to deal. Operating expenses were increasing so fast that they were rapidly wiping out earnings. The companies were confronted with demands from their employees for enormous increases in wages—demands many of which it was clear ought to be granted both as a matter of expediency and as a matter of justice. You know the sequel. The Government decided that it must step in and take control of railroad operation.

This development was regarded with alarm and regret by a very large majority of railway officers. They did not know how revolutionary the change would prove to be. They could not anticipate how it would affect them individually. What has been the attitude of railway officers toward Government control? It has been that of American citizens. They have put the welfare of their country above every other consideration. They said, in effect, at the start that whether it was right or wrong, wise or unwise, for the Government to take over the railways, now that it had done so they would loyally give it the best service of which they were capable in any place to which it might assign them. That has been their attitude ever since. It will be their attitude until the war is won.

List of Exhibitors

- Air Reduction Sales Company, New York.—Air reduction valves and air reduction regulators. Represented by R. J. Bader, W. McCarty and R. A. Sessing.
- American Arch Company, New York.—Railroad ties. Represented by W. W. Hammett, Lulu P. Nott and J. L. American.
- American Floath, Bolt Company, Portland, Me.—American hollow staybolt iron, American rivets, American marine staybolts. Represented by R. W. Benson, W. F. Heacock, J. A. Trainor, W. Widmeier, M. M. McCallister and C. A. Seely.
- Anchor Packing Company, Chicago.—Packing for valves, valves, boxes. Represented by J. C. Weaver and J. A. M. N. B.
- Ashton Valve Company, Boston, Mass.—Valves for steam engines and steam gages, safety valves. Represented by J. W. Motherwell, H. O. Fettingler and S. F. Gettrist.
- Baldwin Locomotive Works, Philadelphia, Pa.—Photographs of locomotives. Represented by C. H. Peterson and C. H. Gaskill.
- Barco Manufacturing Company, Chicago.—Engine tender metallic connections for air, steam and feedwater between engine and tender; Barco metallic steam heat connections for passenger cars, coach yards, stations and roundhouses; Barco air reservoir connections; Barco automatic smokebox blower fitting; Barco loose bolt crosshead and slipper. Represented by F. N. Bard, C. L. Mellor, Charles Thomas and F. H. Stiles.
- Bird-Aecher Company, New York.—Boiler chemicals. Represented by C. J. McGurn, R. P. Bird, C. A. Bird, J. A. McFarland, T. A. Peacock, C. C. Shaw, H. E. Wheeler and J. M. Dooley.
- Buda Company, The, Chicago.—Turbo-generator set, 500 watt capacity; headlight case and reflector. Both meet United States headlight requirements. Represented by M. A. Ross, J. W. Cleary and H. P. Bayley.
- Chambers Valve Company, New York.—Chambers throttle valve. Represented by Frank Clark, W. H. Bellmaine and E. Barnett.
- Commonwealth Supply Company, Richmond, Va.—Lewis power reverse gear. Represented by S. H. Lewis.
- Crane Company, Chicago.—Valves and fittings. Represented by Frank D. Fenn and Fred W. Venton.
- Dearborn Chemical Company, Chicago.—Represented by T. H. Price, O. H. Rheymer, W. S. Reed, T. H. Ross, Paul Bowen, I. H. Bowen and I. I. B.



The Great Indian Peninsula's Military Train

A Novel Scheme for Carrying Troops by Rail

The Great Indian Peninsula Railway of India Uses Military Cars, Holding 66 Soldiers Each

By Frederick C. Coleman

SINCE AN UNFORTUNATE mishap which occurred to troops in transit from the Northwest frontier of India some time back, most of the trooping arrangements have been conducted from the port of Bombay, and the Great Indian Peninsula Railway with commendable promptitude has now made most carefully planned and complete arrangements for safeguarding the comforts of the men entrusted to its charge.

To make the situation regarding the new troop trains quite clear it is necessary to refer to the general arrangements which have from time to time been made for military traffic in India. In "pre-mutiny" days, certain rivers and canals were the only means of transport, but with the advent of railways, the military authorities gradually utilized these, and troops were conveyed to their different cantonments "by rail" as this means of communication became established. It can be quite understood, however, that in such a large country as India, the journeys must be long even by rail and that to convey European troops through a country wherein the customs and habits of the inhabitants are so different is no easy undertaking. The government therefore instituted "rest camps" or large plain barracks at convenient intervals along the main lines of railway, to which the troops were conveyed in relays, that is to say, they would undertake their journeys in sections, resting one or two nights, as the circumstances might dictate, at the rest camps. As the speed of trains increased and refreshment and food arrangements became more organized this system of rest camps was more or less abandoned and the journeys attempted by through trains stopping at suitable intervals for meals. The trains themselves, however, were wanting in convenience and comfort for Europeans, inasmuch as they had to be made up of the standard third class cars of the country, which it may here be noted are very different from the third class cars used on English or American railways. If the class of car could be gaged by the rate of fare, the third class cars in India would be about 10th class in England, for the fare charged to an ordinary passenger amounts to the large sum of $\frac{1}{4}$ cent per mile.

The cars themselves are plain open vehicles with wood seats of slat pattern, and are built to accommodate about 100 third class passengers. When used for trooping this

number is considerably reduced, usually to two-thirds. It is as well to point out here that in India third class travel is of the "happy-go-lucky" style, for the passengers appear to prefer having double complement in the car to half. There then seems to be more voices to carry on the discussions, etc., which appear to go on continuously—the subject matter being "picer," or money—probably the amount of fare paid, etc. The noise in a third class car of an Indian Railway train at night is somewhat appalling; it is only on the mail trains where a slight extra fare is charged that the native passengers appear to want to sleep.

A soldier outward bound for India and traveling over the British railways from a country station to the port of embarkation is carried in a comfortable and well upholstered third class car and has little to complain of. On reaching India, however, (his arrival was usually timed for the "cold" weather, but recently, owing to war conditions, the journeys have had to be performed in the hot season), he was accommodated in the cars we have mentioned above. Some years ago, we believe, at the instance of the late Lord Kitchener, the authorities did have iron rails provided along the inside of the compartments of ordinary "thirds" on which hammocks could be slung, and so provide more sleeping accommodation for those men who previously *had to lie on the floor*.

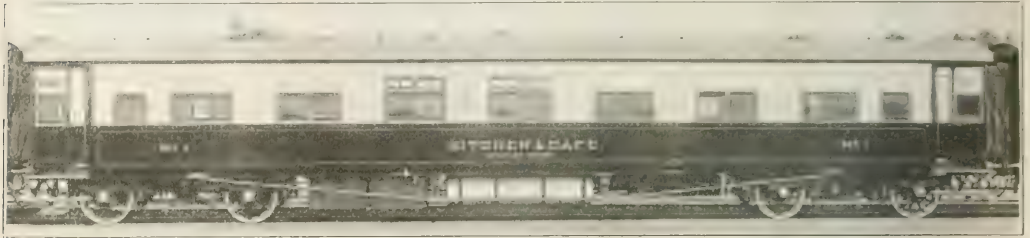
This order of things has now been entirely changed, for to meet the problem of the better transportation of the British troops in India, the Great Indian Peninsula Railway, in collaboration with the military authorities, has recently completed at its Matunga workshops, Bombay, several special trains designed by A. M. Bell, the company's carriage and wagon superintendent, for the conveyance of troops coming and going to and from the various Indian cantonments. A complete train includes 11 cars: a staff car, a combination restaurant and sleeping car, a sleeping car for the officers, 6 military cars for the soldiers with a canteen car between and a brake van.

The military car is perhaps the most interesting. The body of the vehicle, 68 ft. long by 10 ft. wide, is built directly on a strongly braced steel underframe, the bottom sills of the sides being bolted to longitudinal angles running the full length of

the underframe sills. The side posts are braced by diagonals and the whole structure is pulled together with long tie bolts passing through from the plates to the sills. The framing of the superstructure is of Burmah teak, sheathed with planished steel panel plate on the outside and lined with teak on the inside. Between these two skins there is a 2 in. space which is divided by a layer of heat-resisting material. The roof is treated in a similar manner which represents the standard practice for all of the new passenger cars built for the Great Indian Peninsula since the old "sunshade" arrangement was discarded. The cars are each of the corridor type with end

are stowed below the lowest berths, and their kits are accommodated in parcel racks above the uppermost. At each end of each car are two lavatories and also a wash-basin with a plentiful water supply. About two tons of water are carried in galvanized cylindrical steel tanks placed below the car underframe, the supply for the high-level tanks, etc., being pumped as required by semi-rotary hand pumps. The provision of this facility was necessary owing to the difficulty of obtaining an adequate water supply at intermediate stations on certain stretches of railway.

The trains when made up accommodate half a regiment



Kitchen Car of the Military Train

doors and vestibules built according to standard dimensions. To secure a maximum cross section with the utmost permissible height, without departing from the standard 3-ft. 7-in. diameter wheels, the floor has been brought down onto the underframe. The interior therefore measures from floor to roof 8 ft. 5 in.

The internal arrangements of the military cars consist of galvanized steel tubular framing which supports the berths in tiers of three, a total of 66 being provided in each car, with berths 7 ft. long, one above the other. This arrangement is somewhat similar to that adopted on a troopship. In the hot season only 44 soldiers are usually carried in this

with complete kit and equipment, carry rations for the entire journey, the only stops made en route being those for traffic and locomotive purposes. Incandescent gas lamps are used for lighting the interior. For ventilating, a double row of "Monarch" exhausters are placed "hit and miss" along the roof, and above the windows there are openings which can be closed with either venetians or shutters. This combination permits of the inlet of a steady current of air from the outside, through the interior, and out by the roof. The officers are accommodated in a corridor sleeping car connected to a composite sleeper and restaurant, while the stores, mineral waters, ice, etc., are carried in the end vans. The



The Military Car

manner, as the upper berths are left vacant. Typical views of one of these cars, as used for day and for night travelling, are shown in the illustrations. The lowest berth forms a seat by day, while the middle one folds down to form a back for it, and the uppermost folds up against the parcel rack. There are no partitions to form compartments, but the berths—being arranged transversely and opening off the side corridor—give similar effect, with the added advantage that the tubular framing and the open slats of the berths give to the car an open and well ventilated interior. The men's rifles

crew or staff attending upon the wants of the soldiers is also accommodated in these. At meal times portable tables are placed between each set of seats in the military cars and the meals are served from the kitchen by orderlies appointed for this work.

The kitchen car is of the same over-all dimensions as the other vehicles forming these military trains. It has a large central kitchen with tiled sides and floors with a large cooking range situated in a central position. This range is operated with oil burnt in vaporizing burners at each end of its

casing. All the usual kitchen arrangements are incorporated in this apartment. Adjacent is a cold storage for meat, etc., and a compartment from which iced drinks, tea, coffee, etc., are served. At the opposite end of the kitchen car are quarters for the sergeant-in-charge, cooks, attendants, etc.



The Military Car by Day

A plentiful supply of water is carried in tanks underneath, and electric ventilators are provided in the roof, operated from the lighting system of the car.

A train made up in this manner is 730 ft. in length and weighs approximately 400 tons, and the running time allowed averages 30 miles per hour, without stops. It has



The Car Arranged for Night Travel

thus been possible to reduce considerably the time of transport of troops over many of the long runs between the military depots in India, as no "rest halts" are required, and as the kitchen car carries the necessary commissariat arrangements, the only intermediate stops necessary are those required for locomotive and train purposes.

NEW BERLIN-VIENNA RAILWAY.—Construction of a fourth direct railway from Berlin to Vienna is said to have been approved by the German Railway Control Board.

Train Accidents in June.

THE FOLLOWING is a list of the principal train accidents reported as occurring on the railroads of the United States in the month of June, 1918:

Date	Road	Place	Kind of Accident	Kind of Train	Killed	Inj'd
3	Atchison, T. & S. F.	Atchison, Mo.	br.	P. & P.	0	13
3	Eric.	Rittman, Ohio	br.	P. & P.	6	3
5	Central Vermont	Burlington, Vt.	br.	P. & P.	9	7
14	Lack. & W. V.	Moosic, Pa.	br.	P. & P.	2	9
22	Mich. Central	Ivanhoe, Ind.	br.	P. & P.	7	120

Date	Road	Place	Cause of Derailment	Kind of Train	Killed	Inj'd
3	Missouri Pac.	St. Louis, Mo.	br.	P.	2	91
6	New York, N. H. & H.	Lakeville, N. H.	br.	P.	0	2
6	Southern	Asheville, N. C.	br.	P.	0	2
11	Denver & R. G.	St. Louis, Mo.	br.	P.	0	2
12	Lehigh V. & T.	Easton, Pa.	b. wheel	P.	0	2
17	Missouri K. & T.	St. Louis, Mo.	d. bridge	P.	0	2
18	St. Louis S. W.	St. Louis, Mo.	br.	P.	0	2
21	Pennsylvania	Hastings, Pa.	br.	P.	0	2
23	K. C. Mex. & Orient	Woodland, Mo.	d. journal	P.	0	2

Date	Road	Place	Cause of Accident	Killed	Inj'd
3	N. Y. N. H. & H.	Saybrook, J.	b. pipe	0	2

The trains in collision at Acomita, N. M., on the third were westbound passenger No. 7 and eastbound passenger No. 2. The westbound train was standing at the station and was struck by the eastbound at about 20 miles an hour; both locomotives were wrecked. One engineer, one fireman, two express-baggage men and one porter, five passengers and three others were injured. The engineman of train No. 2 had overlooked the fact that the right of his train to main line at the meeting point had been taken from him by train order.

The trains in collision near Rittman, Ohio, on the 4th, were, westbound train consisting of a locomotive and empty passenger cars, and an eastbound locomotive, running backward, without cars. Six men were killed and three were injured. The killed were all on the westbound train, the engineman, the fireman, the conductor, two brakemen and a porter. The men on the eastbound locomotive had seen their danger in season to jump off, and they were injured, but not fatally. The westbound train was running on the east-bound track.

The trains in collision near Burlington, Vt., on the fifth, were a southbound mixed train, not carrying passengers, and a northbound locomotive, belonging to a worktrain, but running without cars. The collision occurred in a short tunnel, and both locomotives were wrecked. Nine employees were killed and seven were injured. The exact cause of the collision is not definitely known as most of the employees concerned were killed; but dependence on insufficient flagging is believed to have been the primary cause.

The trains in collision on the Lackawanna & Wyoming Valley at Moosic, Pa., on the 14th, were a worktrain, just starting out of a side track, and a northbound freight, the freight striking the rear end of the worktrain. Two employees were killed and nine were injured. The flagman of the worktrain had put down torpedoes and had returned to his train; but the torpedoes were not far enough back, and the freight had not time in which to stop.

The trains in collision on the Michigan Central at Ivanhoe, Ind., on the 22nd were a mixed train, westbound, carrying a part of a circus, and a following extra train consisting of empty sleeping cars. Four sleeping cars and a caboose at the rear of the circus train were wrecked and took fire, and

Abbreviations and symbols used: A, Accident; br., Broken; b., Broken; d., Derailment; dr., Drift; f., Fire; f. & p., Fire and passenger; f. & p. & c., Fire and passenger and caboose; f. & p. & c. & e., Fire and passenger and caboose and engine; f. & p. & c. & e. & t., Fire and passenger and caboose and engine and train; f. & p. & c. & e. & t. & s., Fire and passenger and caboose and engine and train and stock; f. & p. & c. & e. & t. & s. & w., Fire and passenger and caboose and engine and train and stock and work; f. & p. & c. & e. & t. & s. & w. & d., Fire and passenger and caboose and engine and train and stock and work and destroyed by fire; f. & p. & c. & e. & t. & s. & w. & d. & a., Fire and passenger and caboose and engine and train and stock and work and destroyed by fire and one or more passengers killed.

78 passengers and one employee were killed, and 120 passengers injured. The employee killed was the trainmaster. The train of empty cars had run past distant and home automatic signals set against it and had also been warned by a fusee, the line of road being straight. The collision occurred at 3:57 a. m. This collision was reported in the *Railway Age* of June 28, page 1570.

The train derailed near Hope, Ark., on the third was the northbound Sunshine Special. The locomotive was thrown off the track and overturned at a switch which had been maliciously tampered with. Two trainmen were killed, and 79 passengers and 12 employees were injured, none seriously, it is said.

The train involved in the accident at Lakeville, Mass., on the ninth about 6 a. m., was a westbound passenger. The train struck an automobile at a highway crossing and one car was thrown off the track. No persons on the train were injured, but in the automobile five men were killed and two were injured.

The train derailed at Huber, Ky., on the ninth, was southbound passenger No. 7, the same train which was involved in a collision, within about three miles of Huber, last December. The train was derailed while running at full speed, and two coaches were dragged some distance on their sides. The engine and one car remained on the track. Sixteen passengers were injured.

The train derailed at Amherst, Va., on the 12th, was northbound passenger No. 32. The train struck a freight car which fouled the main track and the locomotive and four cars were overturned. The fireman was killed and the engineman was injured.

The train derailed at Salt Lake City, Utah, on the 12th, was a westbound passenger. The train was running at a speed of about fifty miles an hour; three coaches were derailed and partly turned over, two fell down a bank, one tourist and two standard Pullmans derailed; one passenger was killed and twelve injured. The derailment is believed to have been due to distortion of track by solar heat.

The train derailed at Bear Creek Junction, Pa., on the 13th, was an eastbound freight, in which were 42 tank cars filled with gasoline. The wreck took fire, presumably from friction of iron parts, and 17 cars of gasoline were burnt up. The derailment was caused by a broken wheel.

The derailment on the Missouri, Kansas & Texas on the 17th was between Dallas and Wichita Falls. Six passengers and three trainmen were injured. The derailment was caused by the failure of a bridge weakened by fire.

The train derailed on the St. Louis Southwestern near Selby, Tex., on the 18th, was a southbound special, carrying soldiers. The engineman, fireman, and five soldiers were injured seriously, and 29 other soldiers escaped with less severe injuries.

The train derailed at Hastings, Pa., on the 21st, was a local passenger, from Garway to Hastings. The engine was thrown off the track at a misplaced switch and, with two cars, was badly damaged. Two passengers and one trainman were injured.

The train derailed near Wooland, Tex., on the 23rd, was westbound freight No. 19. One brakeman was killed. The cause of the derailment was the failure of a journal which had become heated.

The train involved in the accident at Saybrook Junction, Conn., on the evening of the 23rd, was eastbound passenger No. 26. As the train approached the station, at moderate speed, the windows of four coaches were broken by a blast of air or steam from the locomotive of a westbound train, passing at the moment, due to the breaking of a connection to the air pump. Twelve passengers were injured by glass.

Electric Car Accidents—Serious accidents to electric cars were reported in June at four places: New York City on the 1st; East Brighton, Ala., on the 11th; Newark, N. J., on the

21st; and Angola, N. Y., on the 29th. Of the numerous personal injuries, none were reported fatal.

Canada—An express train was derailed on the Canadian Pacific at Shepard, Alta., on the 19th and one on the Canadian Government Railway at Nash's Creek, N. B., on the 27th. In the first mentioned nine persons were reported injured and in the other none.

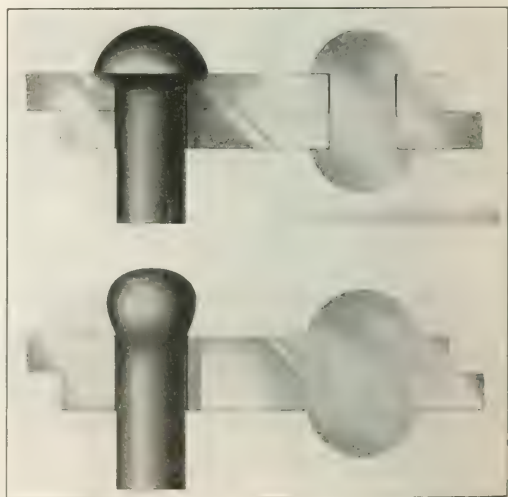
Tight Rivets

THE AMERICAN FLEXIBLE BOLT COMPANY, Pittsburgh, Pa., has recently placed on the market a new type of rivet called the "American" rivet. It has a rounded head, which when driven into the work will more completely fill the rivet hole than the ordinary type of rivet. One of the illustrations shows actual photographs of sections cut through riveted plates, in which both the ordinary



Various Types of Heads Can Be Formed from the One Head of the "American" Rivet

type of rivet and the "American" rivet were used. With the ordinary type of rivet it is practically impossible to upset the metal directly under the head on account of the square shoulder. With the "American" rivet the metal is made to flow under the head and fill the rivet hole as the head is upset in the process of riveting. By thus



Sections Through Plates Riveted by the Ordinary Type of Rivet and the "American" Rivet Showing How the "American" Rivet Completely Fills the Rivet Hole

filling the rivet holes more perfectly, the "American" rivet requires less calking and less stock is required to form the different types of heads. No sharp corners are formed in its manufacture to weaken it. Any desired shape of head may be obtained from the one stock pattern.

Doings of the United States Railroad Administration

Rules for Adjustment of Labor Controversies Issued— Table d'Hote Meals in Dining Cars Ordered

WASHINGTON, D. C.,

Adjustment of Labor Controversies

W. S. CARTER, director of the Division of Labor, has issued a circular regarding methods of adjusting differences as regarding labor, in part as follows:

In the adjustment of differences of opinion, not involving rates or amount of wages, or hours, that arise in the relations between the officials and employees, which differences are to be expected, sincere effort should be made to reach a common understanding without the necessity of reference to the director general, or to the Division of Labor. Where such controversies are not so adjusted, or where questions involving rates or amount of wages or hours are raised, the following methods will be adopted:

(a) Requests by employees for increases in wages, in addition to increases provided for in wage orders, will be filed *only* with the Board of Railroad Wages and Working Conditions, to which board has been assigned the duty of hearing, and investigating such matters, as provided in Article VII of General Order No. 27.

(b) The method of securing interpretation of wage orders is prescribed by the director general in Supplement No. 6 to General Order No. 27, and the prescribed method should be followed in cases involving interpretations of wage orders.

(c) When employees are represented by railway boards of adjustment, the procedure as to all controversies within the scope of their duties will be as directed in general orders creating such boards. The fact that certain employees are not represented by railway boards of adjustment will in no manner deprive them of any of the benefits accruing from such boards. An assistant to the director of the Division of Labor has been appointed, and a staff of representatives has been organized, for the especial purpose of rendering the same service to such employees as though represented by a railway board of adjustment. Boards of adjustment have been created by understanding with the larger organizations of employees, for the convenience of handling such matters and to relieve the director of the Division of Labor of adjusting same. It is not practicable to create railway boards of adjustment, except for the larger organizations of employees.

(d) Requests for adjustments in wages by employees not represented by railway boards of adjustment, which requests are based upon existing practices or adjustments reached through former arbitrations and settlements, will be presented to the proper officials of the railroads, and negotiations will be conducted in the usual manner up to the chief operating officer, or officer designated by him. Should no agreement be reached, and it appear to be necessary to take the matter further, a joint statement of facts (in duplicate) will be prepared by the representatives of the employees concerned and the proper officials of the railroad, and submitted to the director of the Division of Labor of the United States Railroad Administration. Attached to such joint statement of facts will be such brief arguments by both parties to the controversy as is believed desirable by those concerned. When an adjustment is not then reached through correspondence, a representative will be assigned to investigate, and if by his assistance no agreement is then reached, the matter in controversy will be referred again to the director of the Division of Labor.

(e) Personal grievances or controversies arising under interpretation of wage agreements, and all other disputes arising between officials of a railroad and its employees *not*

represented by railway boards of adjustment, will be handled in the usual manner by the individual, his representative, or by committees of employees, up to and including the chief operating officer of the railroad, or officer designated by him, when, if an agreement is not reached, the chairman of the committee of employees and the officer of the railroad will refer the matter to the director of the Division of Labor, in the same manner as provided in Paragraph *d* of this circular.

(f) When an employee, or class of employees, is not represented by committees, and negotiations can not be conducted in the usual manner, matters of complaint will be taken up with the proper officials of the railroad. When such employee or employees desire to appeal to the director general, a complete statement of the cause of complaint will be filed by such employee or employees with the director of the Division of Labor. When an adjustment is not reached through correspondence, a representative will be assigned to investigate, and if by his assistance no agreement is then reached, the matter in controversy will be referred again to the director of the Division of Labor.

(g) General Order No. 8 suspended negotiations for revision of schedules or general changes in conditions affecting wages and hours pending decision of the matter by the director general, which was accomplished by General Order No. 27. No order has since been issued either prohibiting or directing that negotiations for revisions of working conditions be undertaken. This matter is left to follow the usual course, except that all requests for increases in wages, reduction of hours, or special rates for overtime will be taken up directly with the Board of Railroad Wages and Working Conditions. Where working conditions are not agreed upon by committees of employees and the officials of the railroads, a joint statement of the points at issue will be prepared and filed with the director of the Division of Labor, attaching thereto such brief arguments as may be desired. When an adjustment is not then reached through correspondence a representative will be assigned to investigate, and if by his assistance no agreement is then reached, the matter in controversy will be referred again to the director of the Division of Labor.

Nothing herein contained has reference to employees of railroads not under federal control.

Garnishment of Wages Prohibited

General Order No. 43, issued on September 5, provides as follows:

"Whereas proceedings in garnishment, attachment, or like process by which it is sought to subject or attach money or property under federal control or derived from the operation of carriers under federal control under the act of Congress of March 21, 1918, are inconsistent with said act, and with the economical and efficient administration of federal control thereunder; and

"Whereas such proceedings are frequently commenced, particularly for the garnishment or attachment of amounts payable, or claimed to be payable, as wages or salaries of employees, which practice is prejudicial to the interests of the Railroad Administration in the operation of the lines and systems of transportation under federal control, and is not necessary for the protection of the rights or the just interests of employees or others; and

"Whereas if any rules or regulations become necessary to

"It is therefore ordered that no moneys or other property under federal control or derived from the operation of carriers while under federal control shall be subject to garnishment, attachment, or like process in the hands of such carriers or any of them, or in the hands of any employee or officer of the United States Railroad Administration."

The Railroad Administration has been turning some of its efforts toward an improvement and some degree of stand-

203 New Locomotives Delivered in August

Director General McAdoo on September 6 authorized the following statement of new locomotives delivered to railroads during the month of August:

[illegible]

Arrangements have been completed for making the new plan effective on the same day on all railroads under government control. At the same time steps are being taken looking to the co-ordination of dining car organizations and commissaries and the joint utilization of equipment which it is thought will lead to far more satisfactory results, both for the railroads and the public, than was possible under the old conditions.

Quantity production of some of the types of the standard freight cars ordered by the Railroad Administration has been attained and instructions have been sent to the car manufacturers as to which roads should receive the first deliveries. In the case of box cars they are naturally being sent first to the western roads that need them for the grain movement.

Insurance and Fire Protection

The section will have its own force of general inspectors and loss investigators, reporting directly to it at Washington, and through the Division of Operation will communicate to the regional directors and the officers and employees of the operating force under them with regard to the work of fire prevention and inspection on all railways under control of the Railroad Administration, with the object of utilizing existing organizations as they may be available, reorganizing them when it may be necessary, and establishing adequate fire protection and inspection organizations for those properties upon which no such organization is now maintained.

The circular says it is believed that if every employee can be made to feel an alert consciousness of responsibility for this loss, that it can be substantially reduced, thus effecting an important saving in the cost of operation and avoiding the interference with and delay of traffic that fires cause. To this end the earnest co-operation of every employee of

the United States Railroad Administration is desired and requested.

Service on Mississippi and Warrior Rivers

Director General McAdoe has given his approval of plans for establishing transportation service on the Mississippi and Warrior rivers under the direction of the Division of Inland Waterways. A fleet of 30 steel barges and seven tow-boats has been assigned for operation on the lower Mississippi and weekly sailings will be established beginning the last week in September between St. Louis and New Orleans, for both bulk and package freight. The fleet will have a carrying capacity of 6,000,000 ton-miles per week and the service will be augmented as soon as additional equipment is available, forming a substantial addition to the transportation facilities of the middle west. It has been found necessary to make the establishment of proper and adequate terminal facilities a condition precedent to the inauguration of service at intermediate points.

For service on the Warrior river steel self-propelled barges originally designed by the Alabama & New Orleans Transportation Company for the coal trade have been purchased, together with other equipment sufficient to carry 300,000 tons of coal annually from the mines on the Warrior river to Mobile and New Orleans. The Lake Borgne Canal has also been leased, giving a short route to New Orleans harbor from Mobile Bay. The temporary fleet is now being repaired and plans are being laid to obtain steel equipment sufficient to carry 1,500,000 tons annually by water to the gulf.

Rates on Live Stock Feed

At the present time there are no commodity rates applying on velvet beans, meal, cake, etc., from Memphis, Tenn., to points in Arkansas, Louisiana and Oklahoma. In order to encourage the movement of these commodities there has been authorized the establishment from Memphis to all points in Arkansas, Oklahoma and points in Louisiana (west of the Mississippi river) the same rates as now apply on cotton seed meal, subject to minimum carload weight of 40,000 lb. On account of the increased necessity for stock feed and the scarcity of cotton seed meal, a demand has been created at points in the Southwest for velvet beans, velvet bean meal, velvet bean cake, copra meal and soya bean meal. These commodities are used as live stock feed the same as cotton seed meal. Live stock feeders in the states of Oklahoma, Arkansas and Louisiana, West of the Mississippi river, who have heretofore used cotton seed meal for feeding purposes, owing to the shortage of cotton seed meal must now seek some other feed. Shippers at Memphis, Tenn., advise that they are able to take care of the situation by supplying velvet beans, velvet bean meal, velvet bean cake, copra meal and soya bean meal, which commodities make good substitutes for cotton seed meal for feeding purposes.

Improper Packing Being Checked

In the effort to improve the general handling of less than carload shipments and to reduce the amount of loss and damage claims, particular attention has been directed to the feature of improper packing, resulting in more rigid inspection of packages, before accepting for shipment.

Reports from one middle West district indicate that during the period of four months just ending, a total of 27,541 small shipments were turned down by the receiving clerks, 14,570 of these shipments were repaired or recovered, and were accepted by the railroads for shipment. 12,971 of the shipments, however, were rejected entirely by the railroads. This, of course, means that consignees received their goods in better condition, and undoubtedly also means a big saving to the railroads in avoiding numerous claims for loss

and damage which would have accrued had the shipments been accepted as originally presented.

Particular attention is being given to this matter of less than carload shipments, and many thousands of car miles are being saved daily by the elimination of duplicate or unnecessary package cars.

Estimates of Additions and Betterments for 1919 Called For

In order to determine what additions and betterments, including equipment, and what road extensions should be made during the year 1919, the Division of Capital Expenditures, in D. C. E. Circular No. 10, is asking federal and general managers to have prepared at once budgets setting forth briefly each project which in their judgment should be commenced on D. C. E. Form 9. Regional directors are expected to issue instructions in accordance with the circular and to give such directions and supervision to the preparation of the budgets for submission to them as they may deem advisable. The regional directors are to note on the forms the elimination of any project or jobs which they disapprove, with comment as to their reasons, and to send the revised budgets to the Director of the Division of Capital Expenditures. It is not the intention that the budgets as submitted shall be approved, but they are to be prepared solely for the purpose of affording an approximate forecast of the work considered necessary for 1919 and its approximate cost.

Rules for Investigation of New Devices

The circular of rules governing the submission of devices or inventions to the Railroad Administration, issued by the mechanical department of the Division of Operation and published in last week's issue, has been reissued by the Division of Operation as Circular No. 18 in practically the same form but made to apply to appliances for roadway or track as well as for use on cars and locomotives. Correspondence regarding matters of this nature which relate to locomotives or cars should be addressed to Frank McManamy, assistant director, division of Operation, and correspondence relating to appliances in connection with roadway and track should be addressed to C. A. Morse, assistant director, engineering and maintenance.

Re-Routing Saves Car Miles

The Railroad Administration has issued a statement saying it is following up closely the question of eliminating circuitous routing, and is meeting with close co-operation on the part of shippers generally. Several months ago arrangements were made to check billing at the more important junction points, change routing and send cars via direct routes, calling attention of the initial lines and shippers to roundabout routing. A report shows that during a recent month three Wisconsin junctions re-routed 1221 cars, with a saving of 93,750 car miles. The real transportation economy in this, however, is in the fact that all these cars were originally routed through Chicago, and were diverted to other junctions, thereby avoiding handling through the Chicago terminals.

Fruit Movement

Director General McAdoe has announced that a report from Hale Holden, regional director of the Central Western region, for the month of August shows that during that month 138 special fruit trains, with 5640 cars, were operated through from California to the Missouri river and Chicago. The total California movement since the commencement of the season about June 1 amounted to 446 trains, with 17,495 cars. The Colorado fruit movement commenced about August 15, and during the latter portion of the month there were moved a total of 45 fruit specials, with 1523 cars.

I. C. C. Certifying Standard Return for Compensation Contracts

The Interstate Commerce Commission is now furnishing the director general daily with certifications of the amount of the "Standard return," as provided in the railroad control act, representing the average net operating income of the various railroads for the three years ending June 30, 1917, which is to be inserted in the standard contracts with the individual roads to represent the amount of their compensation. Although the law makes the three-year average the maximum this figure is being used in the ordinary case.

Chief of Secret Service Appointed

Effective September 18, William J. Flynn, former chief of the secret service division of the Treasury Department, has been appointed chief of the secret service of the United States Railroad Administration in the Section of Claims and Property Protection, with offices in the Southern Railway building, Washington, D. C.

* * *

H. S. Noble has been appointed federal manager of New York and New Jersey canals to succeed G. A. Tomlinson who was appointed director of the Division of Inland Waterways of the Railroad Administration as noted in last week's issue of the *Railway Age*.

Fuel Conservation at Stationary Plants

AN ENTHUSIASTIC MEETING of railway men directly responsible for the consumption of fuel in the stationary plants on the railways under the control of the Railroad Administration was held at the Fort Dearborn Hotel, Chicago, September 9, under the direction of Eugene McAuliffe, manager, Fuel Conservation Section. The meeting was well attended and inspiring impromptu talks were given by representatives of the Fuel Administration, the Fuel Conservation Section of the Railroad Administration and railroad men.

Mr. McAuliffe in opening the meeting called attention to the great amount of fuel that will be required for the railways this year. At the best possible estimate this will amount to 166,000,000 tons, of which 16,000,000 tons will be used in other than locomotive fireboxes. This coal will cost on an average \$3.50 per ton which is 250 per cent greater than the average price in 1915. While from a purely financial standpoint all possible saving in fuel should be made, the most important reason is its scarcity. It is estimated that the country will be short 75,000,000 tons and the railways, the largest consumers of fuel, must contribute a large amount to make up this shortage. Although much has already been accomplished in using fuel economically on locomotives there is practically a virgin field among the railway stationary plants. While no attempt was made by Mr. McAuliffe to go into detail regarding the manner in which fuel can be saved in these plants he called attention to the great importance of keeping steam pipes and boilers well lagged to prevent undue radiation of the heat. Particular attention was also called to the importance of preventing all kinds of leaks. Piping extending for any great distance should have ample provision for expansion. Exhaust steam should be used for heating wherever possible. The buildings should be kept tight in winter so the heat will not be wasted.

Fuel must be conserved. The shortage of fuel in England has required that country to take 8,600 men from the army to mine more coal. Coal should be salvaged the same as scrap. At the present prices five tons of coal is worth

one ton of ordinary scrap. One road adds a coal car to the work train that is sent over the line to pick up the scrap for the purpose of collecting the waste coal with the scrap.

Talks by Fuel Administration Representatives

David Moffet Myers, advisory engineer, United States Fuel Administration, spoke of the work the Fuel Administration is doing; described its organization and offered freely the services of the 600 men in that department to help the railway men save fuel. He said that without question 50,000,000 tons of coal or 10 per cent of the country's consumption, could be saved by more careful operation of steam generating plants without any expenditure for additional equipment. He pointed out the fact that practicing fuel economy not only saved fuel but reduced greatly the demands on the railroads for transportation.

George R. Henderson, administrative engineer for the Fuel Administration in eastern Pennsylvania, prefaced his remarks with the slogan:

"If we can't can the Kaiser we can help make the can." And the can is made up largely of coal, he said. He described the questionnaire sent out to all steam plants for the purpose of determining whether or not they were using the coal to the best advantage. It has been productive of good results. Committees have been formed in various parts of the country to investigate conditions. The work of such committees in the mills of New England has resulted in a 15 per cent saving in fuel. He spoke of several individual cases where a large amount of fuel had been saved by reducing light, consolidating electric lighting plants, etc. The small plants are the more wasteful. Patriotic posters have been used to a large extent to stir up the interest of the power plant operators and particularly the firemen in saving coal. It is important for everybody to do the best they can with the equipment they have.

Joseph Harrington, administrative engineer for Illinois, spoke of the necessity for considering the personal equation of the men who handle the fuel. He cautioned that particular attention should be given the small plant. There are so many of them that even though the waste at any individual plant may be small the accumulative effect will be very large. Any organization developed on the railroads should be large enough to give the small plants proper supervision. He advocated strongly a two-man recording draft gage for boilers so that a continuous record of the manner in which a fire is handled could be obtained and the work of the fireman thus supervised. Mr. McAuliffe agreed with him thoroughly in this. Such a device Mr. Harrington explained, would also have considerable moral effect on the fireman. He would fire the boiler correctly for he would know that a record was being kept of his performance. He also spoke of the importance of weighing the coal in order that the fireman will get a better idea of what he is actually doing. It will give him an incentive to improve his work and that is an important point that should in no way be overlooked. Congenial surroundings are also necessary. A conveniently arranged plant, well ventilated and kept picked up and clean will give the fireman a certain amount of pride and self-respect which will be reflected in his work.

Osborne Monnett, engineer for the Fuel Administration, spoke briefly, calling attention to some of the important points that should be watched in the design and operation of boiler plants.

Fuel Oil Must Be Conserved

Nelson G. Phelps of the Oil Division of the Fuel Administration spoke on the fuel oil situation. He said that the time had now arrived when very serious consideration must be given this product. Oil is needlessly wasted. The

Bureau of Mines, a short time ago, estimated that 40,000,000 barrels, or 1,680,000,000 gallons, of fuel oil were wasted yearly due to improper operating methods. It is very easy to waste the oil when it is being burned and it is here that a vast saving must be made. The country is facing a shortage of 29,000,000 barrels and for the last six months it has been necessary to draw from the storage supply.

In calling attention to the oil resources of the country he said that from the time petroleum was first discovered, in 1859, to 1891, the production steadily increased. At that time it was restricted almost entirely to the states of Pennsylvania and New York and the production in those two states during 1891 was 30,000,000 barrels. Last year it was only 9,000,000 barrels. Similarly in Ohio the maximum production came in 1896; in West Virginia in 1900; in Indiana in 1904; Illinois, 1910; California, 1914, and Oklahoma and Kansas will probably have their maximum production this year. The entire production today amounts to about 400,000,000 barrels yearly.

Improper combustion of the fuel oil is responsible for the greatest waste. There should be some one made responsible for fuel oil economy and detailed to instruct the furnace operators in the use of the oil torch. Proper burners should be used. By far the majority of homemade burners are wasteful and it would be decidedly better to purchase a burner that has been designed correctly. Too often the fundamentals of burner construction are not understood. Better efficiency will be obtained with oil heated to 110 deg. before it enters the burner. The Fuel Administration is planning to publish some educational matter on economical fuel oil consumption which will be free for those handling fuel oil.

A Word from Fuel Supervisors

Various representatives of the Fuel Conservation Section spoke calling attention to the more important defects found around the railway stationary plants. By far the most common is improperly lagged steam pipes and boilers, excessive leakage from both air and steam lines, and improperly maintained boiler settings. Mr. Roesch presented some interesting figures showing that with coal at \$3.50 per ton in the furnace, steam at 150 lb. pressure leaking through a 1/2-in. hole would waste \$3,340 per year; through a 1/32-in. hole \$1,330 per year. Air at 100 lb. pressure with coal at \$2.00 per ton leaking through a 1/16-in. hole \$2.89 per month, and through a 1-in. hole, \$741.82 per month. It was stated generally that positive and absolute neglect was responsible for the greatest wastes. In one case a road was extremely short of water at a certain point, and at the same time was wasting 26,000 gal. through leaky valves. Piping should be above ground in order that leaks can be located and stopped. A case was reported where a set of 9-in. locomotive air compressors was used for furnishing air at high pressure to the shop for tools, while a large shop compressor was used to supply air at a lower pressure to the yards. The shop compressor was not used to capacity and the two methods of producing the air were used simply to give a high and low pressure line. With a reducing valve the shop compressor could furnish air for both the shop and the yard.

In some territories where coal has been very cheap it has been difficult to make the men appreciate the value of fuel, but with the extreme shortage throughout the country they are beginning to realize the necessity for economy and while there is a lot to be done in educating these men they are giving their support and co-operation. The fuel supervisors are holding staff meetings at the important terminals. Their attention is not restricted entirely to the mechanical department, the transportation department is in a position to save a large amount of fuel, and men from that department are included in the meetings. Particular stress was laid on what coal

means to this nation and to all of the Allied nations in winning the war. If for the lack of it this country could not do the full measure of work that will be required of it, the length of the war will be increased, and that means that thousands of our American boys will be unnecessarily sacrificed. Saving fuel is the least we can do at home and everybody will do this if they are made to appreciate its importance.

Other Speakers

There were among other speakers at the meeting, H. T. Bentley, superintendent of motive power, Chicago & Northwestern, who told how necessary it was to stir up the enthusiasm of the men in the practice of fuel economy. C. A. Brandt, of the Locomotive Superheater Company, spoke of the possibilities of the superheater in stationary boiler plants, particularly in roundhouses. This practice will reduce the condensation to a large extent.

Mr. Anderson, of the Milwaukee Light & Power Company, Milwaukee, Wis., spoke of the success with which pulverized coal has been used in the power plant of that company under stationary boilers. Boiler and furnace efficiencies of over 86 per cent have been obtained with the pulverized coal, the net efficiency being greater than that obtained with the automatic stokers. The Locomotive Pulverized Fuel Company's apparatus was applied last May, and after changing the design of the furnace to adequately meet the new conditions imposed by this method of combustion no difficulty has been experienced with the proper operation of the plant. Mr. Anderson made it clear that in the design of the furnace lay the secret of success in using powdered coal. He spoke very enthusiastically of the possibilities of this method of firing stationary boilers.

The advantages particularly referred to for this method were the constant degree of efficiency, the fact that constant critical attention was not needed as in the case of stoker or hand firing methods and the ease of control of the fire. The waste of fuel accompanying the banking and cleaning of fires is eliminated. At the plant in question which has peak loads night and morning this feature was of particular importance. It was possible to shut a boiler down at night and by keeping the dampers closed to conserve the heat of the brick work in the furnace, to start the fire in the morning from the heat of the brick, the steam pressure having dropped but little. To operate this system most successfully a sufficiently large installation should be made to warrant a pulverizing plant of sufficient size to bring the cost of preparing the fuel down to a reasonable figure.

Mr. Maddox, of the Missouri, Kansas & Texas, told of the experience that road had with this method of burning fuel at its Parsons, Kans., plant. A sufficiently large furnace volume and the proper baffling of the boilers is very necessary. He believed that this method of burning fuel had come to stay, particularly in stationary plants. Lignite has been used with especially good success although it was fed to the boiler with seven per cent moisture.

JAPANESE WATCHMEN'S SENSE OF RESPONSIBILITY.—About a month ago a little after midnight, says a recent issue of *The Railway Times*, Tokio, a person in a jinrikisha was just crossing the railroad tracks at Hibunzaka, as the guards were not closed, when a freight train suddenly came running and struck him down to death. The two watchmen of the crossing soon found that this fatal accident was entirely due to their negligence of duty and realizing their responsibility, threw themselves under a next approaching train and killed themselves. The caps and uniforms which were provided to them by the railways were nicely folded and placed near the place of their death, meaning to return them to their owner.

Orders of Regional Directors

TAMPERING WITH SHIPMENTS OF GASOLINE.—The Eastern regional director orders that outlet valves on the bottom of empty tank cars that contain a small portion of gasoline must not be tampered with by railroad employees; it is a dangerous practice.

Passenger Service.—The Eastern regional director directs attention to the fact that trainmen must not allow passengers to occupy more than one seat at any time, either for themselves or their baggage, when required for other passengers.

Expenses of Joint Ticket Offices.—The Eastern regional director advises that the Director, Division of Public Service and Accounting, has decided that the basis upon which monthly expenses of the joint ticket offices should be distributed is the gross ticket sales for the calendar year 1917, and that this basis should be made effective September 1, 1918.

Red Cross Posters in Railroad Stations.—Permission has been given the Red Cross to post in railroad stations a series of Red Cross posters between now and September 28, when the Fourth Liberty Loan campaign begins. They must be removed at the beginning of the Fourth Liberty Loan campaign.

Increase to Express Messengers.—The Eastern regional director advises that the American Railway Express Company has granted increases to express messengers effective July 1, and it will be proper that the railroads pay their proportion of such increases as in the past. The Express Company officials will be requested to submit a statement to each of the lines indicating to just what extent the increases were made and the proportion to be borne by the railroads. In the case of any messengers who are carried on the payrolls of the railroads, the Express Company has arranged to honor bills for the increase in rates granted under General Order No. 27, so that authority will not be necessary in individual cases.

Bond for Transportation of Merchandise in Customs Custody.—The Eastern regional director advises that a bond has been executed by the director general and accepted by the treasury department for all roads under federal control in lieu of bonds heretofore given by such carriers in the following cases:

1. The transportation of bonded merchandise in accordance with revised statutes, Sections 3000; 3001; 3005; 3006, Act of June 10, 1880, and acts amendatory thereto;
2. The privilege of lading and unlading bonded merchandise at night and on Sundays and holidays under the Act of February 13, 1911.

This bond does not supersede bonds known as consumption entry bonds, internal revenue bonds or warehouse bonds.

Troop Trains.—The Eastern regional director has issued the following rules to govern the furnishing of information as to the contemplated arrival of troop trains:

It is desired that no information with regard to the movement of troops or troop trains be given to any person whatever except as follows:

1. Railroad officers and employees may be given such information as it is necessary for them to have in order to provide for the proper movement of trains.
2. Information necessary may be given to connecting lines in the form provided by the cipher code.
3. Accredited representatives of the Red Cross, upon proper identification at points where troop trains are scheduled to stop, may be informed, upon application of the prospective hour of arrival of such trains. (Note: Where troops or troop trains are moving to a seaport this information

Employees should be instructed as above and should be informed by notice or otherwise that any discussion of troop movements with members of their families or with others is a serious offense.

Agreements Covering Side Tracks, Pipe Crossings, etc.—

The Eastern regional director states that inquiry was recently made of the director general's office as to whether the managers under United States Railroad Administration should execute in their own name side track agreements, leases for land, permits for crossing for pipes, conduits, overhead crossings for wires, etc., in which it was contemplated to use

the regular forms heretofore used by the corporation, and stamp them "United States Railroad Administration," etc., and subject to the usual 30, 60 or 90 days' termination.

In view of the fact that many, if not all, of these permits, notwithstanding their short termination, create conditions which may continue indefinitely, it is thought that the managers should prepare the agreements on the usual forms of the corporation, indicate the approval of the manager by his signature at some appropriate place upon the form, and then forward it to the president of the corporation to be executed by himself or such officer as the corporation may designate. Certain documents, of course, which may be of a temporary nature, may be acted upon without troubling the corporation with the details. More specific instructions concerning this and other matters are being formulated by the Administration and will be sent you in due course.

Interview of Officers and Soldiers by Agents of Railroad Administration.—The Eastern regional director quotes from a letter addressed to Hon. John Barton Payne, general counsel, Division of Law, by P. C. Harris, acting for the adjutant general, indicating that the war department has amended its requirements relative to the right to interview officers and soldiers by agents of the Railroad Administration.

Agents of the Railroad Administration will hereafter be considered as "proper officers" within the meaning of Paragraph 824 Army Regulations (relating to the furnishing of information by persons in the military service), and, upon presentation of proper credentials to the commanding officer or officers, will be permitted to interview soldiers at army camps and stations, and all necessary facilities for assisting them will be afforded.

The interviews that will be permitted in such cases will be restricted absolutely to the ascertainment of facts within the personal knowledge or recollection of the officers or enlisted men concerned. No reference to or examination of official records of any description either by the person being interviewed, or by the agent, will be permitted. Evidence from such records, whether at the army camps or stations or in the war department, will be furnished only by the war department, as prescribed by Paragraph 824 Army Regulations, in response to a request therefor made by the proper representative of the Railroad Administration upon The Adjutant General of the Army.

Income Reports.—The following reports and information are now being sent to C. R. Gray, Director, Division of Transportation, Interstate Commerce Commission Building, Washington, D. C.

1. Detailed income reports, showing comparisons with last year and indicating the expenses by primary account.
2. Each report or statement used by transportation officers to measure efficiency and cost of their operations.
3. Detailed explanation of the reasons for the increase or decrease in the above mentioned statements.
4. Usual explanations provided for president or chief operating officer covering increases and decreases as shown in the above mentioned statements.

It is the intention that the reports on the new O. S. Forms will take the place of the reports enumerated under headings 1, 2 and 3, and it will be unnecessary to continue sending the reports last referred to after those which apply to the month of August. The O. S. Forms do not provide for an explanation of increases and decreases in expenses. It will be necessary therefore, for the individual roads to continue sending in such explanation, but it should, as in the case of the O. S. Forms, be sent direct to the Operating Statistics Section, 603 Southern Railway Building, Washington, D. C.

Mis-use of Refrigerator Cars.—The Eastern regional director calls attention to a report of the Refrigerator Car Committee of the Division of Operation as follows:

Equipment, with particular reference to fruit and vegetable refrigerator cars, by permitting them to be loaded with ice in body of the car, also commodities which are permitted by present tariffs to have ice packed in the shipment, such as lettuce and spinach. To maintain an efficient refrigerator car it is imperative that the insulation be kept dry and it is a physical impossibility to construct or mechanically waterproof insulation that will withstand shipments as above referred to without moisture coming in contact with floor insulation.

Another very objectionable practice on the part of some shippers or consignees is to leave in cars when unloaded at warehouses and team tracks large quantities of decayed fruits and vegetables, and at times some of them clean out their warehouses of these articles and put them into the empty cars and allow them to return to the Pacific Coast. When the cars are badly contaminated it requires days and in some cases weeks to clean

easily stopped if warehousemen and yard clerks were instructed to see that all refrigerator cars are completely unloaded. We also recommend that oils in any form, or hides, or any other offensive articles be restricted from these cars, as it requires considerable scrubbing and fumigating to remove the stains and odor and the water required will necessarily get to the insulation.

Another practice on the part of some shippers that should be discontinued is the use of nails and spikes through the sides and floor of the car for bracing, as these necessarily puncture the insulation and form a channel for moisture to penetrate the insulation.

Prompt Payment of Freight Charges.—Provisions of General Order 25 requiring the prompt payment of freight charges, are not applicable to the payment of freight charges due from the British Ministry of Shipping, and bills for such charges may be rendered monthly in accordance with General Order 25-A.

Maintenance of Right-of-way Fence.—The Southwestern regional director emphasizes the necessity of close attention to the maintenance of right-of-way fences. Proper maintenance of fences helps to reduce to claim payments for stock killed on the right-of-way and aside from this, it conserves live stock for marketing purposes.

Inter-regional Movement of Special Cars and Special Trains.—The Southwestern regional director states that inter-regional special car and special train movements may be made regardless of whether such movements are in accordance with published tariffs if the initial line receive special authority from its regional director. Connecting lines may continue the movement on the assurance from the initial line that authority has been obtained. The regional director in charge of the initial line will obtain authority for the continuation of such movement when necessary from the regional directors interested and at the time of granting permission for the movement to the initial line.

Treating of Cross Ties.—The Northwestern regional purchasing committee sets forth rules prepared by the Central Advisory Purchasing Committee for the purpose of preventing interference by commercial treating plants with the programme of the Railroad Administration in securing its supply of ties. The rules specify that no arrangement should be made with any commercial tie treating plant both to furnish and treat ties. Contracts should cover only the treatment of ties to be furnished by the railroad from its regular source of supply. In order that railroads may avail themselves of an immediate source of possible supply and prevent possible financial loss to those commercial treating plants which have already purchased cross ties for treatment and resale, the regional purchasing committees may buy from any commercial plants in the region all the ties that they may now have on hand at their plants either treated or ready for treatment, or any ties which may be at this time enroute to their plant as a result of previous purchases. Ties purchased in this manner may be distributed by the committee to the roads most in need of them. The Forest Products section of the Central Advisory Purchasing Committee is compiling the information necessary to formulate a definite plan for making use of the capacity of facilities of all commercial tie and lumber treating plants and for distributing the available supply of railroad ties and timber among them to the best advantage, thereby preventing confusion and interference of action between the railroads and the plants. The rules apply to all switch ties and cross ties either hewn or sawn.

Locomotive Coal.—The Northwestern regional purchasing committee announces that the Railroad Administration has authorized the Fuel Administration to divert from railroad use such high grade gas and by-product coal as may be required to carry on the government's steel production programme. It is understood, however, that the Fuel Administration will arrange in advance for an adequate supply of the most satisfactory quality of other coal available for railroad use. Before submitting the changes in coal supply by local fuel administrators, however, the railroads are requested to advise the regional purchasing committee.

The committee announces also that the order of the United States Fuel Administration establishing a price for tippie coal has been modified to permit negotiations between operators and individual railroads for coal taken directly from tipples to locomotives at mines. It is recommended that the amount of coal so taken be increased if possible, to avoid the use of cars. The average number of tons per day so delivered is to be reported to the regional purchasing committee.

Specifications for Chain.—The Northwestern regional purchasing committee announces that the Chain Section of the War Industries Board requests that railroads adopt standard specifications for chain for locomotive tenders and cars, and also that the inspection of chains be made only at the manufacturers' plants. The circular is accompanied by the Railroad Administration's specifications for chains, which the railroads are asked to examine for the purpose of determining whether such chains can be generally applied.

Salary Increases to Subordinate Officials.—In Circular 28, dated August 31, the Northwestern regional director announces salary increases to subordinate officials, effective August 1.

1. Assistant yardmasters will be paid on an hourly basis of eight hours per day, at a rate five cents higher than the day or night yard foremen's rates.

2. Assistant general yardmasters will be paid on an hourly basis of ten hours per day, at a rate five cents higher than the day or night foremen's rates.

3. General yardmasters will be paid on an hourly basis of ten hours per day, at a rate five cents higher than the day or night foremen's rates. Assistant night yardmasters working 10 hours, with a maximum of \$250 per month. Yardmasters at outside points where no assistant yardmasters are employed will be paid the same rate as an assistant yardmaster working ten hours per day.

4. Trick dispatchers will receive an increase of 20 per cent over the present rate with a maximum of \$210 per month.

5. Chief dispatchers and night chief dispatchers will receive an increase of 20 per cent over their present rates with a maximum of \$250 per month.

6. Trainmasters and assistant superintendents will receive an increase of 20 per cent with a maximum of \$275. In some cases assistant superintendents or trainmasters are now paid \$275, or more, in which cases adjustments should be made in individual cases on the merits in each instance after negotiation with the railroad.

7. Road foremen of engines, travelling engineers and traveling firemen will receive an increase of 25 per cent with a maximum of \$250 per month.

8. Roadmasters will receive an increase of 25 per cent generally.

Railroads are asked to submit recommendations for increases in the rates of pay of superintendents, master mechanics, etc., and these recommendations will be acted upon promptly upon receipt.

Interpretation of Clause Regarding Commissions, etc.—In Supplement 5 to Circular R. P. C. 11, dated September 5, the Northwestern Regional Purchasing Committee sets forth six questions raised by the assistant general counsel of the Railroad Administration relating to the interpretation of the attorney general's ruling pertaining to contingent commissions, etc., and answers from the assistant attorney general of the United States:

Question 1. Does the character of federal control of railroads require a different interpretation of these requirements than a direct contract for supplies for the war department, etc.? Answer: The character of federal control of railroads does not require a different interpretation of the covenant against contingent fees than that which applies to the war and other departments of the government.

Question 2. Does the clause apply to a contract involving a commodity upon which the government has fixed a price if the contract is made at that price and the contractor pays a commission? Answer: No.

Question 3. Suppose a contract, calling for deliveries and payments during federal control, was entered into between the railroad company and the contractor prior to federal control, the contractor having agreed to pay a commission as payments are made; the Railroad Administration in taking over the property takes over the contract as well as on subsequent payments by it on the contract, the contractor is to pay a commission. Would this situation be affected? Answer: No.

Question 4. Is the clause intended to cover an instance where the contractor has a contract with the government for the sale of a commodity, the capacity of sales agent who is paid:

- (a) On a salary and commission basis;
- (b) On an exclusive commission basis according to sales;
- (c) On an exclusive commission basis in a certain territory covered by him.

It is understood in the above cases that the contract is negotiated by the sales agent in the name of the principal. Answer: Yes.

Question 5. In the cases set forth under No. 4 above would it make any difference if the representative was so employed by the contractor prior to federal control and continued in such capacity during federal control? Answer: No.

Question. Does the clause apply in the case of a manufacturer's agent operating on an exclusive commission basis as the representative of several companies where the agent negotiates the contract in the name of the company he represents? **Answer:** The covenant prohibits the payment of contingent fees to manufacturers' agents operating on an exclusive commission basis as a representative of several companies where the agent negotiates the contract in the name of the company he represents.

Rates of Pay to Piece Workers. The Northwestern regional director outlines the practice which will be followed in applying the provisions of General Order 27 and its supplement 4 to piece workers. This class of labor will receive for each hour worked the same increases per hour as have been awarded to the hourly worker engaged in similar employment in the same shop. Piece workers, like other workmen, will be subject to the minimum allowances, specified in Supplement 4, and the provisions for the payment of time and one-half time for overtime, including Sundays and the following holidays: New Year's Day, Washington's Birthday, Decoration Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas. Railroads having the piece work plan in effect for car or locomotive repairs are requested to submit to the office of the regional director their recommendations as to any further increase in piece work rates which should, in their opinion, be made.

An Electric Snow Melting Device

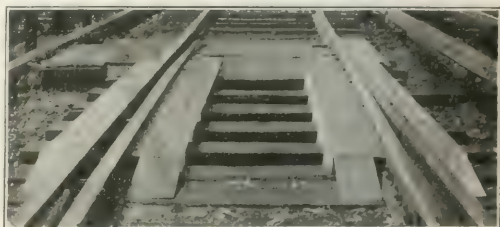
SNOW STORMS AND BLIZZARDS have come to be an accepted excuse for the breaking down of train schedules. One of the problems is to keep the switches and their throwing mechanism free so that they can be operated promptly in any conceivable kind of a storm. The "snow in the switches" is a very important cause of delay in terminals, and at busy junctions and detouring places, and if the turnouts can be kept in service, much trouble can be avoided.

The common method of attempting this is to have men shovel the snow out and then brush the switch points clean with brooms. There are a number of objections to this, where there are many trains or fast ones. The first objection, for this year at least, is that there are not enough men to do it. Another is that when the wind is heavy the men are not able to do the work. If the snow blows in between the stock rail and the switch point at the rate of 60 miles an hour, it is evident that it will be difficult to brush it out with brooms. The points that are operated by switch stands can be taken care of, but it may take a great deal of time. At an interlocking plant, where the men have to clear the snow out of the switches, then step back and signal to the operator of the interlocking station and have him attempt to make the movement, the delay is apt to be more serious, and detentions accumulate with the number of trains. Near the big cities it is not clear to all our laborers that they should endure hardships and work long hours at their normal rate of pay, when they can send word to their foreman that they are sick, and then work at more comfortable jobs for a few days with the contractors and make more money. Of course, there are many loyal men, but it is a temptation to which men who have inadequate clothes for these extreme conditions do yield occasionally, and if they do fail to report, it is at a time when the railroads cannot well employ extra or new men to take their chances on busy tracks. There is danger to men who try to do this work when there is a blinding storm, whether they are experienced or not. It is only necessary to ride an engine in a bad storm to realize the danger to men on the tracks, especially if there are a number of tracks and, therefore, several routes that a train may take.

An electric heater device has been developed to help keep the switches clear from snow, and to decrease the amount of labor required. The heater units are enclosed in a 3½-in. wrought iron pipe, 20 in. long, and a battery of them is placed between the ties, just under the rail. They are wired

from a circuit, as the amount and character of the supply current makes necessary, and a switch is placed in this wiring at some convenient point clear of the track. The current can be turned on by an employee as the snowstorm starts. The heat generated does the rest.

The temperature in the heater rises about 100 deg. C. in the first half hour, and by the end of an hour is about 135 deg. C. above the outside temperature. This heat is not enough to set fire to anything, but is enough to take the frost out of the ground so that drainage is provided and the snow which falls on the ground is melted. This melting snow makes a light mist which prevents the accumulation of snow or its freezing on the slide plates, and keeps the space on the slide plates, or under the tie rods or other mechanism where it is placed, free for operation. In an ordinary storm this is completely effective and the track above the heaters is kept as dry and clear as a floor. It is effective also with a con-



A Switch Outfitted With the Thawing Device With the Covering to Confine the Heat

siderable wind, provided that wind is at an angle with the track.

During three years' trial with these heaters there has been only one situation where men were required on the switches in addition to the heaters, and that was when there was a violent wind parallel to the track, so that none of the rails acted as a wind-break. In this particular case, and it occurred once, the snow was driven between the switch point and the stock rail faster than it could be melted, and all the men possible were put on the switches at this location to keep them clear. To remedy this particular condition, a covering was put over the tie rods and the space housed on either side of the main track rail and the adjacent switch point, so that the only vulnerable part of the switch left exposed was that space between the stock rail and the main track rail adjacent. The heaters were placed under this protection, so that the heat was confined and allowed to escape only through this space. This housing is made of wood to prevent the heat escaping or being transmitted, except the plate which moves with the point, which is made of metal, so that the heaters keep it warm and prevent the accumulation of snow or ice upon it which would result in stopping its free movement back and forth over its supports as the switch is operated. Various parts of this are hinged so that easy access is provided to inspect the switch and make adjustments during the storms. This was tried one year on two switches and was completely successful.

Each of these heaters takes 11 amperes and requires 36½ volts. The heaters can be used for either A. C. or D. C. current with equal effectiveness. For a turnout with 15-ft. switch points there have been used 18 of these heaters to fit the current on which they were tried. This gives a total current consumption for these 18 heaters of 7.26 K. W. per hour.

This device was developed under the direction of Francis Boardman, division engineer on the New York Central, at New York. It is being placed on the market by The Q & C Co., New York.

General News Department

The contractual relations between railroads and telegraph companies are to be examined by a committee which has been appointed by the postmaster general. It is composed of Joseph Stewart, special assistant to the attorney general; G. W. E. Atkins, vice-president of the Western Union Telegraph Company, and John Barton Payne, general counsel of the Railroad Administration. The committee will report what changes, if any, should be made in these contracts or in the service rendered.

The Philadelphia Rapid Transit Company has taken a policy in the Metropolitan Life Insurance Company, New York City, covering \$1,000 on the life of each employee of the road who has been in the service one year or longer. About 7,000 employees will have the benefit of this arrangement. An individual policy for \$1,000 will be given into the personal custody of each member. In the event of the employee leaving the service, the insurance company undertakes to reinsure him without requiring a physical examination. It is said that an employee who has been with the company for many years and who has been paying at the rate of \$72 a year for a \$1,000 policy, will be enabled to obtain the same protection, plus sick benefits of \$10.50 per week and a \$40 monthly pension, for an annual outlay of \$12; and this is a typical case. The liberal provisions of the arrangement are made possible by joint co-operative effort. By pooling the interests of many thousand employees, plus the contribution of \$120,000 per year by the company, it is possible for each individual member to obtain a measure of protection otherwise out of the question.

Western Railway Club Meeting

The Western Railway Club will hold the first meeting of the year at the Hotel Sherman, Chicago, on Monday, September 16. The gathering will be in the nature of a keynote meeting intended to inspire the members to greater efforts in the coming months. M. K. Barnum, assistant to the vice-president of the Baltimore & Ohio, will present a paper and several other prominent railroad officers will give short talks. As is customary, a dinner will be served at the hotel at 6:30 p. m. and the meeting will convene at 8:00 p. m.

Standard Baggage Car Designs

The United States Railroad Administration has completed designs for a 70-ft. standard baggage car and is working on the designs for a 60-ft. baggage car. Alternate designs have been developed for the 70-ft. car, one having the usual type of built-up-end construction, and the other a cast-steel-end construction. The latter, in addition to a combination platform and body bolster casting, includes a cast-steel vestibule-end frame. It is reported that from 1,200 to 1,500 cars will be ordered from the standard designs.

Changes in Personnel, Bureau of Railway Economies

Important changes have recently been made in the personnel and scope of the Bureau of Railway Economies, Washington. The Bureau, on July 1, was transferred to the control of the railroad corporations—that is, the organizations outside the United States Railroad Administration—and these corporations, the original supporters of the Bureau, decided to continue its work at least until the end of this year. Arrangements have now been made which virtually insure its continuation after that time, with special attention to the study of the various aspects of government control of the railroads. W. J. Harahan, chairman of the executive committee, retired from the committee on his appointment as federal manager of the Seaboard Air Line, and

Howard Elliott, chairman of the Northern Pacific, was elected to succeed him. R. H. Aishton and C. H. Markham had retired from the committee on their appointment as regional directors of the Railroad Administration, and their places will be filled later. Prof. Frank Haigh Dixon, who had been chief statistician of the Bureau since October 1, 1910, resigned on July 15 and is now giving his time to his duties as transportation expert for the United States Shipping Board, making a study of ocean freight rates; and he has been succeeded by Julius H. Parmelee, who has been statistician of the Bureau since May, 1911.

New Preference List of Essential Industries

Railways operated by the United States Railroad Administration are placed in the first of four classes of a revised preference list of industries and plants compiled by the Priorities division of the War Industries Board, establishing the order of priority as the governing factor in the distribution of labor, capital, facilities, material, transportation and fuel and also as the basis for industrial exemption from the draft. The list, which is described as the master-key governing the flow of basic industrial elements to the industries essential to the war program, was made public on September 9, superseding all previous listing. In it the priorities division has grouped major industries, according to their relative importance, into four great classes, consideration being given in this grouping to the factors of intrinsic importance of the product for use during the war and the urgency, the necessity for maintaining or stimulating and increasing the total quantity of production, and the proportion of the capacity of the industry or plant devoted to the production of essential products.

Railways not operated by the Railroad Administration (excluding those operated as plant facilities) are placed in the second class. The railway supplies industry as such is not listed but the preference list includes several classes of plants engaged in producing the basic materials entering into railway equipment and supplies. Among these are: Plants engaged principally in manufacturing locomotives or travelling cranes, class II; plants engaged principally in manufacturing electrical equipment, class III; plants engaged principally in manufacturing machine tools, class II; steel making furnaces, class I; steel plate mills, class I; steel rail mills, class II; and all plants operating steel rolling and drawing mills, exclusive of those taking higher classification, class III.

The list is issued "for the guidance of all governmental agencies and all others interested in (1) the production and supply of fuel and electric energy, (2) in the supply of labor, and (3) in the supply of transportation service by rail, water, pipe lines or otherwise, in so far as such service contributes to production of finished products." It is made up of industries and plants which in the public interest are deemed entitled to preferential treatment. The inclusion of the industries and plants on the list does not operate as an embargo against all others, but the effect is to defer the requirements of all other industries and plants until the requirements of those on the preference list shall have been satisfied. The industries and plants grouped under class I are only such as are of exceptional importance in connection with the prosecution of the war. Their requirements must be fully satisfied in preference to those of the three remaining classes. Class I includes air craft, ammunition, army and navy, small arms, blast furnaces, chemicals, coke, coal, domestic consumers, explosives, feed, foods, guns, oil and gas, public institutions and buildings, ships, and steel.

Priorities in the supply and distribution of raw materials, semi-finished products and finished products are to be governed by Circular No. 4 issued by the priorities division under date of July 1 and its amendments and substitutes.

REVENUES AND EXPENSES OF RAILWAYS

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REVENUES AND EXPENSES OF RAILWAYS

SEVEN MONTHS OF CALENDAR YEAR 1918 CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues.			Maintenance of way and structures.			Operating expenses.			General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) last year.
		Freight.	Passenger.	Total.	Way and structures.	Equipment.	Total.	Traffic.	Trans- portation.								
Denver & Rio Grande	2,535	\$11,414,596	\$2,668,284	\$14,082,880	\$2,103,469	\$3,845,978	\$5,949,447	\$189,715	\$5,984,509	\$426,632	\$12,767,116	70.97	\$279,356	\$745,000	\$2,448,830	\$1,037,609	
Denver & Salt Lake	555	9,937,752	1,259,366	11,197,118	1,855,455	4,263,345	6,118,800	6,837	6,125,637	141,162	6,266,799	124.03	\$1,437,720	\$316,464	\$1,754,184	\$1,037,609	
Duluth, Missabe & Northern	410	8,995,648	1,248,958	10,244,606	1,248,958	1,248,958	2,497,916	1,248,958	1,248,958	2,497,916	5,246,874	58.81	\$1,437,720	\$316,464	\$1,754,184	\$1,037,609	
El Paso & Southwestern (Co.)	1,028	6,721,939	1,437,534	8,159,473	6,887,532	1,271,941	8,159,473	110,774	2,379,083	\$36,635	\$5,030,666	58.81	\$1,437,720	\$316,464	\$1,754,184	\$1,037,609	
Erie	1,989	33,548,968	6,016,579	39,565,547	6,016,579	41,038,592	101,104,171	14,904,308	6,016,579	118,033,769	118,033,769	107.55	\$3,334,955	\$1,618,322	\$4,953,277	\$2,316,553	
Florida East Coast	764	3,331,067	1,653,306	4,984,373	594,091	703,238	1,297,329	79,704	2,146,764	130,283	3,869,322	68.86	\$2,019,320	\$266,982	\$1,752,338	\$1,752,338	
Ft. Worth & Denver City	454	2,852,727	1,058,720	3,911,447	404,059	524,729	928,788	4,281	17,003,111	158,679	37,358,741	79.95	\$231,591	\$140,150	\$371,741	\$371,741	
Fonda, Johnston & Gloverville	88	191,472	395,470	586,942	61,425	95,439	156,864	194,572	4,507,430	355,039	8,087,491	68.72	\$3,679,991	\$397,745	\$3,282,246	\$3,282,246	
Gastonia, Harrisburg & San Antonio, Georgia	1,328	2,092,458	1,034,740	3,127,198	1,418,124	1,559,681	2,977,805	60,019	1,482,363	85,330	2,245,235	66.48	\$1,151,714	\$45,313	\$1,197,027	\$1,197,027	
Great Northern	35,450,667	8,619,379	9,548,881	18,168,260	9,548,881	9,202,156	18,751,037	531,274	23,284,260	383,313	23,667,573	91.01	\$4,337,380	\$355,610	\$4,692,990	\$4,692,990	
Great Northern & Santa Fe	1,947	5,806,667	2,893,007	8,699,674	2,893,007	10,443,194	13,336,201	1,850,000	1,850,000	3,700,000	54,645	52.83	\$1,155,165	\$1,155,165	\$1,155,165	\$1,155,165	
Hocking Valley	349	8,904,430	543,857	9,448,287	726,190	726,190	1,452,380	1,452,380	2,904,760	1,452,380	4,357,140	72.48	\$1,775,013	\$458,432	\$1,316,581	\$1,316,581	
Houston & Texas Central	948	3,343,444	1,198,939	4,542,383	4,868,104	714,850	5,582,954	11,668	3,352,450	11,668	6,329,081	86.21	\$1,908,090	\$210,000	\$1,698,090	\$1,698,090	
International & Great Northern	1,159	4,626,031	2,277,122	6,903,153	1,022,891	1,022,891	2,045,782	1,498,704	1,498,704	2,997,408	3,496,112	76.57	\$1,775,013	\$458,432	\$1,316,581	\$1,316,581	
Lake Erie & Western	476	3,766,170	351,124	4,117,294	351,124	1,139,419	1,490,543	93,037	2,357,015	147,700	4,485,053	88.00	\$97,802	\$180,044	\$407,846	\$407,846	
Lehigh Valley	1,143	2,784,176	1,351,124	4,135,300	3,245,368	3,539,585	6,784,953	3,245,368	3,539,585	6,784,953	13,524,538	100.71	\$3,684,431	\$544,465	\$4,228,896	\$4,228,896	
Long Island	1,116	2,882,313	1,351,124	4,233,437	3,099,144	1,113,879	4,213,023	1,351,124	1,351,124	2,702,248	3,927,813	72.71	\$7,582,530	\$1,118,890	\$6,463,640	\$6,463,640	
Long Angeles & Salt Lake	1,116	2,882,313	1,351,124	4,233,437	3,099,144	1,113,879	4,213,023	1,351,124	1,351,124	2,702,248	3,927,813	72.71	\$7,582,530	\$1,118,890	\$6,463,640	\$6,463,640	
Louisville	5,043	36,975,981	1,691,999	38,667,980	6,539,780	11,287,877	17,827,657	835,105	21,599,098	835,105	41,411,642	75.87	\$11,591,874	\$1,667,266	\$10,924,608	\$10,924,608	
Louisville, Henderson & St. Louis	199	1,050,987	373,528	1,424,515	1,400,005	233,906	1,633,911	208,579	4,542,713	1,042,345	5,585,058	100.71	\$3,684,431	\$544,465	\$4,228,896	\$4,228,896	
Maine Central	1,216	5,750,509	2,296,875	8,047,384	8,753,001	1,510,759	10,263,760	1,042,345	10,727,511	1,042,345	21,790,356	100.71	\$3,684,431	\$544,465	\$4,228,896	\$4,228,896	
Maryland, Delaware & Virginia Ry.	1,216	5,750,509	2,296,875	8,047,384	8,753,001	1,510,759	10,263,760	1,042,345	10,727,511	1,042,345	21,790,356	100.71	\$3,684,431	\$544,465	\$4,228,896	\$4,228,896	
Michigan	1,312	2,347,054	849,593	3,196,647	3,809,134	35,801,503	41,610,637	465,717	15,571,534	17,469	32,342,581	72.71	\$7,582,530	\$1,118,890	\$6,463,640	\$6,463,640	
Missouri, Oklahoma & Gulf	1,312	2,347,054	849,593	3,196,647	3,809,134	35,801,503	41,610,637	465,717	15,571,534	17,469	32,342,581	72.71	\$7,582,530	\$1,118,890	\$6,463,640	\$6,463,640	
Missouri Pacific	7,301	33,256,334	1,076,262	34,332,596	1,400,005	233,906	1,633,911	208,579	4,542,713	1,042,345	5,585,058	100.71	\$3,684,431	\$544,465	\$4,228,896	\$4,228,896	
Morgan's Ca. & Tex. R. R. & S. Co.	1,400	3,148,354	1,056,358	4,204,712	1,056,358	4,499,629	5,555,987	1,056,358	1,056,358	2,112,716	530,346	77.72	\$2,065,298	\$233,138	\$2,298,436	\$2,298,436	
Mountain States	1,284	13,821,318	3,471,818	17,293,136	3,471,818	18,028,712	21,500,530	2,559,965	5,119,930	1,263,635	14,066,264	64.48	\$6,442,348	\$1,141,752	\$7,584,100	\$7,584,100	
New Orleans Great Northern	6,079	94,004,303	35,103,111	129,107,414	35,103,111	140,612,338	175,715,449	18,458,554	32,955,017	51,413,571	167,178,026	84.03	\$20,753,370	\$2,606,542	\$18,146,828	\$18,146,828	
New York Central	571	9,776,949	3,923,742	13,700,691	3,923,742	11,660,684	15,584,426	1,844,752	1,844,752	3,689,504	1,957,895	85.41	\$1,834,567	\$407,500	\$2,242,067	\$2,242,067	
New York, New Haven & Hartford	2,001	27,079,449	10,776,781	37,856,230	10,776,781	37,856,230	48,633,011	1,844,752	1,844,752	3,689,504	1,957,895	85.41	\$1,834,567	\$407,500	\$2,242,067	\$2,242,067	
Norfolk & Western	1,083	35,831,432	5,271,246	41,102,678	5,271,246	42,700,440	47,971,686	5,271,246	5,271,246	10,542,492	2,296,602	70.97	\$4,196,356	\$745,000	\$4,941,356	\$4,941,356	
Norfolk Pacific	9,507	37,300,790	9,961,274	47,262,064	9,961,274	50,408,274	60,369,548	8,200,015	8,200,015	16,400,030	3,319	70.97	\$4,196,356	\$745,000	\$4,941,356	\$4,941,356	
Omaha Short Line	2,333	13,821,318	3,471,818	17,293,136	3,471,818	18,028,712	21,500,530	2,559,965	5,119,930	1,263,635	14,066,264	64.48	\$6,442,348	\$1,141,752	\$7,584,100	\$7,584,100	
Pennsylvania	3,434	34,721,912	8,315,572	43,037,484	8,315,572	47,838,130	56,153,702	7,010,241	11,666,732	18,676,973	28,683,705	83.76	\$8,744,049	\$1,063,647	\$9,807,696	\$9,807,696	
Pennsylvania & Delaware	1,534	10,776,781	3,923,742	14,700,523	3,923,742	11,660,684	15,584,426	1,844,752	1,844,752	3,689,504	1,957,895	85.41	\$1,834,567	\$407,500	\$2,242,067	\$2,242,067	
Pennsylvania & New York	1,534	10,776,781	3,923,742	14,700,523	3,923,742	11,660,684	15,584,426	1,844,752	1,844,752	3,689,504	1,957,895	85.41	\$1,834,567	\$407,500	\$2,242,067	\$2,242,067	
Pittsburgh & Lake Erie	1,400	3,148,354	1,056,358	4,204,712	1,056,358	4,499,629	5,555,987	1,056,358	1,056,358	2,112,716	530,346	77.72	\$2,065,298	\$233,138	\$2,298,436	\$2,298,436	
Portland & Western	74	217,268	37,210	254,478	733,616	174,906	908,522	8,316	2,155,106	3,023	2,158,129	96.31	\$2,155,106	\$2,155,106	\$2,155,106	\$2,155,106	
Portland & Western	74	217,268	37,210	254,478	733,616	174,906	908,522	8,316	2,155,106	3,023	2,158,129	96.31	\$2,155,106	\$2,155,106	\$2,155,106	\$2,155,106	
Portland & Western	74	217,268	37,210	254,478	733,616	174,906	908,522	8,316	2,155,106	3,023	2,158,129	96.31	\$2,155,106	\$2,155,106	\$2,155,106	\$2,155,106	
Railroad & Western	114	3,621,111	497,259	4,118,370	497,259	4,118,370	4,615,629	497,259	4,118,370	4,615,629	8,734,000	79.17	\$879,614	\$141,414	\$1,021,028	\$1,021,028	
Richmond & York	43	1,409,606	64,076	1,473,682	64,076	64,076	1,537,758	64,076	64,076	1,537,758	1,601,834	111.11	\$1,537,758	\$1,537,758	\$1,537,758	\$1,537,758	
St. Louis & New Orleans	969	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	5,424,418	100.00	\$3,616,212	\$3,616,212	\$3,616,212	\$3,616,212	
St. Louis & New Orleans	969	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	5,424,418	100.00	\$3,616,212	\$3,616,212	\$3,616,212	\$3,616,212	
St. Louis & New Orleans	969	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	5,424,418	100.00	\$3,616,212	\$3,616,212	\$3,616,212	\$3,616,212	
St. Louis & New Orleans	969	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	5,424,418	100.00	\$3,616,212	\$3,616,212	\$3,616,212	\$3,616,212	
St. Louis & New Orleans	969	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	5,424,418	100.00	\$3,616,212	\$3,616,212	\$3,616,212	\$3,616,212	
St. Louis & New Orleans	969	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	1,808,106	1,808,106	3,616,212	5,424,418	100.00	\$3,616,212	\$3,616,212	\$3,616,212	\$3,616,212	
St. Louis & New Orleans	969	1,808,106	1,808,106	3,													

Collision at Alliance, Nebraska

In a butting collision on the Chicago, Burlington & Quincy, seven miles west of Alliance, Neb., on Tuesday, September 10, between westbound passenger train No. 43 and an eastbound work train, 12 passengers were killed and 18 passengers and trainmen were injured. Failure of the work-train conductor to protect against the passenger is given as the cause of the collision.

Chicago to New York in 12½ Hours

An airplane was started from New York on Thursday morning, September 5, with mail bags which it was hoped to deliver in Chicago the same afternoon, the air line distance between the two cities being about 800 miles, and the intention being to travel at from 70 to 100 miles an hour; but the aviator did not reach Cleveland until about 9 p. m., and he was compelled to stay there over night. He arrived at Chicago at 7 o'clock on the evening of the second day.

The aviator started back from Chicago for New York on Monday morning, September 9, carrying 2,000 pieces of mail, but he was compelled to stop overnight at Lockhaven, Pa., on account of trouble with his radiator, and he reached New York at 11:32 a. m. on Tuesday. His actual time in the air was 7 hours 52 minutes, or a little better than 100 miles an hour. Having some mail for Washington, he left New York at 12:10 p. m., and reached Washington at 3:07 p. m.

Another aviator who, according to the plans, was to follow the first one within a short time, was detained, and left Chicago on Tuesday morning at 6:25; and this one succeeded in reaching New York the same day; but he did not arrive until 8 o'clock at night; and he was so high above the earth that he lost his bearings and groped around Long Island and over the Atlantic Ocean and Long Island Sound for about two hours before he landed; and then he came down at Hicksville, some 15 miles beyond Belmont Park, the regular landing place. This man and his mechanic, who rode with him, were clothed with electrically heated garments.

A. E. R. A. Convention Postponed

The Executive Committee of the American Electric Railway Association has decided, in view of the present conditions, that it would be unwise to hold a convention along the lines of its original plan, and accordingly arrangements for holding the meeting in Atlantic City, October 8, 9 and 10 will be cancelled. There will be substituted a one-day meeting to be held in New York on a date to be determined later.

American Gear Manufacturers' Association

The semi-annual meeting of the American Gear Manufacturers' Association will be held at the Onondaga Hotel, Syracuse, New York, September 19, 20 and 21.

A portion of the program has been announced as follows: "Priority," by Charles A. Otis, of the Priority Committee. "What Is the Possibility of Women Becoming a Permanent Factor in the Gear Industry"—W. H. Diefendorf. "Trade Acceptances"—C. E. Crofoot.

"The Outlook of the Steel Supply"—C. E. Stuart, secretary and treasurer of the Central Steel Co., Massillon, Ohio.

"TRAVELING CONDITIONS IN FRANCE," says a Paris correspondent of the Westminster Gazette, "is not only a matter of high fares, infrequent trains, overcrowded cars, slow journeys, but it is also a question of papers. We have got the paper habit in France." In other words, travel is a matter of many formalities, and it is necessary to make something of a study in geography before setting out on a journey of any length, owing to the number of "zones" into which the country is divided. The result of all the resulting restrictions, which have, however, undergone some slight relaxation of late, is that it is extremely difficult for civilians to travel, and if the necessary permits have been obtained the passenger has to put up with far more inconvenience, delay and overcrowding in the course of his journey than is the case in England, owing to the extent to which the railways and rolling stock are utilized for military requirements and such urgent traffic as the transportation of foodstuffs to the interior.

Traffic News

The centralization of freight facilities in Buffalo, N. Y., is expected to concentrate I. c. l. traffic in five of the ten freight stations now in use.

Congestion of grain at St. Paul and Minneapolis on Monday last necessitated an embargo on all shipments of grain to Minneapolis. On the tracks of the two cities about 6,000 cars of grain were standing.

The movement of grain eastward over the Grand Trunk during the month of August, mostly from ports on the Great Lakes, for export from Montreal, amounted to 8,371,521 bushels; and the average load per car is given as 1,799 bushels.

At Buffalo, N. Y., on Tuesday, September 11, an embargo was ordered on all grain coming to that city from the west by rail. A heavy movement of wheat from Ohio, Indiana and Michigan was the cause. About 1,600 cars of wheat were waiting in the yards because of congestion on and near the elevator tracks.

A pump weighing five tons was carried recently by automobile from Pittsburgh, Pa., to Norristown, 309 miles, in three days; and the same truck, a Pierce-Arrow, took a similar load back to Pittsburgh in considerably less time. The actual time on the road was about 90 hours, or seven miles an hour. This truck has been in use about twenty months.

The use of motor trucks to carry food products to Philadelphia from the southern part of New Jersey has now become so general that, according to the New Jersey State Department of Agriculture, the number of such trucks in use runs up into the thousands; and, according to the same authority, hundreds of trucks are run from that region every night to New York City.

Railroad companies delivering coal to consumers by order of the Fuel Administration for the purpose of relieving emergencies will be allowed to charge for extra service. The railroad may receive from the consumer or retail dealer the cost of the coal including lawful transportation charges from point of origin to destination, and the additional sum of 15 cents a ton, or such greater additional sum as may be agreed upon by the road and the consumer or dealer. The Bureau of Prices of the Fuel Administration will adjudicate any differences that may occur.

Receipts of grain at the primary markets in the month of August aggregated 166,607,000 bushels, or about 62 million bushels above the best previous record for August, which was four years ago. This record was also about 6 million bushels above that of any single month ever recorded, the previous record being in December, 1915, when the total was 160,444,000. The receipts of wheat in August amounted to 93,164,000 bushels or more than 50 per cent above the largest month's record ever before made, which was in August, 1914.

Director General McAdoo has announced rates on castor bean hulls and stems, c. l. and I. c. l., the same as the rates on fertilizer. Rates on this basis are to be established between points in the state of Florida and other states in Southern Classification Territory. The castor bean industry has become one of considerable importance, owing to the effort of the government to have them produced in large volume, primarily for the purpose of securing oil for use as lubricants for airplanes. The stems and hulls will be used as fertilizer.

Lehigh Valley to Use Pennsylvania Terminals

Director General McAdoo announces that beginning September 15, the New York and Jersey City passenger terminals of the Pennsylvania will be used by the Lehigh Valley, discontinuing the use of the Communipaw terminal of the Central of New Jersey. Lehigh Valley trains Nos. 5, 6, 7, 8, 9, 10, 29, 30, 11 and 28 will run to or from the Pennsylvania station at New York, while the other trains (locals) Nos. 1, 27, 33, 40, 22 and 34, will use the Jersey City terminal of the Pennsylvania. The Lehigh Valley will run its troop trains to or from Communipaw.

A Piece of Freight 13,000 Feet Long

Ocean vessels taking oil from the Tampico fields, Mexico, have to be loaded some distance out from the shore on account of the shallow water and the lack of harbor facilities; and the oil is conveyed from the shore through pipes laid on the bottom of the ocean. At Agua Dulce, about 70 miles south of Tampico, two such pipes have just been laid by the Texas Company, and each pipe is 2½ miles long. Each was drawn from the shore to its position for use by a tug, assisted by a steamship, the sections having been put together on the shore and loaded on a series of four-wheeled trucks, running on rails.

This pipe is 8 in. in diameter and each of the two lines weighs about 382,000 lbs., or as much as one of the large modern freight locomotives. These pipes are more than twice as long as any of those heretofore in use.

At the outer end of these pipe lines connection is made to the tank in the ship by means of flexible metal hose.

Freight-Movement Economy at Philadelphia

The Philadelphia district committee of the car service section of the United States railroad administration has issued regulations for shipment of l. c. l. freight from that city, which fill a book of 400 pages. All l. c. l. freight to the territory lying, in a general way, north and northwest of the city is sent by the Philadelphia & Reading. The Baltimore & Ohio will have for its territory the south and southwest, including the Baltimore and Washington districts and the States south of the Potomac and Ohio rivers. The Pennsylvania will take shipments for what may be broadly described as the middle section of the country. West of Philadelphia this will include the Harrisburg, Pittsburgh and Erie districts, embracing central and western Pennsylvania.

The territory tributary to the numerous freight stations in Philadelphia is divided into fourteen zones. To equalize the service among the different sections of the city the "sailing days" for various specified destinations will be rotated between the various zones. If the l. c. l. freight from the city to a certain destination is sufficient to warrant a car a day, the car will leave each of the zones in turn on different days. Thus the shipper in any given zone will have his choice of waiting until the car comes around to a station in his neighborhood or of teaming his goods across the city to a station in another zone.

Coal Production

The output of bituminous coal during the week ended August 31 was approximately the same as the week preceding, estimated at 12,642,000 net tons as against 12,620,000 net tons during the week of August 24. The production for the week represents an increase of 4.7 per cent over the estimated average daily requirements for the coal year, but production for the first five of the six months of the coal year has been nearly 13,000,000 net tons below the Fuel Administration's schedule of requirements. Production of anthracite during the week is estimated at 2,259,715 net tons, an increase over the week preceding of 5.9 per cent, and making the total production for the coal year an increase of 2.7 per cent. The percentage of full-time output of bituminous for the week ending August 24 lost on account of car shortage is reported as 9.9 per cent.

A report by the Car Service Section of the Railroad Administration shows that the increase in cars of coal loaded for the period from January 1 to August 31, as compared with the corresponding period of 1917, has passed the half million mark. For the week ended August 24 the total cars of all kinds of coal loaded amounted to 263,982, as compared with 229,594 in 1917, and the estimate for the week ending August 31 shows a total of 263,523, as compared with 233,097, making the increase in 1918 up to and including August 31, 516,951 cars.

NORWAY'S FUEL SUPPLY SUFFICIENT.—Commercial Agent Norman L. Anderson, at Copenhagen, Denmark, states that according to press reports Norway's supply of fuel for the winter is secured, 400,000 cords of wood having been carried by the railroads during the first four months of the year. The transportation of wood will be continued all summer.

Commission and Court News

Interstate Commerce Commission

Tentative Report on Time Zones

The Interstate Commerce Commission has issued a tentative report of its attorney-examiner on the Standard Time Zone investigation prescribing the limits of Eastern, Central, Mountain and Pacific standard time zones with regard to the convenience of commerce and the existing junction points and division points of the railroads.

The report says that the preliminary investigation disclosed "a wholly incongruous situation as to the limits of existing time zones" and that they are so irregular as to preclude an attempt to define them even approximately. As the result of the investigation the new lines of demarkation are moved slightly westward in many instances in an effort to approximate the ideal by fixing boundaries between the zones as closely as may be to the median meridians. It is recommended that the changes be made at 2 a. m. on Thanksgiving Day, November 28. The report says the carriers generally asked that the present time-changing points on their lines be not disturbed because they are usually well-established division points and termini of despatching districts but it is held that the "inertia of things as they are should not deprive any portion of the country of the benefits of a well-adjusted time standard."

The proposed new boundary between the Eastern and Central zones would extend from a point on the Canadian boundary near Port Huron, Mich., and south through the St. Clair River, the Detroit River and Lake Erie to Toledo. Thence it passes through Crestline, Columbus and Gallipolis, Ohio; Kenova, W. Va.; Bristol and Johnson City, Tenn.; Franklin, N. C.; Atlanta and Macon, Ga., to Appalachicola Bay, Fla.

Between the Central and Mountain zones the proposed line runs from Portal, N. D.; south along the Missouri River to a point near Pierre, S. D.; thence southwest to the White River and thence to the Nebraska-South Dakota State line; through Nebraska along the Nebraska and Republican rivers to Kansas, near Phillipsburg, detouring west to Dodge City and back to Mineola, using the boundary line of the State to the Cimarron River, which it would follow into Oklahoma, moving generally westward to Collingsworth county, Texas, and thence south-west to the Rio Grande.

The proposed boundary between Mountain and Pacific zones would begin at the east line of the Blackfeet Indian reservation and run south through Cut Bank, Helena and Butte, Mont.; Pocatello, Idaho; Ogden and Salt Lake City, Utah, and west to the Utah-Nevada boundary, which it would follow from a point near Uvada to enter Arizona through Yavapai County, to Seligman and down the Colorado River to the Mexican border.

The act provides that the standard time of Alaska shall be that of the 150th meridian, although the report suggests that it might be expected that Alaska would lie in three zones.

Certain exceptions are made whereby certain carriers are permitted to carry their general time standards over into another zone.

Personnel of Commissions

John M. Jones, chief of the tariff bureau of the Interstate Commerce Commission, died at Washington September 7. Mr. Jones was in railroad service from 1886 until about 11 years ago, when he resigned his position as chief of the tariff bureau of the Southern Railway, at Atlanta, Ga., to take a place with the Interstate Commerce Commission. He began his railroad service in the accounting department of the Richmond & Danville, now a part of the Southern Railway. He served successively on the Georgia & Pacific, the Georgia & Alabama, the Tennessee Central and the Southern. Besides being chief of the division of tariffs under the Interstate Commerce Commission, he was a member of a number of important internal committees of the commission.

Equipment and Supplies

Freight Cars

THE LUCEY MANUFACTURING COMPANY is inquiring for flat cars for export to Japan.

THE BIRMINGHAM PACKING COMPANY, Birmingham, Ala., is inquiring for 10 refrigerator cars.

Iron and Steel

THE DENVER & RIO GRANDE has ordered eight truss bridges weighing 1,050 tons from the Virginia Bridge & Iron Company.

Miscellaneous

THE BAY CITY FOUNDRY & MACHINE COMPANY, Bay City, Mich., is inquiring for 20 sets of pile drivers.

ALASKA ENGINEERING COMMISSION.—Sealed proposals will be received by the Alaska Engineering Commission at Seattle, Wash., by September 23, for iron and steel tools and tin shop supplies, castings and repair parts for locomotives.

Signaling

THE ERIE has ordered from the T. George Stiles Company of Arlington, N. J., one set of standard type "T," 64-way drawbridge circuit controllers for use at Cleveland, Ohio.

THE WASHINGTON, BALTIMORE & ANNAPOLIS ELECTRIC has awarded a contract to the Union Switch & Signal Company for the installation of light signals with continuous track circuits on its double-track line between Naval Academy Junction and District Line, near Washington, D. C.

THE NORTHERN TEXAS TRACTION COMPANY has ordered the necessary signal material from the Union Switch & Signal Company to extend the automatic block signals on its line between Ft. Worth, Tex., and Dallas. The extension will include six blocks operating under the "traffic direction block" system, one block for complete curve protection on single track and four blocks of double track signaling for rear-end and curve protection. Thirty new style "N" light signals will be used. The installation will be made by railroad forces.

THE PHILADELPHIA & READING has awarded a contract to the Union Switch & Signal Company for the installation of automatic block signals on its main line from Bound Brook, N. J., to Skillman, 14 miles. The work embraces the substitution of semaphores for the existing enclosed disk signals and will include a new interlocking plant at Manville Junction, N. J., and changes in the interlocking plants at Bound Brook Junction, Belle Mead, and at Manville Crossing. The signals will be operated by alternating current. The Union Switch & Signal Company has received another contract from the Philadelphia & Reading for extensive additions to an electro-pneumatic push button installation at Rutherford (Pa.) yard.

RAILWAY CONSTRUCTION IN ECUADOR.—The Koppel contract with the Ecuadorian Government for the construction of the Huigra-Cuenca Railway has expired and the government is now free to proceed with the construction of the spur from Sibamba to Cuenca. The contract, which was made with the Koppel Co., a Berlin firm, called for a branch line of 150 kilometers (93 miles) to connect with the Guayaquil and Quito line at Sibamba. According to a recent issue of the Guayaquil El Telegrafo, the work done by the Koppel firm was inferior, and great satisfaction is felt that the matter is now out of their hands.—*Commerce Reports*.

THIS IS A REMINDER that the Fourth Liberty Loan Campaign will begin on September 28 and close October 19.

Supply Trade News

H. W. McCandless, vice-president of the Weir Frog Company, Cincinnati, Ohio, died on August 21.

Harry E. Passmore, formerly with the Grip Nut Company, has accepted a position as production manager with the Marble Cliff Quarries Company, Columbus, Ohio.

James A. Trainor, formerly assistant to the sales manager of the Baldwin Locomotive Works, has been appointed assistant general sales manager of the American Flexible Bolt

Company, with offices at 50 Church street, New York. Mr. Trainor started his business life with the Baldwin Locomotive Works and worked his way up through various departments to the position of assistant to the sales manager. In November, 1917, he entered the service of the U. S. Government as a major in the Russian Railway Service Corps. This organization was sent to Russia to operate the Trans-Siberian Railway. Owing to the upheaval in Russia, part of this organization was recalled to the



J. A. Trainor

United States and Mr. Trainor again entered the service of the Baldwin Locomotive Works, resuming his position as assistant to sales manager, which position he held at the time of his recent appointment.

R. S. Brown, whose election to the position of vice-president of the G. M. Basford Company, was recently announced in these columns, has been with that company since its formation

about two years ago. Mr. Brown was born in England, but came to this country in early life. He received his early education in the public schools of East Rutherford, N. J. After completing high school he went to Pratt Institute, Brooklyn, where he was graduated in 1909. On graduation he entered the service of the Erie Railroad as a special apprentice, working successively in the Meadville office of the mechanical engineer, in the Erie shops at Susquehanna, the office of the general mechanical superintendent



R. S. Brown

at New York and the office of the purchasing agent at New York. On the formation of the G. M. Basford Company, Mr. Brown went with the new company as above noted.

The American Flexible Bolt Company of Pittsburgh has opened a branch office at Cleveland, Ohio, in charge of L. W. Widmeier, who was formerly assistant general sales manager at the company's New York office.

Fred Preston, formerly manager of sales of the P. & M. Company, Chicago, and last fall commissioned a captain in the Signal

Corps of the United States Army with the Aircraft Production Board in France, has been promoted to the rank of major.

The Bettendorf Company announces the closing of its present sales office in Chicago and New York, effective September 1. Requests or communications to the company should be referred to the home office at Bettendorf, Iowa.

J. C. Weedon has been appointed railroad representative for the Anchor Packing Company, with headquarters at Chicago, to succeed J. A. McNulty, resigned to become master mechanic of the Chicago, Milwaukee & St. Paul at Dubuque, Iowa.

American Locomotive Company

An increase of nearly one-half in the charges for taxes on profits was the principal factor in reducing the earnings of the American Locomotive Company in its fiscal year ended June 30, last. The net profits available for distribution to the common stockholders, after the payment of the usual 7 per cent dividend on preferred stock, amounted to \$4,161,137, \$16.64 a share, as compared with \$5,451,680, or \$21.80 a share in the preceding year. The gross earnings for the year ended June 30, 1918, were \$80,588,071, as compared with \$82,213,845 in 1917. The decrease in manufacturing, maintenance and administrative expenses and depreciation, however, was greater than the decrease in gross earnings, so that the manufacturing profit of \$10,229,505 in 1918 represented an increase of \$630,314 over 1917. Deducted from this there was a charge for taxes of \$4,018,951, as compared with only \$2,205,318 in 1917. The usual dividends on the preferred stock were paid and the dividends on the common of 5 per cent, the only difference between the dividends between this year and last being the one per cent Red Cross dividend paid last year. The surplus, after the payment of dividends, amounted to \$2,911,137, as compared with \$3,951,697 in 1917. A charge of \$1,000,000 was made for additions and betterments, as against \$2,000,000 in 1917, so that the net credit to profit and loss, amounting to \$1,911,137, was practically the same as in 1917.

President Fletcher, of the company, said in his annual report that the net profits of the year, amounting to \$9,980,088, included \$893,811 obtained from munitions business, the remaining profit being derived from the regular locomotive business. The final deliveries of munitions were made from the Montreal and Richmond plants in July, 1917, and the work of restoring these plants for locomotive manufacture was practically completed during October, 1917, since which time all the plants of the company have been engaged exclusively on locomotive production. The cost of restoring the Richmond and Montreal plants has been charged to a reserve created for this purpose out of previous years' profits.

The deduction of \$4,081,951 for taxes fully provides for all income and war profits taxes computed in accordance with the existing laws of the United States and Canada, and also includes \$1,400,000 for anticipated increases in the United States war income and excess profits taxes for the six months ended June 30, 1918, which may become effective as of January 1, 1918, upon the passage of the new war revenue law now pending in Congress.

"In arriving at the net profits for the year, there has been included, under the head of manufacturing expenses and deducted from earnings, the sum of \$1,554,613 for depreciation on all classes of property. In addition to this regular yearly depreciation charge, the drawings and patterns account has been written down upon the books of the company to \$1. This charge, amounting to \$981,192, is also included under the head of manufacturing expenses and deducted from the year's earnings.

"During the year there was expended and charged against the reserve for additions and betterments, created out of previous years' earnings, \$3,131,249, which included the purchase of a steel-casting plant at Chester, Pa.; also the cost of additions and improvements to the several locomotive plants of the company.

"In addition to the improvements and additions above mentioned, the company, in June of this year, bought the former plant of the Kline Motor Car Corporation at Richmond, Va., and this plant is now being equipped for the manufacture of important locomotive specialties and accessories heretofore largely purchased from other manufacturers.

"The company sold during the year, to the United States

Rubber Company, the plant at Providence, R. I., formerly used for the manufacture of automobiles, and subsequently as a fuse-loading plant, and sold to the Amoskeag Manufacturing Company the old locomotive plant at Manchester, N. H. Both plants had been previously dismantled and their value written down to a small amount on the books of the company."

Mr. Fletcher notes that the company has received an order for 800 locomotives from the Railroad Administration, and then says:

"The plants of all the locomotive builders of this country will be taxed to their maximum capacity during the war and probably for some time thereafter, to supply the requirements of the railroads operated by the United States Railroad Administration, industrial plants engaged in manufacturing war essentials, and to meet the demands of our government and its Allies for foreign service.

"It is believed that the standardizing of locomotive design for domestic railroads will be a substantial factor in obtaining maximum tonnage production from the plants of the various builders.

"A scarcity and a general unrest of both skilled and unskilled labor existed during the year notwithstanding frequent increases of wages; these conditions still exist, and, together with the enlistment and draft of men required for national service, the severe weather conditions of last winter, and the then congestion of rail traffic with consequent delays in obtaining materials, and the shortage of fuel, affected the production for the year.

"The amount of money in inventories of materials and supplies on hand and for work in progress as of June 30, 1918, aggregated \$25,411,835, as compared with about \$11,000,000 in the largest year of business previous to the war. This very large increase is due to the higher costs of materials and supplies, the necessity for having on hand a larger stock because of the uncertainty of obtaining promptly materials and supplies as they are required, and to the great increase in cost of all labor employed. . . .

"The amount of unfilled locomotive orders in the books on June 30, 1918, was \$74,736,543, as compared with \$77,620,449 on June 30, 1917."

The consolidated general balance sheet follows:

LIABILITIES	
Capital stocks—	
Preferred	\$35,000,000
Common	25,000,000
Bonded debt of constituent companies	\$50,000,000
Current liabilities—	
Advance payments received on contracts	\$299,310
Accounts payable	9,457,126
Unclaimed interest and dividends	2,897
Loans payable—amount of United Liberty Loan Bonds	1,279,000
Other loans payable	6,000,000
Sundry accrued expenses, including accruals for United States and Canadian income and war taxes	4,899,699
Dividend on preferred stock payable July 22, 1918	437,500
Dividend on common stock payable July 3, 1918	312,500
Reserve for accident indemnity and miscellaneous claims	124,000
Reserve for additions and betterments	1,591,348
Profit and loss	17,808,247
	<u>\$91,544,543</u>
ASSETS	
Cost of property (less depreciation reserves)	\$44,773,481
Sundry securities owned	643,453
Current assets—	
Cash on hand and in banks	\$ 7,707,717
Accounts and bills receivable	16,590,892
Employees' subscription for United States Liberty Loan Bonds (less installment payments)	749,516
Employees' subscription for Canadian Victory Loan Bonds (less installment payments)	20,981
United States Liberty Loan Bonds	503,250
Accrued interest	4,836
Materials and supplies	11,637,472
Contract work in course of construction	13,649,148
Locomotives and parts in stock	125,215
Sundry deferred charges	45,390,700
	<u>\$91,544,543</u>

Trade Publications

PISTON RINGS.—Ever-Tyte piston rings, which are claimed to increase compression and power and reduce waste of fuel and oil, are described and illustrated in a four-page folder issued by the Ever Tight Piston Ring Company, St. Louis, Mo. The prices and dimensions are given in the pamphlet.

Railway Financial News

BOSTON & MAINE.—A plan for the rehabilitation of this railroad with the aid of a loan of \$20,000,000 from the Railroad Administration was announced by Director General McAdoo, while on a tour of inspection of New England roads. Interest on the money advanced to the Boston & Maine, the direct general said, would be secured by mortgage bonds and trust funds, and the approval of substantially all of the stockholders would be necessary before the plan could be put into effect.

BUFFALO, ROCHESTER & PITTSBURGH.—This company has filed a petition with the New York Public Service Commission, Second District, for authority to execute an agreement with the Central Union Trust Company of New York, under which the railroad will issue \$1,200,000 in equipment bonds. The company proposes to use the proceeds of the bonds in buying rolling stock, which will be leased to the company by the trustees, the equipment to become the property of the road when the bonds are paid. The railroad has arranged with the United States Railroad Administration for the purchase of the bonds at par.

CHICAGO, ROCK ISLAND & PACIFIC.—See editorial comments elsewhere in this issue.

CHICAGO & WESTERN INDIANA.—This company had \$15,000,000 6 per cent notes which matured September 1 and which were defaulted. These notes were sold a year ago by a syndicate headed by J. P. Morgan & Co. An exchange of letters and telegrams took place between the Morgan firm and John Skelton Williams, director of the Division of Finance, of the Railroad Administration which, so far as has been made public to the date of going to press, amounted in substance to a request on the part of Mr. Williams for the Morgan firm to, in some way, assure the renewal of the notes on a 6 per cent basis, and the offer of Morgan & Company to renew the notes on condition that the rentals from which the Chicago & Western Indiana receives its income would be guaranteed by the government, at a total cost, including interest charges, underwriting, and bankers' commissions of 9½ per cent. This offer was rejected by Mr. Williams who again demanded renewal of the notes on a 6 per cent basis and Morgan & Company replied that they would offer holders of the old notes new Chicago & Western Indiana 6 per cent notes without any bankers' commissions or charges for expenses, but would not guarantee that these notes would all be taken by the holders of the old notes. Mr. Williams offered to advance money enough to pay off such notes as did not accept renewal on condition that this money should only be advanced for 60 days and that Morgan & Company and their associates should arrange to carry the financing of these unrenewed notes after 60 days. This proposition Morgan & Company refused to concede to, claiming that the notes could not be sold at such a price.

DENVER & RIO GRANDE.—See Western Pacific.

GRAND TRUNK.—Lord Southborough, better known as Sir Francis Hopwood, has been elected a director to succeed the late Col. Frederick Firebrace.

A cable from London dated September 10, states that the Grand Trunk is floating new issue of \$15,000,000 three-year 6 per cent notes at 99 for the purpose in part of redeeming \$10,000,000 5 per cent notes maturing October 1.

WESTERN PACIFIC.—The Equitable Trust Company, as trustee for the first mortgage bonds of the Western Pacific, in a report issued on Tuesday, announced that \$7,771,395 had been realized upon the judgment of approximately \$38,000,000 against the Denver & Rio Grande, obtained because of the latter company's failure to live up to its guarantee of the interest on the bonds. Among the assets of the Denver company sold under the judgment was its equity in the Utah Fuel Company, which brought \$4,000,000. In order to purchase this equity the Western Pacific borrowed the sum required, which loan, it is supposed, will be paid off.

Railway Officers

Railroad Administration

General

E. H. Lamb, of the Northwestern regional director's staff, and formerly general agent of the Chicago & North Western, at Sacramento, Cal., has been appointed representative of the Northwestern region on Bureau of Suggestions, Complaints and Public Relations of the United States Railroad Administration, with headquarters at Washington, D. C.

Regional

Hugh McVeagh has been appointed executive assistant and **P. L. McManus** has been appointed transportation assistant to H. A. Worcester, district director of the Ohio-Indiana district, both with headquarters at Cincinnati, Ohio.

Federal and General Managers

H. A. Whittenberger, general manager of the Grand Trunk, Western Lines, has moved his headquarters from Chicago to Detroit, Mich.

F. R. Bolles, vice-president and general manager of the Copper Range, has been appointed general manager, with headquarters at Houghton, Mich.

The Galveston Wharf Company was placed under federal control on August 1, and added to the jurisdiction of **W. B. Scott**, federal manager, Houston, Tex.

J. S. Peter, general manager of the San Antonio & Aransas Pass, has had his jurisdiction extended over the San Antonio, Uvalde & Gulf, with headquarters at San Antonio, Tex.

S. G. Strickland, federal manager of the Chicago & North Western, has had his jurisdiction extended over the Fort Dodge, Des Moines & Southern and the Waterloo, Cedar Falls & Northern, effective September 1.

F. B. Seymour, general manager of the Green Bay & Western, and receiver and treasurer of the Waupaca-Green Bay, has been appointed general manager of the Green Bay & Western, the Kewanee, Green Bay & Western, the Ahnapee & Western and the Waupaca-Green Bay, with headquarters at Green Bay, Wis.

Operating

Gordon P. McHenry has been appointed assistant trainmaster, of the Pittsburgh & Shawmut, with headquarters at Brookville, Pa.

G. H. Gilmer has been appointed superintendent of the Interstate Railroad with headquarters at Appalachia, Va., vice **W. A. Johnson**, resigned.

R. B. Williams, Jr., president of the Central New York Southern, has been appointed general superintendent, with headquarters at Ithaca, N. Y.

D. B. Daley has been appointed superintendent of safety for all lines under the jurisdiction of **J. A. Edson**, federal manager, with headquarters at Kansas City, Mo.

C. S. Darrach, superintendent of the St. Louis & Belleville Electric, has been appointed also superintendent of the St. Louis & O'Fallon, with headquarters at St. Louis, Mo.

E. E. Nash, assistant to federal manager of the Chicago & North Western, at Chicago, has been appointed to the same position on the Fort Dodge, Des Moines & Southern.

P. F. McManus, general superintendent of the Elgin, Joliet & Eastern, with office at Joliet, Ill., has been appointed general superintendent also of the Chicago, Milwaukee & Gary.

Edward Bodamer, trainmaster on the Yazoo & Mississippi Valley at Memphis, Tenn., has been promoted to superin-

tendent of terminals at that city, succeeding **S. J. Hays**, resigned.

A. F. Page, chief dispatcher on the Illinois Central at Louisville, Ky., has been promoted to trainmaster, with headquarters at Louisville, to succeed **G. B. James**, retired on a pension.

F. L. Lewis, general superintendent of the San Antonio, Uvalde & Gulf, has been appointed assistant superintendent of transportation under federal control, with headquarters at North Pleasanton, Tex.

G. B. Goodloe, superintendent of transportation of the San Antonio & Aransas Pass, has been appointed assistant superintendent of transportation under federal control, with headquarters at San Antonio, Tex.

L. Podesta, superintendent of the Chicago Junction, has been appointed superintendent of the Chicago Junction and the Chicago River & Indiana, effective September 1, with office at Union Stock Yards, Chicago.

W. H. Fogg, general superintendent of the Chicago, Indianapolis & Louisville, has been appointed superintendent of transportation under Federal control, with headquarters at Lafayette, Ind., effective September 1.

H. V. Platt, terminal manager of the Salt Lake (Utah) switching district and Ogden switching district, has been appointed also general manager of the Ogden Union Railway & Depot, with headquarters at Salt Lake, Utah.

C. H. Smith, superintendent of the Green Bay & Western, has been appointed superintendent also of the Kewanee, Green Bay & Western, the Ahnapee & Western and the Waupaca-Green Bay, with office at Green Bay, Wis.

J. H. Dyer, assistant general manager of the northern district of the Southern Pacific, with headquarters at Portland, Ore., has been promoted to general manager in charge of the Southern Pacific System Lines south of Ashland, Ore., the Western Pacific, the Tidewater Southern and the Deep Creek Railroad, with headquarters at San Francisco, Cal. Mr. Dyer was born at Colfax, Cal., in 1872, and began work with the Southern Pacific as a track laborer in 1888 on the Sacramento division. He was subsequently brakeman, conductor, yardmaster and trainmaster on the same division. In 1908 he was appointed superintendent of the Shasta division and in 1911 was transferred to the Tucson division. He was again transferred to the Sacramento division in 1914, and on July 1, 1916, was appointed assistant general manager at Portland.

F. L. Burckhalter, division superintendent of the Southern Pacific Company at Portland, Ore., has been appointed assistant general manager of the northern district, south of Ashland, and **T. H. William**, division superintendent of the Southern Pacific Company, at Oakland Pier, Cal., has been appointed assistant general manager of the Southern district, south of Ashland.

Daniel E. Rossiter, whose appointment as division superintendent on the Chicago, Milwaukee & St. Paul, with office at Portage, Wis., was announced in the *Railway Age* of August 23, was born at Orfordville, Wis., and entered railway service with the St. Paul, in 1895. He has been continuously in the employ of that road ever since. In the first eight years of service he was agent and operator; from 1903 to 1908, train dispatcher; from the latter date to 1912, chief dispatcher; and from 1912, to August 15, 1918, trainmaster.

Edgar J. Hamner has been appointed superintendent of the New York Terminals of the Baltimore & Ohio; the Baltimore & New York, and the Staten Island Rapid Transit, with headquarters at St. George, S. I., N. Y., vice **H. R. Hanlin**, transferred, and **William B. Biggs** has been appointed terminal agent of the New York Terminals, with headquarters at New York.

E. A. Blake, acting general superintendent of the eastern general division of the Norfolk & Western, with office at Roanoke, Va., has been appointed general superintendent of the eastern general division, with office at Roanoke, vice **V. A. Riton**, assigned to other duties. **D. F. Peters**, trainmaster at Crewe, has been appointed superintendent of the Norfolk division, with office at Crewe, vice Mr. Blake.

The jurisdiction of the following Southern Pacific officers has been extended over the Western Pacific, the Tidewater Southern, and the Deep Creek: **A. Pollok**, superintendent of dining cars, hotels and restaurants; **R. L. Ruby**, acting superintendent of transportation; **E. L. King**, superintendent of telegraph; **A. L. Hayden**, contract agent, and **P. J. Kindelon**, chief special agent; all with headquarters at San Francisco, Cal.

W. H. Strachan, division superintendent of the Northern Pacific, at Duluth, Minn., has been appointed terminal manager of the Duluth-Superior terminals, with headquarters at Duluth, effective September 5. As terminal manager he will have charge of all terminal operations in Duluth, Minn., and Superior, Wis., in a district extending east to and including Itasca, Wis., and west to Fond du Lac, Minn. He will report to the manager of ore, coal and grain traffic of Lake Superior and upper Lake Michigan ports.

F. M. Lucore, assistant general manager of the Southern Pacific, Texas Lines, has been appointed superintendent of transportation, with headquarters at Houston, Tex., of all lines under the jurisdiction of W. B. Scott, federal manager, namely Morgan's Louisiana & Texas, the Louisiana Western, the Texas & New Orleans, the Galveston, Harrisburg & San Antonio, the New Orleans, Texas & Mexico, the Beaumont, Sour Lake & Western, the St. Louis, Brownsville & Mexico, the San Antonio & Aransas Pass and the San Antonio, Uvalde & Gulf. **F. W. Parker**, superintendent of transportation of the Gulf Coast Lines, has been appointed superintendent of car service of all lines under the jurisdiction of W. B. Scott, federal manager, with headquarters at Houston, Tex. **O. C. Castle**, formerly superintendent of car service of the Southern Pacific, Texas Lines, is now with the Car Service Section of the Railroad Administration at Washington, D. C. **P. Hewitt**, superintendent of telegraph of the Southern Pacific, Texas Lines, has been appointed superintendent of telegraph of all lines under W. B. Scott, federal manager, with headquarters at Houston, Tex. **H. L. Bennett**, superintendent of telegraph of the Southern Pacific, Texas Lines, has been appointed assistant superintendent of telegraph of all lines under the authority of W. B. Scott, federal manager, with headquarters at Houston. **E. B. Coombs**, assistant superintendent of dining cars of the Southern Pacific, Texas Lines, has been appointed superintendent of dining cars, hotels and restaurants of all lines under W. B. Scott, federal manager, with headquarters at Houston. **H. M. Mayo** has been appointed superintendent of safety, and **C. L. MacManus** has been appointed supervisor of station service of all lines under the authority of W. B. Scott, federal manager, with headquarters at Houston.

The Stockton division of the Southern Pacific is now a part of the Northern district, the Portland division having been assigned to **J. P. O'Brien**, federal manager at Portland, Ore.; **B. McIntyre**, assistant to vice-president and general manager of the Southern Pacific Company, at San Francisco, Cal., has been appointed assistant to general manager in charge of wage schedules; **J. F. Spelman**, general superintendent of the Western Pacific, at San Francisco, Cal., has been appointed also general superintendent of the main line and Fernley branch, Southern Pacific, Salt Lake division; **T. F. Rowlands** has been appointed superintendent of the Southern Pacific, western division, at Oakland Pier, succeeding **T. H. Williams**, promoted, and also superintendent of the Oakland, Alameda & Berkeley Electric lines, succeeding



J. H. Dyer

J. C. McPherson, who has received a commission as captain in the engineering corps of the United States army. **B. A. Campbell**, assistant division superintendent at Ogden, Utah, has been promoted to superintendent of the Stockton division of the Southern Pacific, with office at Stockton, succeeding **H. B. Titcomb**, resigned to enter the service of another company; **E. Entleman**, trainmaster at Los Angeles of the Southern Pacific, has been appointed assistant superintendent of the Western division, with headquarters at Oakland Pier, succeeding **G. E. Gaylord**, promoted; **H. W. Wistner**, trainmaster of the Southern Pacific at Ogden, has been appointed assistant superintendent of the Salt Lake division; **W. L. Hack** has been appointed assistant superintendent of the Southern Pacific, Sacramento division, at Sacramento, succeeding **W. H. Kirkbride**, promoted; **W. B. Kirkland**, trainmaster of the Southern Pacific, at Dunsmuir, Cal., has been appointed assistant superintendent of the Shasta division, with the same headquarters, succeeding **A. T. Mercier**, promoted; **H. G. McCarthy** has been appointed trainmaster of the Shasta division, with office at Dunsmuir; **C. G. Tandy** has been appointed trainmaster of the San Joaquin division of the Southern Pacific, with office at Fresno, Cal., succeeding **F. N. McPhee**, who is now in military service; **V. S. Andrus** has been appointed trainmaster of the Southern Pacific, Salt Lake division, with office at Mina, Nev., succeeding **F. F. Small** transferred to Sparks, Nev., succeeding **W. H. McBean**, who has been transferred to Ogden, Utah; **E. J. Kellum** has been appointed trainmaster of the Shasta division of the Southern Pacific, with office at Dunsmuir.

Financial, Legal and Accounting

H. P. McMillan, auditor of the San Antonio, Uvalde & Gulf, has been appointed auditor and acting federal treasurer, with headquarters at San Antonio, Tex.

W. F. Wright, assistant to the purchasing agent of the Louisiana & Arkansas, has been appointed federal treasurer, with headquarters at Texarkana, Ark., succeeding **F. S. Carroll**, resigned, effective September 1.

G. H. Westcott, traffic manager of the Copper Range, has been appointed general freight and passenger agent and acting federal treasurer; **J. G. Stone** has been appointed general solicitor, and **C. E. Wright** has been appointed federal auditor, all with headquarters at Houghton, Mich.

The firm of Glennon, Cary & Walker, Chicago, have been appointed general solicitors of the Indiana Harbor Belt; **W. E. Osborn**, general auditor, has been appointed federal auditor, and **H. A. McConnell** has been appointed acting federal treasurer; both with offices at Gibson, Ind.

Appointments have been made on the Fort Dodge, Des Moines & Southern, effective September 1, as follows: **S. R. Dyer** has been appointed general solicitor, with office at Boone, Iowa; **F. W. Johnston**, treasurer and auditor, has been appointed federal treasurer, with office at Boone.

H. T. Evans, auditor of the Chicago, Indianapolis & Louisville, has been appointed general auditor under Federal control, with headquarters at Chicago. **Byron Cassell**, treasurer of the Chicago, Indianapolis & Louisville, has been appointed acting federal treasurer, with headquarters at Chicago.

J. F. Evans, general auditor of the Western Pacific, at San Francisco, Cal., has been appointed general auditor of the Western Pacific, the Tidewater Southern, and the Deep Creek, and **Charles Elsey**, treasurer of the Western Pacific at San Francisco, has been appointed acting federal treasurer of the same road.

T. O. Edwards, assistant secretary and auditor of the Southern Pacific, at San Francisco, Cal., has been appointed general auditor of the Southern Pacific system, lines south of Ashland, Ore., and **W. F. Ingram**, assistant treasurer at San Francisco, has been appointed acting federal treasurer of the same lines.

H. D. Shecan, general attorney of the Baltimore & Ohio Chicago Terminal, has been appointed general solicitor; **F. B. Huntington**, auditor, has been appointed federal auditor,

and **H. H. Hall**, assistant secretary and assistant treasurer, has been appointed acting federal treasurer; all with headquarters at Chicago.

H. O. Fairchild has been appointed general solicitor, **J. C. Thurman** has been appointed federal auditor, and **Arthur H. Nongin** has been appointed acting federal treasurer, of the Green Bay & Western, the Kewanee, Green Bay & Western, the Ahnapee & Western, and the Waupaca-Green Bay; all with headquarters at Green Bay, Wis.

B. F. James, secretary and treasurer of the Colorado & Southern, has been appointed acting federal treasurer of that road and of the Denver & Salt Lake, with headquarters at Denver, Colo. **E. I. Grenfell**, general auditor of Denver & Salt Lake, has had his jurisdiction extended over the Colorado & Southern, with headquarters at Denver, Colo.

J. D. Black has been appointed general solicitor of the Chicago Junction and the Chicago River & Indiana, with office at Chicago, and **E. S. Gentle**, has been appointed federal auditor; **F. D. O'Connor**, assistant secretary and assistant treasurer of the Union Stock Yards & Transit Company, has been appointed acting federal treasurer of both of the above roads.

Appointments have been made on the Chicago & Western Indiana and the Belt Railroad of Chicago, effective September 1, as follows: **J. R. Barse** has been appointed general solicitor, succeeding **C. G. Austin**; **R. L. Porter**, auditor and assistant secretary of the Chicago & Western Indiana and secretary and auditor of the Belt Railroad of Chicago, has been appointed federal auditor, of both roads, and **J. E. Murphy**, treasurer of both roads, has been appointed acting federal treasurer of both roads, all with headquarters at Chicago.

K. K. Knapp, general counsel of the Elgin, Joliet & Eastern, has been appointed to the same position on the Chicago, Milwaukee & Gary, and **R. W. Campbell**, general attorney, has been appointed general solicitor; both with offices at Chicago. **C. G. Nelson**, secretary, treasurer and auditor of the Chicago, Milwaukee & Gary, has been appointed federal auditor of the same road; **F. W. Winkler**, assistant auditor of the Chicago, Milwaukee & Gary, has been appointed acting federal treasurer of the same road, with office at Rockford, Ill.; **G. W. Williams** has been appointed federal auditor of the Elgin, Joliet & Eastern, with office at Chicago; **F. L. Koontz**, secretary and treasurer of the Elgin, Joliet & Eastern, has been appointed federal treasurer, with office at Chicago, effective September 1.

Traffic

M. J. Dooley has been appointed division freight and passenger agent, of the Houston East & West Texas, with headquarters at Houston, Tex.

W. L. Lewis, traffic manager of the Elgin, Joliet & Eastern, at Chicago, has been appointed traffic manager also of the Chicago, Milwaukee & Gary.

A. H. VanLoan has been appointed division freight agent in charge of traffic at Shreveport, La., and of the Vicksburg, Shreveport & Pacific, with office at Shreveport, La.

Eugene Mock, traffic manager of the Midland Valley at Muskogee, Okla., has been appointed division freight and passenger agent, with headquarters at the same place.

E. H. Shaufler, general traffic manager of the Kansas City, Mexico & Orient, at Kansas City, Mo., has been appointed division freight and passenger agent, with headquarters at Wichita, Kan.

H. K. Faye, traffic manager of the Western Pacific, has been appointed general freight and passenger agent of that road, the Tidewater Southern and the Deep Creek, with headquarters at San Francisco, Cal.

W. G. Crush, general passenger agent of the Missouri, Kansas & Texas Railway of Texas, has been appointed general passenger agent of that road, the Houston & Texas Central and the Union Terminal of Dallas, with headquarters at Dallas, Tex., effective September 1.

The jurisdiction of **E. B. Carson**, general baggage agent of the Southern Pacific, with office at San Francisco, Cal., has been extended over the Western Pacific, the Tidewater Southern, and the Deep Creek.

J. F. Garvin, general freight agent of the Missouri, Kansas & Texas Railway of Texas, has been appointed general freight agent of that road, and the Wichita Falls & Northwestern, with headquarters at Dallas, Tex., effective September 1.

W. S. Keenan, general passenger agent of the Gulf, Colorado & Santa Fe lines, has been appointed also general passenger agent of the Texas Midland and the Houston Belt & Terminal, with headquarters at Galveston, Tex., effective September 1.

F. R. Dalzell, assistant general freight agent of the Gulf, Colorado & Santa Fe lines, has been appointed also assistant general freight agent of the Texas Midland and the Houston Belt & Terminal, with headquarters at Galveston, Tex., effective September 1.

J. B. Call, general freight and passenger agent of the Green Bay & Western, has been appointed general freight and passenger agent also of the Kewanee, Green Bay & Western, the Ahnapee & Western, and the Waupaca-Green Bay, with office at Green Bay, Wis.

J. S. Hershey, general freight agent of the Gulf, Colorado & Santa Fe lines, with headquarters at Galveston, Tex., has been appointed also general freight agent of the Texas Midland and the Houston Belt & Terminal, with headquarters at Galveston, effective September 1.

G. W. Luce, freight traffic manager of the Southern Pacific Company, at San Francisco, Cal., has been appointed freight traffic manager of the Southern Pacific system, lines south of Ashland, Ore., the Western Pacific, the Tidewater Southern and the Deep Creek; **Charles S. Fee**, passenger traffic manager of the Southern Pacific Company at San Francisco, has been appointed passenger traffic manager of all the above roads.

W. F. Sterley, general freight and passenger agent of the Ft. Worth & Denver City, at Fort Worth, Tex., has been appointed assistant general freight agent of that road, the Wichita Valley, the Houston & Texas Central, the St. Louis, San Francisco & Texas, the Ft. Worth & Rio Grande, the Brownwood North & South, the International & Great Northern (Ft. Worth to Spring—Madisonville Branch) the Abilene & Southern and the Ft. Worth Belt, with headquarters at Ft. Worth, Tex., effective September 1.

J. A. Brown, general freight agent of the Gulf Coast Lines, with headquarters at Houston, Tex., has been appointed general freight agent of the Ft. Worth & Denver City, the Wichita Valley, the Houston & Texas Central, the St. Louis, San Francisco & Texas, the Ft. Worth & Rio Grande, the Brownwood North & South, the International & Great Northern (Ft. Worth to Spring—Madisonville Branch) the Abilene & Southern and the Ft. Worth Belt, with headquarters at Ft. Worth, Tex., effective September 1.

C. W. Strain, general passenger agent of the Gulf Coast Lines, with headquarters at Houston, Tex., has been appointed general passenger agent of the Ft. Worth & Denver City, the Wichita Valley, the Wichita Falls & Northwestern, the Abilene & Southern, the St. Louis, San Francisco & Texas, the Ft. Worth & Rio Grande, the Brownwood North & South, the International & Great Northern (Ft. Worth to Spring—Madisonville Branch) and the Ft. Worth Union Passenger station, with headquarters at Ft. Worth, Tex., effective September 1.

L. V. Beatty, general agent of the Kansas City Southern, at Kansas City, Mo., has been appointed division freight agent, with headquarters at the same place, and **J. O. Hamilton**, assistant general freight agent, at Texarkana, has been appointed division freight agent of the Kansas City Southern, south of DeQueen, Ark., and of the Texarkana & Fort Smith, with headquarters at Texarkana, Tex. **S. G. Hopkins**, division passenger agent, of the Kansas City Southern, at Texarkana, has been appointed division passenger agent on the Kansas City Southern south of DeQueen, Ark., and of the

Texarkana & Ft. Smith and the Vicksburg, Shreveport & Pacific, with office at Texarkana, Tex.

The following officers of the Kansas City Southern have been appointed to the same or new positions on that road and the Texarkana & Ft. Smith, the Midland Valley, the Houston East and West Texas, the Vicksburg, Shreveport & Pacific, the Kansas City, Mexico & Orient Lines and the Joplin Union Depot, effective September 1: **R. R. Mitchell**, general freight agent, has been appointed to the same position, with headquarters at Kansas City, Mo. **S. G. Warner**, general passenger and ticket agent, has been appointed general passenger agent at Kansas City; **H. A. Weaver**, assistant general freight agent, has been appointed to the same position at Kansas City; **J. R. Mills**, assistant general freight agent, has been appointed to the same position at Kansas City, and **F. D. Downie**, general baggage agent, has been appointed to the same position on all lines, at Kansas City.

The following officers have been appointed to traffic positions on all of the lines under the jurisdiction of **J. S. Pyeatt**, federal manager: **C. O. Jackson**, who has been general passenger agent of the Ft. Worth & Rio Grande and assistant general passenger agent of the Paris & Great Northern, becomes general baggage agent, with headquarters at Dallas, Tex. **R. Daniels**, assistant general passenger agent on the Missouri, Kansas & Texas Railway of Texas, has been appointed division passenger agent, with office at Dallas, Tex. **W. B. Wells**, assistant general freight agent of the Paris & Great Northern and general freight agent of the Ft. Worth & Rio Grande, has been appointed division freight and passenger agent, with headquarters at San Antonio, Tex. Other division freight and passenger agents recently appointed include **H. W. Landman**, who will be located at Ft. Worth, Tex.; **W. H. Yeargin**, with office at Wichita Falls, Tex.; **W. L. Geer**, with headquarters at Waco, Tex., and **G. B. Magruder**, with headquarters at Houston, Tex.

W. A. Kellond, manager of mail traffic and general baggage agent of the Missouri, Kansas & Texas, at Parsons, Kan., has been appointed general baggage agent of that road and of the St. Louis-San Francisco, with headquarters at Springfield, Mo. **J. C. Lovrien**, division passenger agent of the St. Louis-San Francisco at Kansas City, Mo., has had his jurisdiction extended to include the Missouri, Kansas & Texas. **F. J. Deicke**, general agent, passenger department, of the St. Louis-San Francisco at St. Louis, Mo., has been appointed division passenger agent of the Frisco and the Missouri, Kansas & Texas, with the same headquarters. **L. W. Price**, division passenger agent of the Frisco at Oklahoma City, Okla., has been appointed also division passenger agent of the Katy. **F. R. Newman**, division passenger agent of the St. Louis-San Francisco, at Joplin, Mo., has had his jurisdiction extended over the Missouri, Kansas & Texas, with the same headquarters. **H. C. Conley**, assistant general freight agent of the St. Louis-San Francisco, at Oklahoma City, Okla., has been appointed division freight agent of that road and the Missouri, Kansas & Texas, with the same headquarters. **H. B. Sperry**, assistant general freight agent of the Missouri, Kansas & Texas, at Kansas City, Mo., has been appointed division freight agent of that road and the St. Louis-San Francisco, with the same headquarters. **F. J. Lawler**, commercial agent of the Frisco, at St. Louis, Mo., has been appointed division freight agent of that road and the Missouri, Kansas & Texas, with the same headquarters. **A. H. Stevens** has been appointed division freight agent of the Missouri, Kansas & Texas and the St. Louis-San Francisco, at Joplin, Mo. **J. F. Reily**, general freight and ticket agent in Kansas of the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., has been appointed division freight agent of both that road and the St. Louis-San Francisco, with the same headquarters.

C. C. P. Rausch, assistant freight traffic manager of the Missouri Pacific, has been appointed to the same position on the Missouri Pacific, the St. Louis Southwestern and the Louisiana & Arkansas. **B. S. Atkinson**, purchasing agent and traffic manager, of the Louisiana & Arkansas, has been appointed general freight agent of that road with headquarters at Texarkana, Ark. **J. D. Watson**, assistant to the president of the St. Louis Southwestern, has been appointed

assistant general freight agent of that road with headquarters at St. Louis, Mo. **W. M. Cook**, manager of foreign freight traffic, of the Missouri Pacific at St. Louis, has been appointed assistant general freight agent of that road, the St. Louis Southwestern and the Louisiana & Arkansas, with office at St. Louis. **L. D. Knowles**, assistant general freight agent, of the Missouri Pacific at Kansas City, has been appointed division freight agent of that road, with the same headquarters. **R. M. McWilliams**, assistant general freight agent, of the Missouri Pacific at Little Rock, has been appointed division freight agent of that road and the St. Louis Southwestern, with the same headquarters. **Dan Jacobs**, assistant general freight agent, of the Missouri Pacific at Alexandria, La., has been appointed division freight agent of that road and the Louisiana & Arkansas, with the same headquarters. **J. T. Ferguson**, local representative, agency and public service, of the St. Louis Southwestern at Shreveport, La., has been appointed division freight agent of that road and the Louisiana & Arkansas, with the same headquarters. **F. L. Peakins**, assistant general freight agent of the Missouri Pacific at Omaha, has been appointed division freight agent of that road, with the same headquarters. Other division freight agents of the Missouri Pacific recently appointed include **P. E. Watson**, Pueblo, Col., who was formerly general agent of the Missouri Pacific at that point; **J. D. Yates**, Wichita, Kan., formerly general agent of the Missouri Pacific at that point; **C. C. Cloutman**, Atchison, Kan., formerly general agent of the Missouri Pacific in that city; **G. W. Pither**, Joplin, Mo., formerly commercial agent of the Missouri Pacific at that point, and **N. A. Beach**, St. Joseph, Mo., formerly general agent of the Missouri Pacific at that city. The following division freight agents of the Missouri Pacific and the St. Louis Southwestern have been appointed: **C. C. McCarthy**, St. Louis, Mo., formerly general agent of the Missouri Pacific at that city; **W. D. May**, Memphis, Tenn., formerly local representative, agency and public service, of the St. Louis Southwestern in that city, and **C. B. Lindsay**, Pine Bluff, Ark., formerly division passenger and freight agent of the Missouri Pacific at that city.

Engineering and Rolling Stock

O. H. Gersbach, engineer maintenance of way of the Indiana Harbor Belt, at Gibson, Ind., has been appointed chief engineer.

Raymond A. Greene, formerly a chemist with Armour & Co., Chicago, has been appointed chemist and engineer of tests of the Chicago & Alton, with headquarters at Bloomington, Ill.

G. W. Hegel, chief engineer of the Chicago Junction, has been appointed chief engineer also of the Chicago River & Indiana, with office at Union Stock Yards, Chicago.

A. Montzheimer, chief engineer of the Elgin, Joliet & Eastern, at Joliet, Ill., has been appointed chief engineer also of the Chicago, Milwaukee & Gary, succeeding **I. W. Troxel**.

J. Horrigan, superintendent of motive power of the Elgin, Joliet & Eastern, at Joliet, Ill., has been appointed superintendent of motive power also of the Chicago, Milwaukee & Gary.

E. R. Breaker, chief engineer of the San Antonio, Uvalde & Gulf, has been appointed assistant mechanical superintendent under federal control, with headquarters at North Pleasanton, Tex.

D. M. McLauchlan, assistant master mechanic of the Southern Pacific, at Brooklyn, Ore., has been appointed master mechanic on the Portland division, vice **C. E. Peck** resigned to go to another road.

J. A. McNulty, railroad representative of the Anchor Packing Company, at Chicago, has been appointed division master mechanic of the Chicago, Milwaukee & St. Paul, at Dubuque, Iowa, succeeding **G. T. Messer**.

Willard Kells, assistant general superintendent of motive power of the Atlantic Coast Line, with office at Wilmington, N. C., has been appointed general superintendent of motive

power of the Atlantic Coast Line and the Winston-Salem Southbound, vice **R. E. Smith**, deceased.

R. J. Sporseller has been appointed road foreman of engines on the Pennsylvania Railroad, Western Lines, with headquarters at Lancaster, Ohio, to succeed **J. L. Todhunter**, transferred, effective September 5.

F. E. Morrow, assistant chief engineer of the Chicago & Western Indiana and the Belt Railroad of Chicago, at Chicago, has been appointed chief engineer, succeeding **E. H. Lee**, who goes with the corporation.

T. J. Wyche, chief engineer and chairman of the Valuation Committee of the Western Pacific, at San Francisco, Cal., has been appointed chief engineer of the Western Pacific, the Tidewater Southern, and the Deep Creek.

W. T. Mead, acting group engineer of the western group of the Presidents' Conference Committee, has been appointed assistant valuation engineer of the Illinois Central, with headquarters at Chicago, to succeed **D. W. Thrower**, recently promoted to valuation engineer.

J. M. Silliman, resident engineer of the Canadian Pacific, at London, Ont., has been appointed division engineer in charge of maintenance of way forces on the Susquehanna division of the Delaware & Hudson, with headquarters at Oneonta, N. Y., vice **H. S. Rogers**, resigned.

W. H. Kirkbride, assistant superintendent of the Sacramento division of the Southern Pacific-Pacific System, with headquarters at Sacramento, Cal., has been appointed chief



W. H. Kirkbride

engineer of the Southern Pacific-Pacific System Lines south of Ashland, Ore., with headquarters at San Francisco, Cal., succeeding **W. Hood**, who remains with the corporation. Mr. Kirkbride graduated from Leland Stanford, Jr., University in 1895 and for seven years was engaged in mining engineering, railroad location and construction work. In August, 1902, he entered the service of the Southern Pacific as assistant engineer at Sacramento, where he remained until April, 1904, when he was appointed

roadmaster of the Red Bluff district. In February, 1906, he was appointed assistant division engineer of the Sacramento division, and in April, 1909, was promoted to division engineer of the Coast division, with headquarters at San Francisco. He was transferred to the Sacramento division in March, 1911, where he remained until December, 1917, when he was promoted to assistant superintendent.

C. E. Peck, master mechanic of the Southern Pacific, at Brooklyn, Ore., has been appointed assistant superintendent of motive power, of the Oregon-Washington Railroad & Navigation Lines, with headquarters at Portland, Ore., vice **J. T. Langley** resigned to accept service elsewhere.

The jurisdiction of the following Southern Pacific officers has been extended over the Western Pacific, the Tidewater Southern and the Deep Creek: **George McCormick**, superintendent of motive power, and **A. H. Babcock**, electrical engineer; both with headquarters at San Francisco, Cal.

A. Daniels, assistant engineer on concrete construction at Milwaukee, Wis., on the Chicago, Milwaukee & St. Paul, has been promoted to district engineer of the Northern district, with office at Minneapolis, Minn., succeeding **W. R. Powrie**, who has resigned to become superintendent for Morris & Dougherty, contractors, on the Union station at St. Paul.

F. L. Carson, superintendent of motive power of the San Antonio & Aransas Pass, has been appointed assistant mechanical superintendent under federal control, with headquarters at Yoakum, Tex. **F. W. Bailey**, superintendent maintenance of way, has been appointed assistant engineer maintenance of way under federal control, with headquarters at Yoakum.

E. G. Lane, engineer maintenance of way of the Baltimore & Ohio, western lines, at Cincinnati, Ohio, has been appointed chief engineer of the Baltimore & Ohio, western lines, the Dayton & Union and the Dayton Union, succeeding **L. G. Curtis** resigned to accept service with the Baltimore & Ohio Railroad Company, and **H. R. Gibson**, district engineer maintenance of way, at Cincinnati, succeeds Mr. Lane.

In the notice of the appointment of **Earl Stimson** as general superintendent of maintenance of way and structures of all lines under the jurisdiction of A. W. Thompson, federal manager at Baltimore, Md., the statement was made that Mr. Stimson graduated from Cornell University in 1895. This statement was incorrect to the extent that while Mr. Stimson attended this university from 1893 to 1895, he did not graduate from it.

J. A. Power, assistant general manager of the Southern Pacific, Texas Lines, has been appointed mechanical superintendent of all lines under the authority of W. B. Scott, federal manager, with headquarters at Houston, Tex. **C. R. Morrill**, assistant general manager of the Southern Pacific, Texas Lines, has been appointed engineer maintenance of way of all lines under W. B. Scott, federal manager, with headquarters at Houston. **E. E. Worthing**, signal engineer of the Southern Pacific, Texas Lines, has been appointed signal engineer of all lines under W. B. Scott, federal manager, with headquarters at Houston.

Purchasing

J. M. Wagner has been appointed purchasing agent of the Copper Range, with headquarters at Houghton, Mich.

William McMaster, purchasing and industrial agent of the Indiana Harbor Belt, at Chicago, has been appointed purchasing agent.

C. H. Kenzel, purchasing agent of the Elgin, Joliet & Eastern, at Chicago, has been appointed purchasing agent also of the Chicago, Milwaukee & Gary.

H. C. Robinson has been appointed purchasing agent of the Chicago Junction and the Chicago River & Indiana, with office at Union Stock Yards, Chicago, succeeding **S. Salter**.

W. C. Weldon, purchasing agent of the Colorado & Southern, has had his jurisdiction extended to include the Denver & Salt Lake, with headquarters at Denver, Colo., succeeding **A. L. Cochrane**.

The jurisdiction of **A. S. McKelligon**, general storekeeper of the Southern Pacific, with headquarters at San Francisco, Cal., has been extended over the Western Pacific, the Tidewater Southern, and the Deep Creek.

L. B. Wood, purchasing agent and general storekeeper of the Southern Pacific, Texas Lines, has been appointed general storekeeper of all lines under W. B. Scott, federal manager, with headquarters at Houston, Tex.

H. E. Dutton, purchasing agent of the Green Bay & Western, has been appointed purchasing agent also of the Kewanee, Green Bay & Western, the Ahnapec & Western and the Waupaca-Green Bay, with headquarters at Green Bay, Wis.

F. W. Taylor, purchasing agent of the Southern Pacific Company, at San Francisco, Cal., has been appointed purchasing agent of the Southern Pacific system, lines south of Ashland, Ore., the Western Pacific, the Tidewater Southern, and the Deep Creek.

Special

J. S. Webster has been appointed chief special agent of all lines under the jurisdiction of W. B. Scott, federal manager, with headquarters at Houston, Tex.

Corporate

Executive, Financial, Legal and Accounting

Charles I. Sturgis, general auditor of the Chicago, Burlington & Quincy, has been appointed controller with office at Chicago.

A. E. Wright, secretary and purchasing agent of the St. Louis & O'Fallon, has been appointed secretary and assistant to the president, with headquarters at St. Louis, Mo.

E. T. Dumble has been appointed corporate manager in charge of the fuel oil department of the Southern Pacific Lines in Louisiana and Texas, with headquarters at Houston, Tex.

C. E. Bahl has been elected secretary and treasurer, and **W. B. Johnson** has been appointed auditor, of the Wheeling & Lake Erie and the Lorain & West Virginia; both with offices at Cleveland, Ohio.

E. S. Loucke has been appointed secretary and acting treasurer, of the Louisville & Nashville, and **G. R. White**, assistant auditor of disbursements, has been appointed auditor; both with offices at Louisville, Ky.

J. H. R. Parsons, vice-president and general manager of the Southern Pacific, Louisiana Lines, has been elected vice-president of the Southern Pacific Lines in Louisiana and Texas, with jurisdiction over the Louisiana Lines only, with headquarters at New Orleans, La.

George C. Morris, receiver of the Houston & Brazos Valley, has been appointed also treasurer, with headquarters at Freeport, Tex., to succeed **W. C. McLendon**, who has been appointed local treasurer under federal control. **A. E. Masterson** has been appointed general attorney for the receiver, with headquarters at Angleton, Tex.

G. L. King, assistant secretary of the Southern Pacific, Pacific System, has been appointed assistant treasurer, assistant secretary and secretary of leased lines of the Southern Pacific Lines West of El Paso and Ogden, with headquarters at San Francisco, Cal. **A. D'Heur** has been appointed corporate manager of the fuel and oil department, and **E. B. Leavitt** has been appointed lease agent, with headquarters at San Francisco, Cal.

C. J. Hellerstedt, assistant secretary of the Arizona & Eastern, has been appointed secretary with headquarters at Tucson, Ariz., succeeding **Hugh Neill**, who has been appointed assistant secretary, with headquarters at New York. **J. E. White**, assistant treasurer, has been promoted to treasurer, with headquarters at Tucson, succeeding **A. K. Van Deventer**, who has been appointed assistant treasurer at New York. **W. F. Bull**, assistant secretary of the Southern Pacific, Pacific System, has been appointed assistant secretary of the Arizona & Eastern, with headquarters at New York.

Edward M. Hyzer, vice-president and general counsel of the Chicago, St. Paul, Minneapolis & Omaha, has been appointed general counsel of that company, with headquarters at Chicago. **John D. Caldwell**, secretary, becomes secretary and assistant treasurer under the corporate organization, with headquarters at Chicago. **L. A. Robinson**, controller of the Chicago & North Western, has been appointed controller of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Chicago. **George W. Bell**, land commissioner of the Omaha, has been appointed land commissioner and assistant secretary under the corporate organization, with headquarters at Hudson, Wis.

H. H. Hoar has been appointed assistant treasurer of the Kansas City Southern and the Arkansas Western succeeding **H. Visscher** and **I. C. McGee**, now respectively local treasurer and assistant treasurer of the Kansas City Southern under the United States Railroad Administration. **A. H. Barnes** has been appointed auditor of the Kansas City Southern succeeding **L. J. Hensley** who is now general auditor under the United States Railroad Administration. **R. J. McCarty**, vice-president of the Kansas City Southern, has been elected also president of the Arkansas Western. The other corporate officers are **R. S. Robertson**, vice-president; **J. C.**

Gardner, secretary and treasurer, and **J. M. Souby**, assistant secretary who is also solicitor and assistant secretary of the Kansas City Southern.

Operating

E. A. Murphy has been appointed general manager of the California & Oregon Coast, succeeding **J. D. MacVicar**, resigned to accept service elsewhere, effective September 1.

Traffic

W. J. McDonald has been appointed transfer agent of the Louisville & Nashville, with office at New York.

Rowland F. Hill, whose appointment as general freight and passenger agent of the Toronto, Hamilton & Buffalo, with headquarters at Hamilton, Ont., has already been announced in these columns, was born on December 14, 1889, at Hamilton, Ont. He began railway work in July, 1906, as a stenographer in the master mechanic's office of the Toronto, Hamilton & Buffalo. The following September he was transferred in the same capacity to the general freight and passenger agent's office. From September, 1909, to November, 1911, he was soliciting freight agent, and then to May, 1915, was rate clerk. He then served as chief clerk until September 15, 1915, when he was appointed assistant general freight and passenger agent, which position he held at the time of his recent appointment as general freight and passenger agent of the same road, as above noted. Mr. Hill's entire railroad service has been with the Toronto, Hamilton & Buffalo.

Engineering and Rolling Stock

Albert W. Newton has been appointed chief engineer of the Chicago, Burlington & Quincy, for the corporation, with headquarters at Chicago.

R. Montfort, consulting engineer of the Louisville & Nashville, has been appointed chief engineer for the corporation with headquarters at Louisville, Ky.

A. McDonald, assistant master mechanic of the Grand Trunk at Montreal, Que., has been appointed assistant to superintendent of motive power with office at Montreal shops.

F. W. Mahl, director of purchases of the Southern Pacific-Pacific System at New York, has been appointed corporate mechanical engineer of the Southern Pacific Lines west of El Paso and Ogden, with headquarters at San Francisco, Cal.

E. R. Battley, master mechanic of the Grand Trunk, at Montreal, Que., has been appointed superintendent of motive power, eastern lines, with headquarters at Montreal. **D. J. McCuaig**, master mechanic at Toronto, has been appointed superintendent of motive power, Ontario lines, with office at Toronto; **G. M. Wilson**, master mechanic, at Montreal, locomotive shops, has been appointed superintendent of motive power shops, at Montreal; **J. C. Garden**, master mechanic at Battle Creek, Mich., locomotive shops, has been appointed superintendent of motive power shops, at Stratford, Ont. **J. Vass**, assistant master mechanic at Allandale, Ont., has been appointed assistant to superintendent of motive power, Ontario lines, with headquarters at Allandale, and **J. R. Leckie**, assistant master mechanic at London, has been appointed assistant to superintendent of motive power, Ontario lines, with headquarters at London.

Special

J. W. James, special representative under **J. M. Herbert**, formerly inter-regional director at St. Louis, has been temporarily assigned to make a study of physical properties and operations for the stockholders and receivers of the Denver & Salt Lake.

Obituary

A. B. Eldredge, president of the Duluth, South Shore & Atlantic, with office at Marquette, Mich., died on September 9, after a brief illness, at the Hotel Manhattan, New York.

M. V. Richards, commissioner of the agricultural and industrial department of the Southern Railway, with office at Washington, D. C., died at Atlantic City, N. J., on September 8.

Morley Donaldson, formerly vice-president and general manager of the Grand Trunk Pacific at Winnipeg, Man., died at Ottawa, Ont., on August 27, at the age of 65. Mr. Donaldson was born in Edinburgh, Scotland, and entered the service of the Canada Atlantic as chief draftsman in 1881, subsequently rising to the position of general superintendent. When that road was merged with the Grand Trunk in 1905 he was appointed general superintendent of the Ottawa division. In 1912 he was appointed vice-president and general manager of the Grand Trunk Pacific at Winnipeg, from which position he resigned about a year ago.

C. W. Van Buren, who was killed in an automobile accident on August 25, at Canajoharie, N. Y., as was mentioned in these columns last week, was born on October 18, 1867, in Rensselaer county, N. Y. He was educated in the common schools, later attending night school in New York City. In 1889, he began railway work on the New York Central & Hudson River, and served as a carpenter at the West Albany shops until 1891. He was then appointed foreman; and two years later was given charge of the car department work on the Adirondack division at Herkimer, N. Y. In 1896, he was transferred to Utica in charge of car department work on the Adirondack and Mohawk divisions of the same road and the West Shore. He entered the service of the Canadian Pacific in July, 1905, as general inspector on the lines east of Port Arthur. The following year he was appointed divisional car foreman of the eastern division, remaining in that position until July, 1909. He then served as master car builder, of the eastern lines of the same road, at Montreal until May, 1911, and then went to the Union Stock Yard & Transit Company, Chicago, as assistant general superintendent, remaining in that position until January, 1915, and was then appointed general foreman of the Milwaukee Refrigerator Transit & Car Company at Milwaukee, Wis. In April, 1915, he returned to the service of the Canadian Pacific as general master car builder, which position he held until the time of his death.

Robert Ellerslie Smith, general superintendent of motive power of the Atlantic Coast Line, with office at Wilmington, N. C., was instantly killed on August 25, as was announced in

our issue of last week. Mr. Smith's death was caused by the accidental discharge of a rifle which he was cleaning and it is supposed that he was not aware that the rifle was loaded. He was born on February 11, 1862, at Reading, Pa., and graduated from Phillips Academy, Andover, Mass., in the class of 1882. He began railway work later in the same year as a machinist's apprentice on the Philadelphia & Reading. From 1855, to November of the following year, he was a draftsman on the Norfolk & Western, and



R. E. Smith

then to October, 1890, was foreman of the same road at Norfolk, Va. He subsequently served as road foreman of engines for about two years and from 1892, to January, 1896, was general foreman of the Lambert Point shops of the same road. In January, 1896, he entered the service of the Atlantic Coast Line, as fuel agent, and in February of the following year was appointed superintendent of motive power of the same road. From July, 1898, to March, 1905, he served as assistant to general manager and since that time has been general superintendent of motive power of the same road.

EDITORIAL

Railway Age

EDITORIAL

The twenty-sixth annual convention of the Traveling Engineers' Association, which was held in Chicago last week, may truly be recorded as one of the most successful and enthusiastic meetings ever held by this association. The men came to Chicago for business; they came to learn how they could help the

The Traveling Engineers' Convention

nation in winning the war. The attendance at the meeting was so large that the Olympic theatre was requisitioned, as the convention rooms at the hotel could not conveniently hold the crowd. Every session was well attended. The men were anxious to learn and to hear and absorb the ideas of the members and the speakers. The supplymen noted particularly, as the railroad men circulated through the exhibition hall, that they were there to familiarize themselves to the fullest extent with the latest development in the devices and the method of handling those with which they were unfamiliar. The spirit that pervaded the atmosphere of the convention hall during all the sessions was one of patriotism and service. Many brilliant talks were made, to which the meeting responded with enthusiasm. It is sincerely to be hoped that the spirit of this meeting will be carried back home and that it will be reflected in the spirit of the workers.

The Railroad Administration has decided to substitute table d'hôte for a la carte lunches and dinners on dining cars and will establish a price of \$1.00 for lunch and \$1.25 for dinner. In the early history of dining car service in this country the table d'hôte system prevailed. There has been much discussion

Table d'Hôte Meals on Dining Cars

since it was abandoned as to whether it or the a la carte system resulted in better service to the public and was more economical for the railways. The table d'hôte system has been used in England and on most of the railways of continental Europe, and, while the *Railway Age* has no information as to the financial results it has yielded, we have long believed, and have said, in our columns, that it resulted in better service, as well as in lower prices to the public than did the a la carte service which has been in such general use on the railways of the United States. Prior to the war the traveler could get a good meal on a good train on almost any European railway for fifty cents to a dollar. The method usually followed in serving meals was to serve as many guests as could be accommodated in the car at a given time, each guest being given a slip of paper stating the time which he was to eat and the number of the table at which he was to sit. All the guests who came into the dining car at a given time had to finish together, at which time their places were taken by those who had been assigned to that time. Under this scheme each guest knew just when he would be served and when he must get through and there were none of those long lines of passengers waiting to get into the dining cars which recently have been so numerous on railway trains in the United States. In our opinion, after the table d'hôte system has been in use for awhile, a large majority of travelers will find that they like it better than the a la carte system because of its greater convenience and economy and because the food served will be, or ought to be,

better, while at the same time the railways will require less servants to serve meals and will waste less food. It is not to be expected, however, that the table d'hôte system will be introduced without causing much grumbling on the part of persons who have been used to a la carte service and who prefer it. The results of the change will be followed with much interest.

"The government of the United States feels that there is only one reply which it can make to the suggestion of the Imperial Austro-Hungarian government. It has repeatedly and with entire candor stated the terms upon which the United States would consider peace and can and will entertain no proposal

Our Only Terms "Unconditional Surrender"

for a conference upon a matter concerning which it has made its position and purpose so plain." This, President Wilson's answer to the Austro-Hungarian note proposing an unofficial conference of belligerents, is the only answer that America could have given. Now is no time to talk peace nor will any other time in the future be proper to talk peace until the stain of Kaiserism is entirely eradicated from the earth. Our terms of peace are already announced in no unmistakable terms. To dicker about them now would be the most foolhardy thing that we could do. We have the German and the Austrian on the defensive. His morale is crumbling under Foch's repeated blows, and America with its mighty industrial and man power has hardly begun to strike. The morale of our own troops overseas has excited the admiration of our allies. Could we consistently have taken a single step that would have given them even the slightest suggestion that the worst is over and that the war would be settled by peace negotiations instead of by their own desperate efforts at the front? Certainly not. We are fighting this war now for good and all. It will no doubt take several more months to finish it, but even if it takes years, there will be no place for any suggestion, however remote, that might lead to its postponement for our grandchildren and great grandchildren to tackle once again. We have the Hun on the way to his defeat. We must press our advantage to the only ultimate conclusion—Unconditional Surrender—while the present opportunity is in our grasp.

The sale of the Orenstein-Arthur Koppel Company by the alien property custodian this week marks an episode of great importance in the railway supply field.

The Orenstein- Arthur Koppel Company

This company had little right on American soil. The American railway supply field is pre-eminent in its field and that a German owned and operated establishment should have had a successful career in such company was more or less of an anomaly. The Orenstein-Arthur Koppel Company was owned by the Arthur Koppel Aktiengesellschaft, a German corporation with headquarters in Berlin. It was incorporated in Pennsylvania about ten years ago and was one of several branches of the Berlin company, there being others in South America, Cuba, Mex-

ico, England, Africa and Russia. The American company, in short, was merely part of a net, but it was that part in a position to learn what was going on in its line in this country. It was in a most advantageous position to learn what the American railway supply industry was doing and to pass the information along to the parent company and with no good, one can bear in mind, to its American competitors—particularly in foreign trade. Since the outbreak of the war the company has had a most unsavory record. As the announcement of the sale pointed out, the company received many contracts from munition plants, steel mills and other concerns and thereby received valuable information about war work for France, England and later for ourselves, with which it certainly did no good. It also received contracts of its own—rumor has it that it kept its skirts clean of an allied stain—to use a word representing its own side of the matter—by communicating with the Hun authorities and thereby trying to effect the sinking of the ship on which the material was shipped. A glimpse into the future when we shall be going ahead to build up our foreign markets in railway supplies would easily show what a damaging influence an organization of this kind would have offered. Its transfer from 100 per cent German to 100 per cent American ownership is indeed a happy circumstance. The alien property custodian will similarly sell a number of other German owned concerns in other lines. There is not an American in any line of industry that will not wish him god-speed!

Going All the Way

RAILWAYS ARE DEVOTING more attention to the treatment of their locomotive water supplies today than ever before. More roads are constructing treating plants than at any previous time, while an even larger number of lines are making investigations to determine the manner and the extent to which improvements can be effected. This awakening has resulted from an increasing realization of the improvements in locomotive operation which can be attained in this way, and it has been spurred on by the necessity of adopting all practical means for increasing the productive output of each engine, since it is becoming evident that relatively limited relief will be secured through the addition of new power this year. Another factor contributing to this activity is the fact that results can be secured in a relatively short time and with a comparatively limited expenditure, an important consideration at present.

With the general interest in this subject now prevailing it is important that no serious mistake be made which will render ineffective the improvements being undertaken or jeopardize future developments along this line. As pointed out by John R. Leighty, in a letter to the editor in this issue, three features should be considered in every plant—design, operation and supervision. As regards design, the students of water treatment are divided into two distinct schools having radically different points of view. One group contends that the type of plant selected is of relatively little importance and that the proverbial "two barrels and a bucket" will suffice. The advocates of this idea believe that almost any plant properly operated and supervised will bring the desired results. Without depreciating the importance of proper attention to operation and supervision the other group argues that a thoroughly equipped plant designed to insure a complete treatment of the water at a particular station will yield results sufficiently better than the simpler plant to justify the increased expenditure.

There is no question but that even the simplest treating plant intelligently installed and operated will affect improve-

ments in bad water areas. It is also true that an elaborate plant carelessly or improperly operated and inadequately supervised will give no better if as good results as a makeshift plant properly handled. However, the neglect on the part of a road to give proper attention to the manner of operating a plant has no relation to the type of plant itself and there should be no excuse for neglect in this regard with any form of equipment. The most satisfactory plant should be the one complete in its details and then operated properly. One of the most serious handicaps which the water treating industry has suffered has been brought about by the belief that a complete treating plant, once installed would run itself. It is the failures resulting from this condition more than any other cause which have served to discredit water treatment and to create a prejudice against it on many roads which is only now being overcome.

At the present time, when so much attention is being given to the possibilities of water softening it is of the greatest importance that thorough studies be made of the conditions existing at each source of supply and that plants be designed which will result in the maximum efficiency at each station. No one type of plant or standard form of equipment is universally adaptable to all stations on a road or even on a single division. Each point requires individual analysis and design if the best results are to be secured. After equipment has been installed it is of equal importance that proper steps be taken to insure its correct operation and that sufficient supervision be exercised to insure that this be done. The roads which are securing most satisfactory results are the ones that have taken these precautions, while those which have attained little or no success will be found upon investigation, in almost every instance, to have neglected one or more of these essential conditions.

The Most Dangerous Period of the War

THE SOLDIERS OF THE ALLIED NATIONS on the western front, including those of the United States, recently have been winning victory after victory over those of the central powers, and have now driven them back almost where they were four years ago. The central powers, largely owing to this, no doubt, have started a new "peace offensive." Austria-Hungary has asked for a conference of representatives of all the countries engaged in the conflict. Germany has offered terms to Belgium.

In consequence of these developments it may appear to many persons that the triumphal end of the war is drawing near. On the contrary, the part of it we are now entering is the most dangerous to the allied cause since the United States became involved. It is so dangerous because the situation which has been created by the victories of the armies of the allies, and by the peace propaganda which has been begun by the enemy, may be misunderstood by the peoples of the United States and the other allied countries, and cause some relaxation of their military and industrial efforts, and especially their industrial efforts.

The truth is, that any relaxation of the efforts of the armies and peoples of the allies at this time might prove fatal in the long run to their cause. The war is far from won. While the central powers are being rapidly defeated on the western front, and may soon be expelled from France and Belgium, it is an important fact which many may overlook that Germany and Austria are still in possession of vast territories on the eastern front which they have conquered from Russia, Serbia and Roumania. These conquered territories in the east are so populous and have such vast resources that if Germany and Austria should be allowed to keep them, they would actually be stronger after the war than they were before it.

Therefore, the safety of the world requires that the war shall be continued until these powers have been compelled to disgorge their conquests, not only in Belgium and France, but also in the east. Probably there will have to be a long struggle before they will give up the conquered territories on the eastern front.

In the carrying on of this struggle the railway men of America have a part to perform which affords to them a great patriotic duty and opportunity. There are numerous ways in which they can do this duty and take advantage of this opportunity.

They should buy their full share of Liberty Bonds, and the recent vast advances in the wages of railway employees should result in their making much larger subscriptions to the next bond issue than they made to earlier ones.

Being diffused throughout the country and being an unusually intelligent class of citizens, the officers and employees of the railways can do a great work for their country by constantly presenting to their neighbors the need for prosecuting the war with unremitting energy until it has been completely won.

But the greatest part of the duty and the opportunity of railway officers and employees will be found by them very near at hand. They will find it in the performance of their regular work. The operation of the railways of the United States with the highest efficiency will become both more important and more difficult from now on. Unless past experience is no criterion, the demands made by traffic upon the facilities will soon become the heaviest ever known. At the same time, owing to the adverse conditions of the late fall and winter, the difficulties of operating the roads efficiently will soon be at their maximum. Everybody knows what occurred on the railways last winter. It is most improbable that the weather of next winter will be as severe as that of last winter was; but there is always severe weather in most of the United States during most of the winter. In these circumstances the duty of all classes of railway men is obvious.

In the first place, those who are directly concerned with the repair of locomotives, cars and tracks ought to put forth herculean efforts from now on to get these facilities in the best possible shape. Secondly, those who are directly concerned with train operation should begin to make efforts surpassing any they ever made to move all the traffic possible while the good weather lasts. Finally, all should be girding up their loins with the determination, when bad weather comes, to fight it and its effects with the same tireless courage and energy with which the soldiers of the United States are fighting the enemy in Europe.

As a matter of fact, they will be fighting the enemy as surely as the American soldiers on the other side are, and the effectiveness with which our soldiers on the other side can fight will depend largely on the way in which the railway men in this country do their work. Our soldiers cannot fight effectively unless they have ample provisions and munitions. Neither they nor the soldiers of our allies can or will have ample provisions and munitions unless the railways of the United States are operated with the greatest possible efficiency.

That the United States and its allies can win the war and win it completely there can no longer be any serious question. Whether they will win it decisively is another matter, and one which will be settled as much by the workers of America as by the soldiers of America. Of all the workers of America none can contribute more to the failure of the allied cause by slackening their efforts now or more to its early success by greatly intensifying them than the officers and employees of the railways of this country.

As to the patriotism of railway officers and employees there can be no doubt. Whether they fully appreciate their duty and their opportunity the world will be better able to judge after the roads have gone through next winter.

The Boston & Maine Reorganization

THE RAILROAD ADMINISTRATION has outlined a plan for the reorganization of the Boston & Maine which provides for a loan by the government of \$20,000,000 in addition to the \$10,000,000 already advanced by the government and for a consolidation of the leased lines with the Boston & Maine itself. The government's loan would be secured by a mortgage covering the combined properties and, since the laws of Massachusetts compel it, the outstanding debentures of the Boston & Maine would also be secured by this mortgage. Holders of stock of leased lines would surrender their stock for new preferred stock of the same par value and carrying varying rates of interest, based on the dividends which are now guaranteed on the leased line companies' stocks. This rate of interest for the next five years is to be 20 per cent lower than the rate now guaranteed but is to be restored to the full rate at the end of the five-year period. Thus, stockholders of the Fitchburg who are now guaranteed 5 per cent would, for the next four years, receive 4 per cent per year on their new Boston & Maine preferred, and the stockholders of the Connecticut River who are now receiving 10 per cent, would get 8 per cent on their new preferred. The government refuses to recognize any claim of the Hampden Railroad. Provision is also made for the issue of an additional \$12,000,000 preferred stock which may be used to pay off in part the \$20,000,000 to be advanced by the government.

It will be remembered that the plan which, after long and sometimes rather heated discussion and controversy, had been agreed to by the principal interests involved before government control became effective, provided for new preferred stock to bear interest at the same rate as the guaranteed interest on the leased line companies' stocks, for which new preferred was to be exchanged par for par for leased line companies' stocks. Under the old plan, the Boston & Maine would have had to itself raise a considerable amount of money through the sale of an issue of securities. This, under present conditions, would be practically an impossibility. The offer of the government, therefore, would appear to be a very fair one.

The management of the Boston & Maine has all along contended that an exchange of leased line companies' stock for Boston & Maine preferred was the only fair solution of the problem involved in reorganization and has insisted that the interest on this new preferred should be contingent on earnings and not a fixed charge. It would appear that the United States Railroad Administration after an unbiased study of the situation has fully upheld the position taken by the receiver, James H. Hustis, and the interests which have been working with him for a sound reorganization. The government, of course, could go further in bringing pressure to bear on leased line stockholders than could the reorganization committee and also circumstances have been such as to somewhat soften the mood of the reluctant leased line stockholders.

There is a provision in the federal reorganization plan which forbids the payment of dividends by the Boston & Maine common stock during the next five years.

Under the present plan, the Boston & Maine will be enabled to pay off back interest, to make such additions and betterments as are imperatively necessary for the economical operation of the property and, with ordinarily good luck, it ought to be able to earn and put back into the property during the next five years sufficient to form the basis of a greatly improved credit for the company. Furthermore, the holders of Boston & Maine funded debt will now, under the present plan, have their bonds secured by a mortgage on the consolidated Boston & Maine system. This is a quite necessary part of the plan if possible serious loss to savings banks

in Massachusetts is to be avoided. The Boston & Maine debentures are held in quite large quantities by savings banks and it is essential for the credit of the Boston & Maine, as well as for the general investment situation in New England, that nothing should be done which would impair the savings banks' investments in the Boston & Maine. The placing of these debentures in the security of a mortgage should greatly strengthen their market value and correspondingly benefit savings banks.

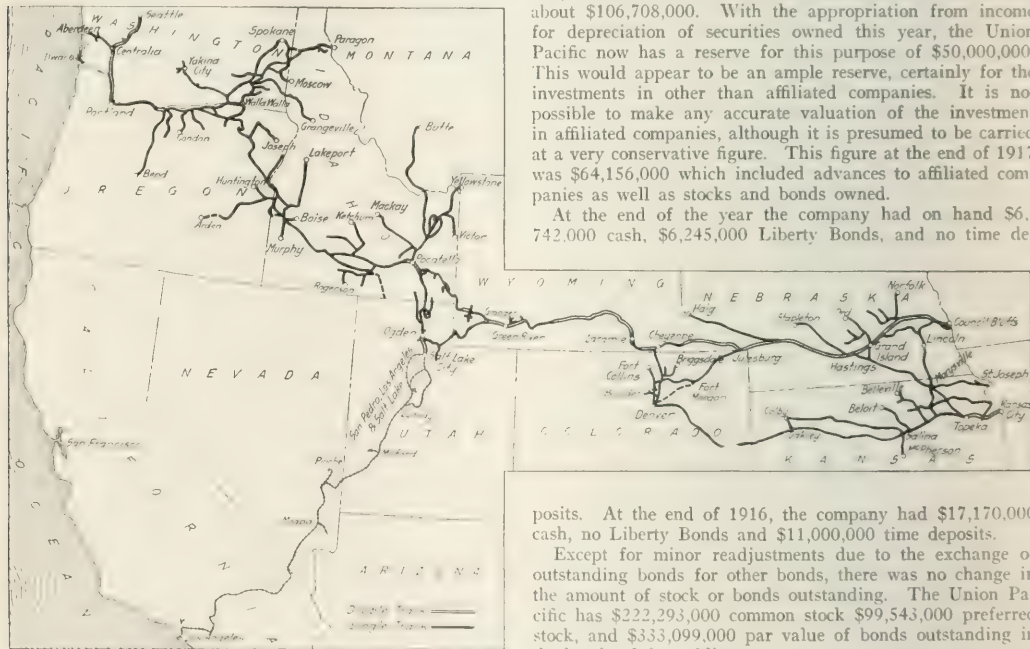
Union Pacific

ROUGHLY, about one-fifth of the total income of the Union Pacific comes from its banking operations and the other four-fifths from the operation of the 7,987 miles of railroad which makes up the Union Pacific system. Changes in tax laws and other considerations have led to a change in the method which the Union Pacific used in stating its income account and in dealing with the profit and loss account and balance sheet items. In 1917, total income available for in-

had a credit balance to profit and loss of \$138,740,000 and, in addition, there was a total "appropriated" surplus of \$41,328,000, of which \$35,418,000 was a reserve for depreciation of securities and \$5,450,000 appropriations for additions and betterments.

As already explained, the company carried nothing over from the income account of the calendar year 1917 to the credit of profit and loss, but during that year charged against this account \$14,582,000 additional reserve for depreciation of securities. The Union Pacific owns Baltimore & Ohio common and preferred, Chicago & Alton preferred, Chicago & North Western common, Chicago, Milwaukee & St. Paul preferred, Illinois Central stock, New York Central stock and Railroad Security Companies' (a holding company for Illinois Central stock) common and preferred to a total par amount of \$70,932,000. The company also owns bonds and notes of other railroad companies with a total par value of \$121,413,000. The company carries on its balance sheet the stocks just mentioned at a valuation of \$90,447,000 and the bonds at a valuation of \$114,130,000. The current quotations for the stocks would put a valuation of about \$50,484,000 on them, and for the bonds and notes a valuation of about \$106,708,000. With the appropriation from income for depreciation of securities owned this year, the Union Pacific now has a reserve for this purpose of \$50,000,000. This would appear to be an ample reserve, certainly for the investments in other than affiliated companies. It is not possible to make any accurate valuation of the investment in affiliated companies, although it is presumed to be carried at a very conservative figure. This figure at the end of 1917 was \$64,156,000 which included advances to affiliated companies as well as stocks and bonds owned.

At the end of the year the company had on hand \$6,742,000 cash, \$6,245,000 Liberty Bonds, and no time de-



The Union Pacific

terest and dividends amounted to \$55,529,000, comparing with \$57,081,000 income in 1916. Interest charges call for approximately \$13,900,000 in each year and there was left, therefore, net income of \$41,536,000 in 1917 and \$43,183,000 in 1916. In 1917, the Union Pacific paid 4 per cent on its preferred and 10 per cent on the common stock, calling for \$26,211,000, and the entire remainder, with the exception of a few thousand dollars for sinking funds, was appropriated for additions and betterments. In 1916, the company paid 4 per cent on its preferred and 8 per cent on its common and appropriated \$4,367,000 for additions and betterments, leaving, after payment of sinking funds, \$17,039,000 to be carried to profit and loss.

At the end of the calendar year 1916, the Union Pacific

posits. At the end of 1916, the company had \$17,170,000 cash, no Liberty Bonds and \$11,000,000 time deposits.

Except for minor readjustments due to the exchange of outstanding bonds for other bonds, there was no change in the amount of stock or bonds outstanding. The Union Pacific has \$222,293,000 common stock \$99,543,000 preferred stock, and \$333,099,000 par value of bonds outstanding in the hands of the public.

In 1917, the company spent \$1,005,000 for extensions and branches, \$13,729,000 for additions and betterments to road and structures, and \$7,540,000 for additions to equipment.

To turn now to the operation of the property as a railroad system. Total operating revenues amounted to \$130,102,000, an increase of 15 per cent over the revenues of 1916. Freight revenues amounted to \$93,348,000, an increase of 11.1 per cent, and passenger revenues to \$25,207,000, an increase of 25.5 per cent. Operating expenses showed a large increase, the total expenses in 1917 being \$77,295,000 or an increase of 21.3 per cent. The increase in expenses, however, was less than half as great proportionately as the increase in taxes. The total taxes, including federal, state and county, war and excess profits, amounted to \$8,452,000 in 1917, an increase over 1916 of 49.5 per cent.

Maintenance of way in 1917 cost \$15,348,000, or 0.5 per

cent more than in 1916. The Union Pacific spent over \$400,000 for the employment of special watchmen in guarding bridges and tunnels in 1917 that probably would not have been required except as a special measure in war time. There was also an increase of \$632,000 in the cost of maintenance of buildings and structures, bringing the total on this account up to \$1,945,000. A considerable part of this maintenance expense was caused by replacement work in connection with addition and betterment work. The annual report gives a long list of engine houses, shop buildings, turntables, water stations, fuel stations, etc., which were built; some of them replacing lighter structures and, therefore, carrying a charge to maintenance as well as to additions and betterments. The list of engine houses is indicative of the character of the work. New 96-ft. tall brick engine houses were built at Marysville, Ellis, Kansas City, Kans., Grand Island, Neb., and Pocatello, Idaho. The engine house at Ellis was a 14-stall structure replacing an old 14-stall house, and the one at Kansas City a 35-stall structure replacing one of 19 stalls.

Transportation expenses in 1917 amounted to \$37,728,000, an increase of \$8,526,000 over 1916. Fuel and wages, but more especially fuel, were the items which account for this large increase. The average cost of coal per ton in 1917 was \$2.41 as against \$1.97 in 1916, and the cost per gallon of fuel oil was 2.02 cents in 1917 as against 1.84 cents in 1916. The miles run to a ton of coal in 1917 averaged 10.23 and in 1916 10.61. Yard expenses increased even more than train expenses. This was due to the fact that prior to 1917 the Union Pacific from Omaha, Neb., to Ogden, Utah, was operated as two grand divisions with, of course, each division having a certain number of districts. This was changed and the road is now being operated, and was in 1917, by divisions, these divisions varying from 100 to 200 miles in length. This change in operating method made, it is believed, a considerable increase in yard work and, therefore, yard expenses, although, of course, train expenses may have been or will be in the future reduced more than enough to offset the additional yard expenses.

Although the Union Pacific was at no time in 1917 in as badly congested a state as some of the eastern trunk lines, there were times when it was necessary to make effective rules which amounted to embargoes.

Maintenance of equipment expenses amounted to \$15,813,000, an increase over 1916 of \$2,641,000. The following table shows the average cost of repairs, excluding overhead depreciation and retirements, per unit of equipment:

	1917	1916
Locomotives	\$4,604	\$3,438
Passenger train cars	899	798
Freight train cars	86	74

At the end of 1917 36.35 per cent of the locomotives were in thorough order, 52.08 per cent in good order, 4.42 per cent required repairs, and 7.15 per cent were in shop. At the end of 1916 34.68 per cent were in thorough order, 40.80 per cent in good order, 15.75 per cent required repairs, and 8.77 per cent were in shop. In other words, the Union Pacific began the year 1918 in much better shape in so far as power was concerned than it entered 1917.

The table shows the principal figures for 1917 and 1916.

	1917	1916
Average mileage operated	7,987	7,933
Freight revenue	\$93,347,832	\$84,012,145
Passenger revenue	25,207,229	20,092,807
Total operating revenues	130,101,864	114,412,607
Maintenance of way and structures	12,348,222	14,402,828
Maintenance of equipment	15,812,795	13,171,633
Traffic expenses	26,210,900	21,176,979
Transportation expenses	37,728,000	29,201,148
General expenses	4,035,470	3,225,561
Total operating expenses	106,138,588	95,204,969
Taxes	8,451,691	5,551,544
Operating income	14,355,015	14,056,020
Gross income	53,809,134	57,080,808
Net income	41,536,500	43,183,409
Dividends	26,210,900	21,176,979
Appropriations for additions and betterments	15,313,573	4,367,075
Sinking funds	11,623	11,623
Surplus	17,039,643	

Letters to the Editor

One Phase of Boiler Water Treatment

TO THE EDITOR:

The development of methods for the treatment of boiler water for locomotive use has been from the outside in, and not from the inside out. This, however, is like many other things in the development of present day railroad practices. Whatever may be the reason, it is a fact that some of the fundamental things that make the present operating methods possible have been practically forced upon the railroads from outside pressure. We could not have the heavy freight trains of today without the automatic coupler invented by a farmer, or the air brake, invented by a non-railroad man. So with the treatment of boiler water: not many railroads to day would be treating their water at all, if it were not for the urging of the commercial side of the question. If it were not for the profit to be had by selling some patented or otherwise protected material or device not one gallon of water would be treated for every hundred at present.

Of course it is legitimate and proper that, if a man can save a road money he should share in the profits, but it does not reflect the most credit on the railroad fraternity when we wait until some outside concern forces a good thing on our attention. I do not presume to say that the materials and devices put forward commercially are not worthy, but I intend only to call attention to the fact that while the treatment of boiler water is recognized by railroad officers as being good economy, they seem to be content to allow commercialism to make them believe in it to the extent of doing it. Most, if not all, concerns engaged in selling devices and materials maintain competent, efficient, technical staffs, and render the necessary service to make an installation fit the conditions in each case, but is it good practice to depend on this service alone? Is not the conclusion likely to be somewhat prejudicial?

There are three distinct steps in the development of water treatment on every railroad: design and installation of plant, operation and supervision, and the most important of these is supervision. The need for treatment proves itself by the length of life of flues and fireboxes and by the "leaking" and "foaming" troubles. Whether it will pay to treat the water requires a water survey.

In considering the matter of operation, the whole question can be summed up by saying that almost any kind of a plant will do the work if properly operated, but no plant will do it if not. To get proper operation requires supervision.

The treating plant is the servant of three departments on most roads, the engineering, transportation and mechanical. It doesn't make any difference what the organization may be, or how much harmony may exist between departments, for the fact still remains that these three branches of the service are involved. The individuals in each branch have been trained to think along lines pertaining to their branches. A man may be broad, honest, fair and anxious to co-operate, but still he is an engineering, transportation or mechanical man, and has the kind of thinker that is developed by his particular line of work.

Somewhere in the organization these different interests center, and there should be the supervision. It may be the division superintendent, the general superintendent, the general manager, the operating vice-president, or the president. It is probably better to go a little higher up than the superintendent when fixing the responsibility for the over-

head supervision and checking, so as to get more breadth and uniformity over a large system. This supervision should include checks of the treatment at short intervals by analysis, at some central point, of the treated and untreated water, and a comparison of the amount treated between checking periods with the amount of chemicals used. Engine performance reports should be compared with the analyses, and the condition of the boilers and fireboxes watched in the same connection. There can be no assurance of proper results otherwise. To err is human and to advertise one's own deficiencies is un-human; therefore, do not depend on the operator reporting on his own work.

JOHN R. LEBIGNEY,
Engineering Superintendent of Water, M. & P.

The Virginian Railway Brake Tests

NEW YORK.

TO THE EDITOR:

In his communication in your issue of August 23, criticising the government schedule and your report of the Virginian brake tests, Mr. Humphrey, vice-president of the Westinghouse Air Brake Company, evidently overlooked the opening paragraph of the report in your issue of July 26. It reads as follows:

"This train was run as the last of a long series of tests including both rack and road tests which have been conducted by the Interstate Safety of the Interstate Commerce Commission, to determine the practicability of the Automatic Straight Air brake system."

This statement makes clear that the tests were not "confined to a single trip down a hill"; these government tests actually involved nearly 30,000 car and train tests divided approximately half and half between rack and road, requiring more than three months for completion.

Mr. Humphrey refers to a few of the many inventors who through many years have striven to provide the railroads with a brake having the functions now accomplished by the Automatic Straight Air Brake:

- (1) Rapid serial action in service applications and in quick release.
- (2) The maintenance of uniform and constant brake cylinder pressure, irrespective of piston travel or cylinder leakage. The cylinder is fed from the brake pipe, the pressure in which is maintained by the compensating valve while the brake valve is in lap position.
- (3) Graduated release, permitting a variation of brake cylinder pressure at the will of the engineer.
- (4) Quick release when desired.
- (5) Emergency applications of the brake available at any time during or after any service application, and an automatic emergency application on full depletion of train pipe pressure.

It is true that these features have not heretofore been successfully incorporated in any practical brake. As Mr. Humphrey says, the others who so attempted all fell short, but this was no bar to the Automatic Straight Air Brake, and we are quite satisfied to leave to the government report the decision as to whether or not it satisfactorily performs all of these functions.

Mr. Humphrey raises the question as to why two 8½-in. cross compound compressors were used on the locomotive with which the tests were conducted. The tonnage locomotives of the Virginian Railway are all regularly equipped with two 8½-in. cross compound compressors for handling trains of 60 to 85 cars. The fact that a 100-car test was to be conducted over a section of road normally limited, as we were officially told, by the demands of the brakes and the air supply to a maximum of 85 cars was ample justification for replacing the compressors, which were badly in need of repair, with others which were in good condition, merely as a matter of common prudence.

There is one other thing concerning the two 8½-in. cross compound compressors which might well be mentioned. Having initially equipped the 100 test cars with trainographs it was thought desirable to take them as a 100-car train, down Kellysville Hill, so as to obtain a record of the conditions before removing the Westinghouse K-2 triples. Not

withstanding that all of the Virginian tonnage locomotives were equipped with two 8½-in. cross compound compressors, the railroad management stated that it had been officially notified by the Westinghouse Air Brake Company that it would not be responsible for trains of K-2 triples of more than 85 cars. We were advised that if we desired to take 100 cars down the hill it would be necessary to use two locomotives with four cross compound compressors.

We experienced no difficulty whatever in supplying the 100 A. S. A. cars with air with the single locomotive and can see no reason why 125 to 150 A. S. A. cars would not be safe on this grade with one locomotive, since the A. S. A. triple uses only 50 per cent of the air required for the K-2 triple.

Mr. Humphrey raises a question as to the events of the 100-car tests, which may be misleading and should be made clear. I quote the following from his communication:

"The tests were conducted under conditions that the element which is governed by the laws of nature, and the mechanical limitations of the brake, were not to be considered in applying the development of these features in long train service without the necessarily unavoidable break-in-two and stalling of trains such as occurred. . . . If my understanding of the report is correct, there were three break-in-two's going down the grade between Princeton and Rich Creek and two stalls, over a distance of 15 miles, and another break-in-two between Roanoke and Victoria, to say nothing of the additional break-in-two's that occurred east of Victoria. . . . And while many of the aforesaid features were attractive and spectacular in test rack demonstrations, they developed the same lack of flexibility and successful performance when placed in service as were demonstrated by the number of break-in-two's and stalls that took place in the tests mentioned."

This all refers to the graduated release function of the A. S. A. brake and is beside the facts, as shown by the government records of what actually happened, and the effective manner in which this function of the brake performed throughout the tests. There was only one break-in-two whilst the train was being operated in graduated release, and this was at eight miles per hour, due to knuckles slipping past, because of a drawbar carrier iron having come down.

The Virginian Railway freight train delay reports plainly show that the physical factors to which Mr. Humphrey makes reference do, as he states, impose a practical limitation on results in trains of 65 cars and upwards equipped with the other types of brake. No progress in air brake development could be expected so long as old principles of brake operation were adhered to. It required a departure from them in order to bring about the improvement for which every railroad man having regard for the safety of passengers, employees and equipment was looking.

The other break-in-two took place in portions of the train being operated in quick release and were the ordinary every day break-in-two's, except that there was no resulting damage, which was remarkable.

The one break-in-two east of Victoria (instead of additional break-in-two's to which Mr. Humphrey refers) while fully explained in your article deserves further attention. The head end of the train had dropped over a summit, and the engineman made a small brake pipe reduction; in releasing, through an error in judgment, the brake valve was held in release only nine seconds, the time being accurately recorded on the chronograph record. We cannot believe that any practical air brake man would charge this break-in-two, whilst the train was in quick release, to any special system of brakes.

The break-in-two near New River bridge whilst the train was in quick release was the result of a knuckle pin with an old break. The brakes were not applied. The break-in-two near Rich Creek was with all brakes in quick release. The break-in-two near mile post 129, was while the train was in quick release. No brakes were applied.

This covers all of the break-in-two's in a 340-mile run with a train of 103 cars. These statements are from the actual records. Inasmuch as the 103 cars were started from Ingleside without a pusher engine, contrary to Virginian

practice with smaller trains, it is surprising that more damage was not done to knuckles and pins, and that there were not more partings.

It is well known that break-in-tuos at the same slow speeds with a 100-car Westinghouse train (an ever-present terror for trainmen and operating officers) frequently tear the train in several pieces, even if they do not buckle the train, and throw part of it over on the adjacent tracks in the face of approaching trains.

The tests would hardly have been complete without these break-in-tuos. Although they were not planned in the program, the results were welcomed. They fully demonstrated that the A. S. A. brake will save many millions of dollars annually to the railroads and eventually to the taxpayers through break-in-tuos alone. We are glad to have this important feature of the brake brought fully before your readers. The break-in-tuos occurred at various speeds, and under varying braking conditions,—graduated release, quick release, brakes applied and no brakes applied,—without a perceptible shock, and demonstrated to the satisfaction of all those present that the horror of accidents resulting from emergency applications of the present-day brakes on long trains from burst hose or from any other cause, disappears, with the introduction of the A. S. A. brake. The train in every case acted as a unit instead of the single cars as separate units. The A. S. A. brake did away with the internal collisions which are today so disastrous.

As to the three "stalls" referred to by Mr. Humphrey, the engineman, who had no training with the brake, and who had never handled a train of 100 cars down the mountain, was simply over-cautious. His previous experience with shorter trains had been such that he could not at first understand how, in graduated release, with a slight brake pipe reduction he could hold 7,500 tons down Kellysville Hill. After he had made a few brake pipe reductions he "saw light," and from that time on he handled the 103 cars of 7,500 tons in graduated release with the same ease as though it had been a five-car passenger train.

It is of interest that on Kellysville Hill, with two 8½-in. cross compound compressors, 60 to 85 cars, and Westinghouse brakes, "stalls" or inability to release the rear end, resulting in the breaking of the train into two and three pieces, are of almost daily occurrence and are a matter of record. For instance, during the month of April, 1918, 65 cars was the length of the average train down Kellysville Hill and even with these short trains eight per cent broke into two or three pieces.

I trust your readers will understand that there had been no private road tests in advance of the government tests. The first time the 100 A. S. A. cars were coupled together they were started down the 12-mile grade with the full confidence of every one present. We all knew that the worst that could happen was that during the first few brake pipe reductions the engineer might use too much air and stall the train. It could not run away; the A. S. A. brake is "safety first."

It will, perhaps, be of interest to your readers to know that these government A. S. A. brake tests furnished the first opportunity in air brake history to obtain automatically such records from every car in every train of the rack and road tests, standing and running, as to permit of establishing the variables between the different series of tests, rack and road, standing and running. From these records it was found that the differences in results were negligible.

We understand that two of the main purposes of the government report will be to dispose of the questions as to whether, in the first place, the A. S. A. brakes of themselves furnish a safe train control, and, in the second place, whether they interchange with present-day equipment.

H. I. MILLER,
President Automatic Straight Air Brake Co.

Enforcing the Caution

Signal for Automobiles

JACKSONVILLE, Fla.

TO THE EDITOR:

I would like to offer a remedy for a great and increasing evil, the danger to passengers in railroad trains, and to people on the highways, from the reckless behavior of drivers of automobiles. I am an engineer on the Seaboard Air line, and on two occasions recently we have had smash-ups caused by the racing of automobiles with trains at high speed on parallel highways, the driver finding out too late that the road turned and crossed the railroad. In both cases the driver of the automobile ran into the side of the train, resulting fatally to persons in his car.

In another case recently I saw a car approaching a crossing at high speed, and I sounded the whistle long and loud; but the motorist became confused and stopped his car on the track; our speed, however, had been checked, so that he escaped. Men in automobiles foolishly assume that they can estimate the speed of a train from a point in front of it, which is out of the question.

I propose to make it impossible for people to approach a railroad track at high speed. Put up a cautionary sign about 80 rods back from the track, and then make three humps in the road. I would make each of the three ridges of such height as to enforce a predetermined rate of speed. Make experiments, if necessary, and have the first hump such that a car can pass over it at 20 miles an hour, without damage; the next one at such height as to impose a limit of 10 miles an hour, and the third, or last one, about 50 ft. from the crossing, to compel a speed of not over 6 miles an hour. Make sure that the reckless driver cannot get over it, at a speed higher than that, without loosening his teeth.

Gates are of very little value. They are run through frequently. Something must be done. Numerous motorists take chances at crossings just for the excitement there is in it; then they stop and look at the train as it goes by. Excitement is caused in the engine cab also; for I do not wish to hurt any one, nor do I want to tear up the brakes by making emergency applications. People on highways should be made to understand that they cannot safely estimate the speed of a train from a distance; especially in the night. An electric headlight is very deceptive in the matter of distance. A dim headlight is always liable to seem farther away than it is.

WM. BAILEY THOMAS.

INTENSIVE PASSENGER TRAFFIC IN ENGLAND.—During the recent bank holiday week-end, the British railways probably handled a more intensive passenger traffic than they have ever carried at any previous period of their history. In the absence of detailed figures it is impossible to state whether a larger number of passengers may not have been carried at some other holiday season, but on no previous occasion have so many persons been conveyed in so few trains, with the result that the average train and car loading to and from the principal resorts was most unusually high. On the Saturday before bank holiday, to give only two instances, there were passengers for the 5:30 a. m. from Waterloo to the coast who had been waiting at the station since the previous night, while outside the London Bridge terminus of the Brighton Railway there were at 7 a. m. already a queue of would-be passengers four or five deep, whose length was estimated at half a mile. These conditions are, of course, abnormal, but the combined effects of reduced train service and tendency of the general public to travel in spite of restrictions, plus the large number of naval and military passengers, has been to bring average train-loading up to considerably more than the pre-war standard. — *Railway Gazette, London.*

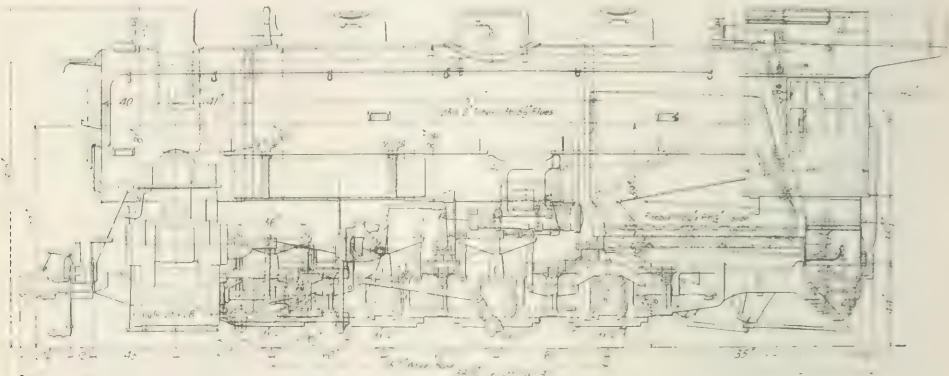
The First Standard 0-8-0 Type Switching Locomotive

Built by the American Locomotive Company; Total Weight
214,000 lb., Tractive Effort 55,000 lb.

THE FIRST OF THE STANDARD switching locomotives designed by the United States Railroad Administration has been recently completed at the Pittsburgh works of the American Locomotive Company. The locomotive is of the 0-8-0 type, of which 150 have been ordered for this year's production, to be distributed among 17 different rail-

roads with a horizontal mudring and does not include a combustion chamber.

The dome is located on the second barrel course. It is 32 in. in diameter and the throttle valve is placed well forward to permit the boiler to be entered without the necessity for removing the throttle. The throttle rigging is of

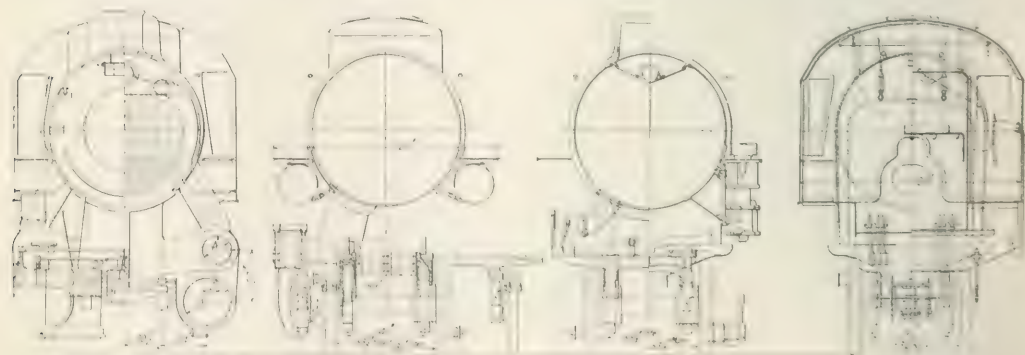


The United States Railroad Administration Standard 0-8-0 Type Locomotive

roads. These engines are designed on the basis of 55,000 lb. axle load and have a total weight of 214,000 lb. The driving wheels are 51 in. in diameter and the cylinders 25 in. in diameter by 28 in. stroke. With 175 lb. boiler pressure, the tractive effort is 55,000 lb.

The ratios indicate that for the service intended, the loco-

motives have ample boiler capacity. The boiler is of the straight top type with a telescopic barrel, the outside diameter of the first ring being 80 in. There are 230 two-inch tubes, laid out with 34-in. tube sheet spacing and 36 5½-in. flues with 7/8-in. tube sheet bridges. The tubes and flues are 15 ft. long over the sheets. The firebox is designed



Cross Sections of the Standard Eight-Wheel Switcher

with the chambers inside connected type, the stem extending through a gland on the back head, located 8¾ in. to the right of the vertical center line. The boiler is fitted with a Security brick arch, Type A superheater and Franklin fire-door. The main frames are each cast in one piece and are 5 in. wide throughout, except for the slab section at the rear end.

Here the width is reduced to 2½ in., with a depth of 13½ in., this section being increased for 30 in. at the extreme rear end where the deck plate is bolted to the frame, to 5 in. in width by 18 in. in depth. The upper rail is 6¾ in. deep over the pedestals and 5¾ in. deep at the smallest section between the pedestals. The lower rail is 4¾ in. in depth

over the binders and $3\frac{7}{8}$ in. at the minimum section. Under the cylinders the section is increased to $9\frac{5}{8}$ in. deep. There is no front deck casting; the bumper casting is attached

able in detail with that used on the light Mikado type locomotive. Paxton-Mitchell metallic packing is used for both valve stems and piston rods.

Steam is distributed by a 14-in. piston valve, which is interchangeable with that used on both the light and heavy Mikado type locomotives, as are also the valve chamber heads. The engines are fitted with the Baker valve motion and the Raggonnet power reverse gear.

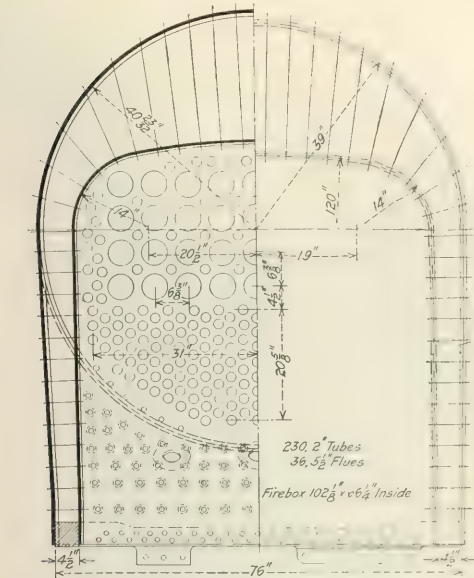
Three standard tenders have been designed to meet the requirements of all the standard types of locomotives. These have 8,000 gal. 10,000 gal. and 12,000 gal. capacity respectively. The 8,000-gal. tender will be used with both the six and eight-wheel switching type locomotives. The tank is of the rectangular type ordinarily used with road engines and is carried on a Commonwealth cast steel frame. It is 27 ft. long by 10 ft. wide by 5 ft. 1 in. high and has a coal capacity of 16 tons. The tank is fitted with the Locomotive Stoker Company's coal pusher. The four-wheel trucks are built up with cast steel side frames and bolsters, and are fitted with 33-in. cast steel wheels mounted on axles having 6-in. by 11-in. journals. The trucks have a wheel base of 5 ft. 10 in. and are spaced 15 ft. 10 in. between centers.

Among the more important specialties are three 3-in. Consolidated safety valves, Ashton steam gages, Murden 2-in. flanged blow-off cocks, Sargent quick acting blower valve with Barco smoke box fitting, Hancock No. 11 nonlifting injectors, Nathan five-feed lubricators, Franklin flexible pipe couplings and the Radial buffer and Unit Safety draw-bar between the engine and tender.

The principle data and dimensions are as follows:

Gage	.....
Service	.....
Fuel	.....
Tractive effort	.....55,000 lb.
Weight in working order	.....
Weight on drivers	.....214,000 lb.
Weight of engine and tender in working order	.....381,900 lb.
Wheel base, engine	.....15 ft.
Wheel base, total	.....52 ft. 10½ in.

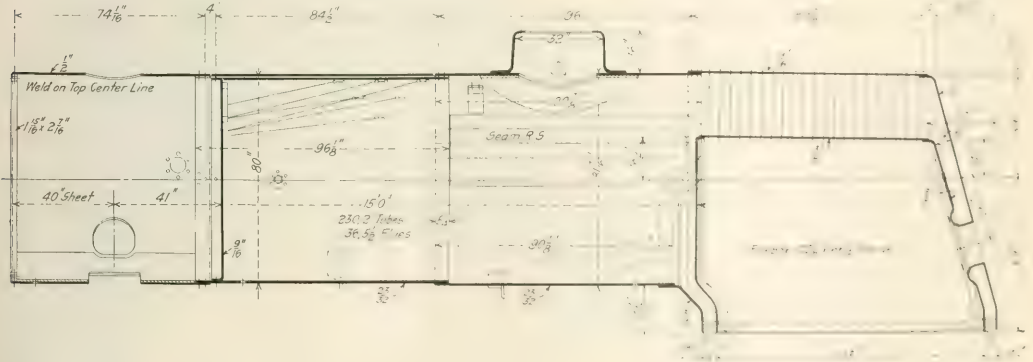
Weight on drivers ÷ tractive effort	.....3.9
Total weight ÷ tractive effort	.....
Tractive effort × diam. drivers ÷ equivalent heating surface*	.....700.0
Equivalent heating surface* ÷ grate area	.....80.5
Firebox heating surface ÷ equivalent heating surface,* per cent.	.....5.7
Weight on drivers ÷ equivalent heating surface,* per cent.	.....



Half Sections Through the Firebox Showing the Tube Sheet Layout

directly to the front end of the frame rails by means of 1-in. flanged angle plates.

The details of the running gear follow very closely in design those of the standard Mikado type locomotives, descriptions of which have already been published.* The piston is of the single plate, dished section type, the specifications calling for either cast or rolled steel. The bull ring is of gun iron, riveted in place on the steel piston and fitted with



Boiler for Standard Eight-Wheel Switching Locomotive

two $\frac{3}{4}$ -in. by $\frac{7}{8}$ -in. gun iron packing rings. The face of the bull-ring is $4\frac{3}{4}$ in. wide, increased to a width of 7-in. at the bottom for 45 deg. on either side of the vertical center line. The crosshead is of the same design and interchangeable

Total weight ÷ equivalent heating surface*	.....
Volume both cylinders	.....
Equivalent heating surface* ÷ vol. cylinders	.....244.5
Grate area ÷ vol. cylinders	.....2.9

Cylinders

Kind
Diameter and stroke

*See the *Railway Age* for July 19, page 134, and August 30, page 373.

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Tubes, number and outside diameter.....	230-2 in.
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Tubes and flues, length.....	15 ft.
Heating surface, tubes and flues.....	2569 sq. ft.
Heating surface, firebox including arch tubes.....	212 sq. ft.
Heating surface, total.....	2781 sq. ft.
Superheater, heating surface.....	673 sq. ft.
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*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

Doings of the United States Railroad Administration

Instructions to Be Followed In Asking for Deferred Classification of Railroad Employees

WASHINGTON, D. C.

DIRECTOR GENERAL MCADOO returned to Washington on Monday, after having spent nearly two weeks on an inspection trip over lines in the Eastern, Allegheny and Pocahontas regions, on which he was accompanied by several of his divisional directors and conferred with regional directors and federal managers. The trip included the New Haven, the Boston & Maine, the Boston terminals, the Cape Cod Canal, the terminals at Cleveland and Ashtabula, Pittsburgh, Altoona, Harrisburg, the Virginian and Coal & Coke railways and the terminals at Norfolk.

Deferred Classification to Be Asked for Necessary Railroad Employees

Instructions that the federal managers give their active personal attention to make sure that deferred classification in the new selective service draft is properly claimed for railroad employees that are necessary and also that no such claim is made where it can reasonably be avoided were telegraphed to the regional directors on September 10 by Walker D. Hines, assistant director general, with directions that they be given to the federal managers by telegram. The instructions state that, generally speaking, all skilled employees engaged directly or indirectly in the movement of trains should be regarded as necessary. A list of the kinds of employees regarded as being in this class is furnished and instructions are also given as to employees clearly necessary but not included in the list. Mr. Hines had preceded these instructions with a telegram directing that steps be taken to ascertain what employees were to be required to register on September 12 and to form local organizations to give assistance in the filling out of the questionnaires.

"The railroad under government control is an essential industrial agency," Mr. Hines said in his telegram, and "its necessary employees should be given deferred classification," but he pointed out that the making of unnecessary claims is both unfair to the government in its work of creating the necessary military and naval forces and injurious to the Railroad Administration in its effort to secure deferred classification for employees who are really necessary. The list referred to is as follows:

General officers, master mechanics, roundhouse and shop foremen, machinists, blacksmiths, boilermakers, tin and coppersmiths, pipefitters, electricians, freight car and passenger car repairmen and inspectors, respective helpers and apprentices of all the foregoing, chemists, locomotive inspectors, gang leaders, superintendents and assistant superintendents, trainmasters and assistant trainmasters, train dispatchers and directors, yardmasters and assistants, road

foremen of engines and assistants, travelling engineers, firemen instructors, locomotive engineers and motormen, locomotive firemen and helpers, conductors, brakemen and flagmen, train baggagemen and express messengers, yard foremen and helpers, hostlers, enginehousemen, telegraphers and telephoners, block operators, telegraph clerks, engineers of maintenance of way, division engineers, roadmasters, field engineers, supervisors, construction foremen, foremen on track work (generally known as section foremen), bridge, building and water service foremen, bridge building, ship and wharf carpenters, signal maintainers, and telegraph and telephone maintainers.

As to the employees not in the foregoing list, Mr. Hines said, the federal managers should exercise the greatest care and discretion to aid in obtaining deferred classification for those clearly necessary, while refraining from taking this step in other cases. Where a given position can be reasonably filled by promotion or by the employment of an outsider, male or female, no effort to secure deferred classification should be made. The mere question of inconvenience or increased expense is not sufficient for regarding an employee as necessary. But where, on account of the character of the work or the complete lack of availability of another to do the work, the existing incumbent is really necessary, the federal manager should take all practicable steps to secure deferred classification. In every case where deferred classification is sought the federal manager should make it clear to the incumbent that it is his duty to the Railroad Administration to claim deferred classification, so that the incumbent will feel no hesitancy about making this claim. If the incumbent does not make the claim, the federal manager or the appropriate superior of the incumbent in question should himself make the claim on behalf of the United States Railroad Administration. Steps should be taken to secure the most effective presentation of the matter to the local board and then to the district board, and the law department of the particular railroad should be called on to assist where such assistance appears to promise good results.

Director General McAdoo also gave instructions to the regional directors, in Circular No. 57 issued on September 18, giving a statement of the policy of the Railroad Administration in support of claims for deferred classification:

"I attach statement issued by the provost marshal general on September 9 to employers and other representatives of industry urging their co-operation in the classification of the new registrants under the selective-service act. In addition to the instructions already issued, on and after September 9, with a view to such co-operation, you are hereby instructed

to see that the railroad officers shall, in presenting or supporting claims for deferred classification before district boards, present the following to such boards as a statement of the policy of the United States Railroad Administration and of the general reasons in support of the claims made for deferred classification:

"All applications made by officers of railroads under federal control for deferred classification for railroad officers and employees and all affidavits made by railroad officers in support of claims for such deferred classification are made by them as officers of the United States Railroad Administration and by my authority and in pursuance of a general policy which in my judgment must be adopted in order to meet the war responsibilities which rest upon the railroads under federal control.

"The government of the United States has taken possession and control of the railroads as a war measure, and their efficient and unhampered operation is indispensable to the successful conduct of the war.

"The essential character of the railroad industry as a war enterprise is not open to dispute. Indeed, in contrast with nearly all war industries, the railroad industry is one of the very few which has actually become a government enterprise because of its essential character for war purposes.

"In such circumstances the men who are necessarily employed in rail transportation in this country are as truly employed in an indispensable war service as are our soldiers and sailors.

"Since the railroads are indispensable and the branches of the service to which the employees belong are indispensable, I understand the remaining questions for consideration by the district board are whether a particular employee can be dispensed with (1) on the ground that the railroad has more of such employees than it needs, or (2) upon the ground that it can readily replace such employees with others.

"Please state to the district board, with my full authority, that after eight and a half months of a thorough and continuing study of this subject, being constantly in touch with employers of railroad labor, the representatives of the railroad employees, and the representatives of the labor situation generally for the whole country, there is no surplus whatever of employees for running the railroads, and there is no surplus supply of labor from which new employees can be drawn to replace those who may be taken for military service. Any competent railroad employee taken from an indispensable branch of the railroad service will be subtracted from a force which is already too small and which can not be adequately replenished. The taking of any such employee by any district board would be a step tending to injure the war operations of some railroads. The taking of such steps by numerous district boards would in the aggregate constitute a cumulative and far-reaching injury to the United States Railroad Administration and would destroy the purpose for which the government took possession of such control of the railroads.

"The scarcity of skilled railroad employees is in part due to the fact that up to the present time the railroads of the country, in addition to meeting their full share of the demands of men for general military service, have been subjected to the peculiar disability that they alone, out of all the industries of the country, have had to furnish large numbers of men for special military service. Hundreds of miles of military railroads in France are being operated for the military forces of the United States who have been drawn from the ranks of the skilled officers and employees of railroads in this country. In this way the drain upon skilled railroad labor has already been proportionately greater than the drain upon skilled labor of other industries, and this in part accounts for the exceptional shortage of skilled railroad labor which confronts the United States Railroad Administration.

"It must also be clear that employees in these classes can not be supplied by the employment and training of new em-

ployees. Practically without exception these employments are not suited to women, but able-bodied and vigorous men are needed for the discharge of the duties. These men are not available in adequate numbers and will become less and less available as the war progresses. Besides, untrained men cannot perform the functions, and if skilled railroad employees are taken for military service the substitution of untrained employees, even if available, would prove destructive to efficient railroad operation.

"It is desired that the understanding and sympathetic co-operation of the district boards shall be sought in all instances. We are all striving for the same end, and that is to win the war. To the extent that railroad men can be spared from railroad service for military service we ought to spare them. But to the extent that they are needed for railroad service the district boards should not attempt to take them for military service.

"The United States Railroad Administration intends to ask for deferred classification only when the men on whose behalf the request is made are needed in the public interest for the continued performance of their duties and when experienced substitutes can not be found. And the district boards, upon whom rests the responsibility for preserving the necessary labor supply for essential occupations, should be urged to grant, in the interest of the national needs and with a nation-wide view of the controlling factors, the applications for deferred classification which are supported by the United States Railroad Administration.

"Instructions have been issued through the regional directors to all officials of railroads under federal control to see that proper applications are made for deferred classification for all necessary railroad employees and to support such applications vigorously, and at the same time to avoid making applications wherever reasonably practicable.

"It is the patriotic duty of the men who are considered necessary for the operation of the railroads to claim deferred classification and to furnish the district boards with the necessary information in their answers to questionnaires to show the basis for such classification. Every man who is helping in these necessary occupations to operate the railroads in this country is rendering not only a service indispensable to the war, but a service that is as praiseworthy and creditable as any war service could be."

Rules for the Issuance of Passes

The following rules governing the issuance of free transportation have been issued by the Division of Operation in Circular No. 19, effective January 1, 1919:

Annual and Time Passes.—1. The issuance of annual and time passes will be confined to the offices of the director general, director of operation, the several federal managers, the general manager on lines where there is no federal manager and the federal manager Pullman Car Lines.

2. Annual and time passes issued over the fac-simile signature of the federal managers (or general managers on lines where there is no federal manager) and countersigned by the person indicated thereon will be limited to—

- (a) For, on account of, the several officers and employees who do not require annual or time transportation on lines beyond their jurisdiction.
- (b) For, on account of, such officers and employees of the corporation as may be specifically authorized by the director general.
- (c) To officers and employees of the American Railway Express Company whose duties are confined solely to lines under their jurisdiction.

3. Annual and time sleeping or parlor car passes will be issued by the federal manager Pullman Car Lines to officers and employees under his jurisdiction.

4. All annual and time passes not included in paragraphs 2 and 3 will be issued only by the director general or director of operation.

5. Annual passes bearing the personal signature of the director general will be good on all lines under federal con-

trol, on all trains, and for seats in railroad operated parlor or chair cars.

6. Annual and time passes bearing the fac-simile signature of the director general will be issued by the director of operation, and will be good on all lines under federal control or within the territory or over the lines specified thereon, and will bear express limitation as to certain trains upon which the pass will not be honored. Such passes will bear the countersignature of C. R. Gray, director; W. T. Tyler, senior assistant director, or J. H. Keefe, assistant director.

7. Annual and time sleeping or parlor car passes, other than for officers and employees of the Pullman Car Lines, and annual and time steamship passes, bearing the fac-simile signature of the director general, will be issued by the director of operation with the same countersignature as provided in preceding paragraph.

8. Federal managers and general managers on lines where there is no federal manager, will forward to the director of operation, on or before November 1, a list of annual or time passes (including sleeping car or steamship passes), required for officers or employees over lines other than those under their control, indicating the lines or territory over which the passes are desired.

Trip Passes.—9. Trip passes will be issued over the fac-simile signature of the director general or of the federal managers (or of general managers on lines where there is no federal manager) and the federal manager of Pullman Car Lines, and will be countersigned by the person indicated thereon. Trip passes issued by the federal and general managers and federal manager Pullman Car Lines will be limited to the lines under their respective jurisdiction.

10. Trip passes bearing the fac-simile signature of the director general, with countersignature of person indicated thereon, will be issued by the director of operation, regional and district directors. Such trip passes will be honored for transportation over the lines indicated thereon.

11. Federal managers and general managers on lines where there is no federal manager, and the federal manager of Pullman Car Lines desiring trip passes for, or on account of, their officers or employees over other lines under federal control, will make request for same to the federal or general manager of such railroad in the same manner that exchange trip passes have heretofore been handled.

General.—12. Passes will not be issued which include the privilege of free meals in dining cars, at restaurants, or on steamships.

13. The current regulations of the Interstate Commerce Commission covering the issuance and record of passes must be observed.

Restrictions on Lumber Shipments

The Car Service Section has ordered an embargo, except as shipments may be made under the permit system, on lumber and other forest products to points north of the Ohio and Potomac rivers, effective on September 16. It does not apply to shipments on account of the government nor for railroad car building.

In connection with the restrictions Director General McAdoo issued a statement in part as follows:

This order was not issued on account of any particular congestion or accumulation, but in order to bring the movement of lumber into the industrial territory under such control as will prevent undue accumulation or overshipments, also delay to cars and other elements of transportation waste.

The experience of the freight traffic committees which have been operating in New York, Philadelphia and Baltimore for some months past, demonstrates not only the desirability, but the practicability of regulating the flow of

traffic by the permit system, based on conditions at destination with particular reference to the need of the consignee and his ability to handle the freight promptly on arrival.

It is not the intent to stop the movement of lumber or other forest products, but merely to control it. It is provided that permits will be issued by authorized bodies upon presentation by the consignee of evidence which justifies transportation service. This evidence will necessarily differ in different cases, the test being, in each instance, whether the need at destination and conditions there and en route are such as to warrant the particular movement at the particular time in its relation to other demands for transportation service.

Requests for permits covering shipments destined to points within the jurisdiction of the freight traffic committees at New York, Philadelphia, Baltimore and Washington should be addressed accordingly. Permits for all other shipments should be requested from the Car Service Section direct.

On account of short notice which was given it has been necessary to consider as in transit such cars as were in process of loading at the time the order was received by railroad officers at various points. It has also been held that shipments of fuel wood, logs, pulp wood or similar products which originate and terminate on the line of a single railroad may be authorized by the transportation officer of such railroad.

Grain Movement

Nearly 100,000 more cars of grain have been handled by the railroads this year than in the corresponding period of 1917, according to a statement issued by Director General McAdoo:

"The conditions existing in the grain trade this season have brought about an unusual situation, due principally to two factors, namely an abundant wheat crop, and a stabilized price which removes any incentive to hold wheat back on the farms for price fluctuations," he said.

"As a result of this situation, the grain has been shipped as fast as harvested and, as a matter of fact, nearly 100,000 more cars of grain have been handled by the railroads to date this season than in the same period last year. Naturally this tremendous flow of grain has overtaxed the storage facilities; at the present time not only are the seaboard elevators filled to capacity awaiting export, but the elevators at the primary markets are practically unable to furnish any more storage, and should the grain be allowed to continue to flow without control, the only possible result would be the use of cars for storage, resulting not only in congestion of tracks and terminals, but in putting the cars out of business for the other transportation needs of the country.

"To meet this situation, the Railroad Administration in conjunction with the Food Administration, has arranged to control grain movements throughout the country and to transport all grain under what is known as the "permit" system in charge of committees in the different grain zones which means that shippers will be furnished with cars, and permitted to ship, to the capacity of all the markets to take care of and promptly unload the grain. This not only will prevent congestion of the tracks and tying up of equipment, but will result in a regular movement of the grain traffic and the best distribution of equipment, with the effect of the greatest efficiency which, of course, results directly to the greatest benefit to the grain producers and the least disturbance of his business arrangements.

"It is interesting to know that already 75 per cent of the winter wheat has moved from the farms, while the spring wheat and oats are just beginning to move, and of the total wheat crop it is estimated that about 45 per cent has already reached the markets, which is far in excess of the usual amount at this time of the year."

particulars. The proposed form provides that the short lines shall be allowed to solicit traffic, shall be guaranteed a car supply proportionate to that of the government lines in the same territory, shall receive rate divisions not less than they formerly received, and that they may have their locomotives repaired at the government railroad shops for a reasonable percentage over the cost of the work. It does not, however, offer any compensation for losses caused by diversion of traffic.

Conditions in Southern Region

Director General McAdoo has received the following report from B. L. Winchell, Southern regional director:

"Conditions in the Southern region are somewhat more satisfactory.

"Final figures as to the earnings for July are not in for all lines, but those received show the following increases:

In gross revenue	\$12,442,161
In expenses	7,557,748
In net revenue from railroad operation.....	\$4,884,413

"The largest actual increase in net so far reported is by the Southern Railroad, \$2,588,042. The Nashville, Chattanooga & St. Louis road reports more than 200 per cent increase in net (\$549,463).

"We still have a heavy lumber traffic in sight and can turn it into earnings as car supply permits. One hundred thirty-five southern mills report as balance of orders on their books more than 24,000 carloads unshipped.

"In order to reduce pressure on our consolidated city ticket offices, and to better accommodate the traveling public, we have established inexpensive ticket agencies at the following military camps: Wadsworth, near Spartanburg; Greene, near Charlotte; Jackson, near Columbia; Gordon, near Atlanta; Johnston, near Jacksonville, and at the marine camp at Paris Island, South Carolina.

"In a general way, we have no congestion down here; most of our lines can handle more business, although some are close on power, but I am insisting upon better engine-miles per day.

"Our principal roads are loading more coal than ever before; they can load still more with better return of coal cars from connections (which matter is in hand); with some enlargement of facilities at a few points of restriction (which work is in hand, or is being planned), and with better car-miles per day, which essential is being followed insistently.

"We must soon have more coaches for our regular trains, or less travel. The coach demand for military service is overtaxing our southern lines' possibilities, and the demands for extra equipment for regular trains, necessary to meet the public convenience, cannot always be met.

"The crop prospects generally are excellent; we will surely have more cotton east of the Mississippi than a year ago."

Railroad Men May Complete Terms of Political Offices

Director General McAdoo has issued Supplement No. 1 to General Order No. 42 making the following modification of the order requiring railroad officers and employees to keep out of politics:

(1) It appears that prior to the issuance of General Order No. 42, various railroad officers, attorneys and employees were elected to political offices and are now holding such offices. In such cases, no objection will be raised to the completion of such terms of office. In all other respects, however, General Order No. 42 will apply to such officers, attorneys and employees.

(2) In cases where prior to the issuance of General Order No. 42 railroad officers, attorneys and employees had been nominated for political offices or had become candidates locally for such offices, they may continue in railroad employment until the election.

(3) The position of notaries public, members of draft boards, officers of public libraries and of religious and eleemosynary institutions are not construed as political offices.

Speed Up Locomotive Repairs

Director General McAdoo has instructed the regional directors to get the following message to every machine shop and roundhouse in their territories:

"General Pershing needs more locomotives in France to keep the big American smash going until the kaiser is pushed across the Rhine. The only way we can give General Pershing the locomotives he needs is for the railroads of the United States to take as few new locomotives as possible and thus permit the locomotive builders to send their product to France.

"We can not do without new locomotives unless we keep our locomotives in repair and moving all the time. I make a special appeal to every railroad mechanic and workman to do his level best to turn the locomotives out of the shops quickly and to keep their wheels turning on every railroad of the United States. Here is a direct way in which every man of you can help Pershing and his heroic soldiers and make certain the early defeat of the kaiser."

Fuel Conservation Circular No. 13

Eugene McAuliffe, manager, fuel conservation section, has issued a circular addressed to superintendents motive power and car department officials, men in charge of car maintenance, yardmasters and switchmen, conductors and trainmen, containing the list of recommendations submitted by a special committee of the Air Brake Association for the prevention of such fuel losses as may be avoided by proper air brake maintenance and operation. The recommendations were published in the *Railway Age* of August 9, page 252. The chief operating officer of each railroad is asked to direct the attention of every employee who is concerned with the maintenance and operation of brake equipment to the observance of these recommendations and to have copies of the circular posted on bulletin boards and furnished to employees for posting in train cabooses.

C. & O. Canal Taken Over

The Chesapeake & Ohio canal, connecting Washington with the coal fields at Cumberland, Md., has been taken over by the Railroad Administration and will be operated under the direction of the new Division of Inland Waterways. There has been considerable agitation for the taking over of this waterway but it was at first decided not to operate it but to render it assistance. Five barges are to be towed to Washington this week to be put in service on the canal and five more will be delivered later in the month. Eighty-four boats are now operated on the canal.

Marine Section Discontinued

Circular No. 55 announces that effective September 1, the marine section of the Division of Transportation, the creation of which was announced in Circular No. 5, has been discontinued. Coastwise steamship lines under federal control will be under the jurisdiction of the federal manager as announced in Circular No. 52. Shipping on the Great Lakes under federal control will be under the jurisdiction of the regional director, Eastern Region.

* * *

The Car Service Section has asked all federal controlled roads to furnish it with definite detailed information relative to the number of cars under lease, or leased by federal controlled roads, either from or to other railroads, private car lines, firms or corporations.

* * *

G. C. Woodruff has been appointed chairman of the committee on l. c. l. freight, Eastern Region, vice C. H. Ketcham.

Operation of the U. S. Military Railways in France

How Americans Adapted Themselves to New Transportation Conditions Encountered Overseas

By J. G. Porter

Private, Co. E, 13th Engineers (Railway), American Expeditionary Forces

AT A CERTAIN PERIOD in the early part of the present war the French High Command suddenly realized that a new military railroad was a vital necessity to its success on this front. Up to that time, this sector, one of the most important and strongly fortified on the western front, had to depend for supplies and ammunition on one incorporated single track narrow gage line and on an old highway known as the "Sacred Way." The "Sacred Way" accommodated four camions running abreast; it was utilized to the fullest possible extent and was equipped with telephones, despatchers, and meeting places for west bound traffic; it with the narrow gage road proved insufficient for the enormous amount of material urgently needed at the front for successful operations. Consequently, one of the large French construction regiments was moved up and at once started on the task of constructing 60 kilometers (37.28 mi.) of single track line from the front to a junction

tached to his French predecessor on the job in order to become familiar with the methods of operators, supplies, French forms for reports, and other details of the work. The regiment was quickly whipped into shape as the organization was copied minutely after the French methods which had proved their efficiency during three years of war. Our officers were made division superintendents, superintendents of motive power or similar positions, and were given charge of the larger detachments at important towns. The enlisted men were made non-commissioned officers and their rating depended on the positions they were qualified to hold from their former railroad experience in the States; thus the master engineers were made traveling road foremen or given charge of coal chutes and shops. The sergeants were appointed station agents (or Chef de Gare), yardmasters, or placed in charge of the water supply. The corporals were made conductors or Chef de Train, and section foremen. First class privates were made operators, and privates are brakemen, clerks, firemen, switchmen, enginemen, callers, machinists, and section men. This latter classification may not appear to be quite just, and yet to conform with military regulations, it is necessary. There are not enough non-commissioned officers' places for all, and as it is necessary for conductors, agents, and section foremen to have men in their charge, they are of higher rank. As a consequence enginemen, machinists and some of the higher paid men on American railways, receive the least in a railway regiment, although the difference in salary is slight. There are always a few in each outfit who are disappointed by not getting the position or rank they expected, but this feeling soon passes, and everyone settles down to his work.



Type of Car Couplings in Use

Train on a Military Railroad

with a main line on one of the largest French railroads. Because of the vital need of this road, the work was pushed as fast as possible and at the end of 31 days, the first 23 kilometers (14.29 mi.) were completed and in operation. This relieved congestion at the loading points and by means of a circuitous route the trains were turned over to the French railway via a branch line. To the engineers in the United States this may not seem a record-breaker in speed of construction, but it must be remembered that absolutely all cuts and fills had to be done by hand as there were no steam shovels, air dump cars, etc., available. After a reasonable time the line was fully completed, as were also two branch lines. Double tracking was then started and finished last spring. In the mean time, however, our regiment, the 13th Engineers (Railway) had arrived in France and was attached to the French army. On a certain date, nearly a year ago, this road was turned over to us to maintain and operate.

The 13th Engineers in Charge

For a few days before the road was completely turned over to us, the station and yardmen were sent out to their various stations on the road, the trainmen and enginemen rode over the road with French crews and everyone was at-

Housing of the Men

We are not billeted in French families as we had expected to be, but live in the regulation French army barracks, and each detachment is very much like a large family. At the different terminals there are large barracks for the trainmen and enginemen, all bunks being numbered to enable the caller to find his victim. There are always reserve barracks at the terminals for the use of train crews laying over from the other end. Here they can draw a couple of blankets, are assigned to a cot and can rest until called, the blankets being then turned in at the desk.

At the smaller stations, the station crew generally lives in barracks, while the agent and operators live in the station. All grade crossings have gates and two crossing tenders and as most of these crossings are isolated, the gate tenders live in their shanties and do their own cooking.

All stations on the road have kitchens with assigned cooks and sufficient helpers for the number of men in that detachment. At the terminals and larger stations there are several kitchens and a man generally goes to the kitchen where he has a pal working unless they happen to be serving pie or pancakes at another location. The supplies are shipped out from the regimental commissary department at the town in which headquarters are located, in lots sufficient to feed men at the various kitchens for 15 days. A supply car runs over the road each day, however, with the daily supply of war meat and bread. The conductor and brakemen on this train

are usually to be found in the supply car, and there's a reason. Every 30 days each company office issues to each man a meal book with three coupons per day in it, for the following month. All roadmen, or anyone away from his home kitchen can present this meal-book at any other kitchen, at any hour, and by signing his name on the back of the coupon can draw a meal. Of course, all roadmen carry the meal book as religiously as they carry their mess kit, gas mask, or tin Kelly. Every night each kitchen turns in these tickets to the commissary department and this determines the supplies to be issued to that kitchen for the next day as this number of meals are subtracted from the original 15 days' supply which was issued to that kitchen.

Methods of Operation and Class of Trains

The road is not equipped with dispatchers' phones, so all blocking of trains between the various stations is handled by the operators. Before double tracking was completed the meets were difficult to arrange because of the different lengths of the sidings, the different classes of trains, etc. The time card shows 24 trains a day each way, all of equal rights and class, although in time of emergency, the trains are handled in the following order—troop, ammunition, sanitaire, artillery, supply, miscellaneous and permissionnaire. In extreme cases this has been changed by the French army issuing a "Special Movement" to some train, in which case that train is superior to all others and cannot be delayed. When I say that the running time over a road 60 kilometers (37.28 mi.) long is six hours, it may seem impractical at first, until some of the factors are considered. The vital need for this road necessitated building it in as short a time as possible, consequently the grades are heavy, the curves very sharp, and as both the French cars and rails are of light material, a fast schedule cannot be maintained. Trains running on time are always 30 minutes apart, for instance, the departing time eastbound from one station is 2 min. after the hour and .32 min. after the hour. From this schedule it can be seen that the paramount idea is slowness and safety. Although the trains move slowly, there is a smoothness and surety about it all that is very welcome in times of rush and emergency. The method employed in obtaining the block is the same as in manual block territory in the States, and a similar block sheet record is kept. We have no train order signals and in the double track territory a hand signal or "high ball" is all that is required unless the train has work to do at that station. Trains "permissionnaire" stop at every station to take on and discharge permissionnaires or soldiers on furlough. The trains sanitaire are the only solid air trains that we handle and they stop frequently to water and feed the patients.

The object of the trainmen and enginemen over here is not to make as many trips as possible, but to keep as near the bottom of the list as they can, because they draw their \$1.10 lying in the barracks the same as on the road. We have only one regular run to which two crews are assigned. This is a pickup run both ways and is a preference job during troop movements and heavy business, but during quiet times the crew generally wish they were back on the board.

Reports Required

The Chef de Train, or conductor, carries a sheet which shows the train number, crew, classification of train, and destination. The consist of the train is shown, and the time of its arrival and departure at each station. All slow orders and all explanations of delays are shown on this same sheet, which is turned in at the end of the run and is filed in the office of the superintendent. On the back of this sheet are several blank spaces to be filled in by the operators in single track territory, because it is necessary for a train to stop at each station to receive a written block to the next station,

signed by the agent or operator on duty. Several blank spaces are also provided to be used by operators when for any reason it becomes necessary to run a train against the current of traffic. All trains use the left hand track under normal conditions. The engineman carries no running orders or sheet of any kind, but before leaving a terminal, reads all slow orders written on the conductor's movement sheet. The conductor also carries a train sheet in duplicate, one copy of which goes to the French road, when the train is turned over to it and the other copy goes to the files in the superintendent's office. On this sheet all car numbers and series initials, tonnage and destination are shown. It is a French form that has not yet been printed in English, but our men are now thoroughly familiar with it.

The caboose or way car is carried next to the tender instead of at the rear of the train, and is furnished with racks for mail, parcels and way bills. The brakemen ride in cupolas built at the ends of the cars. Most of these are open on two sides or else the enclosed type have several windows broken, so although it is comfortable in summer, it is not a very pleasant place on a cold winter night.

The Chef de Gare, or station agent, has charge of the operators, switch tenders, switch crews, and yard masters. All way bills are made out by a French Commissaire Militaire at each station. They are turned over to the Chef de Train picking up the cars, and while they are a French form and written in French, practically no confusion has occurred although we sometimes are doubtful about the initial number or destination. Each station personnel includes two or more interpreters to assist in all conversations with the French authorities or those desiring information of any kind. All station switching is done by switch tenders and the yard crew of that station, leaving only the picking up and setting out of cars for the train crews.

Methods of Communication

No telegraph instruments are in use and the block phone is a simple wall phone connected two ways by a pair of small, two-position knife switches. The phones to switch shanties at yard entrances are of the same type. The more important stations are connected by a long distance phone over which we get our messages, line up of trains for the day, receive special orders, etc. The French signal corps still has charge of the exchanges on this long distance line, and through them we are able to reach any station or any place in France. The twenty-four hour system of time is used and all clocks are regulated from the Paris observatory. At first, a departing time of 19.18 or 23.41 was a little confusing, but by merely subtracting 12 for all time after noon, it is really very simple.

The Handling of Trains

All cars are handled, destination for empties, and re-routings made, from the local French army headquarters or Regulatrice. Our superintendents' office or movement office receives its orders from the local Regulatrice and from the movement office. These are given daily to the various stations and shipping points on the line. Troop trains consisting of a certain number of flat cars, box cars, and permissionnaire cars are kept constantly in readiness in the large yards and always remain intact. As they move over the road under no condition or circumstances are they allowed to pick up or set out cars from the train.

All heavy artillery or French A. L. G. P. trains are handled as "Special Movement." The initials, when translated stand for "artillery of long range and great power." These cannon frequently weigh as much as 60 French tons apiece (a French ton=2,204.6 lb.) and are always handled to a certain point by a special camouflaged A. L. G. P. engine. From this point they are handled on a very slow schedule by our own engines and crews. On all A. L. G. P. ammu-

tion trains, a brakeman is furnished for every 10 cars, and all side brakes are sealed into place to prevent them from dropping down while the train is moving. Only the wheel brakes in the cupolas are left free to operate and they must be handled with the utmost care to prevent the ammunition and explosives from jarring out of the racks in the cars.

The Equipment and Tonnage of Trains

The average empty box-car weighs several tons and is 18 ft. long with a single pair of wheels at each end. The body of the car is mounted on each side on a six or eight-leaf spring over the axle. This is a very fragile arrangement and after a derailment it is necessary to jack all cars on instead of pulling them back, in the familiar American manner, otherwise the wheels are thrown out of line and another derailment is likely to occur. An average load weighs 18 tons except cars of rock which run as high as 30 tons. The extreme lightness of all cars is perhaps the main reason for the almost absolute absence of hot boxes. Just a few nights ago, I had my attention called to the second hot box I have seen since coming to France. The permissionaire cars are more like American cars, some of them being 60 ft. long with double trucks pivoted under each end. The sanitaire or hospital cars, are the heaviest of all as they are generally of steel and are very compactly built with their racks of steel beds, kitchens, etc. They are electric lighted by dynamos driven by the wheels and are by far the most luxurious car we handle.

An 80-car train is as much as the French will accept from us although we have given them as high as 94 and many of the boys still cherish hopes of taking in 100 cars. The trains generally weigh about 800 tons and never more than 1,200. With the heavy grades, sharp curves, and poor coal, this has proved to be plenty for one engine and one pusher to handle over the road. Before we came, the French rarely handled more than 700 tons over this road with either their own or the English A. L. V. F. engines.

The couplings have proven a severe trial to our true American switchmen. They are similar to the old link and pin except that in place of the pin there is a hook that the link fits over. The coupling has to be made very quickly when the cars come together and the buffer springs are compressed, otherwise, as the cars are very light they will bounce apart on the slightest jar. Between the two links there is a screw adjustment and once the switchman is lucky enough to get the two cars hooked together, he generally finds he has about five inches of slack that must be taken up by the adjustment before the buffers touch. The drawbars are of very light material but our enginemen have learned to handle them with the utmost care. Each car is equipped with two stay chains to supplement the drawbar.

Maintenance of Way Standards

The switch stands are the same as those used in England, which have a heavy weight on one side to bring the points back and to close them. A switch needs only to be lined up for a facing train as all outgoing trains trail through it and it will drop back to normal after the last pair of trucks has trailed through.

The original rail in use was a double-ball interchangeable rail made in France. All rails being renewed now, however, are being replaced by American-made rails of about 75 lb. weight. The gage is about two centimeters narrower (0.78 in.) than the standard American gage. Crushed rock is used almost entirely as ballast. The joints are very similar to the 100 per cent joint. All ties are creosoted and are equipped with rail plates. Three lag screws are used in each end of each tie instead of two spikes.

In many ways the rules and practices of operation and maintenance of a military road as I have described them

here, will seem simple and almost impracticable to American engineers. However, before passing judgment on French methods, it must be remembered that just this same slow, simple, and efficient operation has kept their men at the front so well supplied that for the last four years they have more than held their own in this struggle. Truly Marshal Joffre was right when he said in 1914, "This shall be a war of railroads just as 1871 was a war of artillery."

Orders of Regional Directors

COVERING CRANES WITH PRIORITY CERTIFICATES.—The Eastern regional director announces that if there are any undelivered orders heretofore placed for which application for priority certificate has not been made, such application should be filed immediately.

Exchange of Free Transportation.—The Southwestern regional director announces that transportation now in the hands of officers of railway lines not under federal control will not be withdrawn but that additional transportation will not be issued.

Obsolete Freight Car Equipment.—The Northwestern regional purchasing committee asks railroads under its jurisdiction to report any freight car equipment which they contemplate retiring so that the War Board of Electric Railways may determine whether it can be used on electric lines.

Salvaging Hides of Stock Killed on Right-of-Way.—The Northwestern regional director recommends that the hides of animals killed on railroad right-of-way be salvaged. This practice, he says, is highly desirable at the present time because of the shortage of leather.

Revised Prices on Portland Cement.—The Northwestern regional purchasing committee announces the prices on cement, as determined by the War Industries Board for the four months ending December 31, 1918, and the conditions under which purchases of Portland cement are to be made by the several departments of the Government.

Re-rolled Rail.—The Northwestern regional purchasing committee, suggests that railroads consider the use of re-rolled rail and points out that the American McKenna Process Company has a capacity of approximately 15,000 tons per month. Railroads are asked to report the extent to which they will use re-rolled rail as a substitute for new rail, the amount of rail available for re-rolling, etc.

Dismantling of Freight Cars.—The Southwestern regional director announces that when the cost of repairs to freight equipment exceeds the amount allotted to be expended for that purpose, the federal manager or general manager may authorize in writing that the cars be dismantled. Before such cars, or cars which are not worthy of repairs, are scrapped the regional director advises that they should be set apart for inspection by the corporation officers who will determine their final disposition.

Conservation of Fuel.—The Southwestern regional director quotes a letter from Eugene McAuliffe, manager of the Fuel Conservation Section of the Railroad Administration, recommending that cinder pit forces, car riders in switch yards and other employees be prohibited from making open fires from lump coal taken from cars and engine tenders. He suggests that when a fire is actually necessary a small shelter house with a stove be installed, thereby reducing the consumption of coal to a fraction of that used in the open fires.

Maintenance of Track Force Corps.—The Eastern regional director announces that the following order has been issued to Colonel R. C. Marshall, in charge of Construction Division, Quartermaster Corps: "The Construction Division will maintain or cause to be maintained in safe and serviceable condition all trackage within the camp and cantonment reservation limits and camp quartermasters will keep careful

account of all expenditures, including labor, necessary for proper maintenance of trackage in any case in which railroad company fails to properly maintain trackage." The last portion of the order, relative to camp quartermasters keeping careful account of all expenditures necessary for proper maintenance of trackage, etc., has to do with cases where it might be necessary for the war department to repair tracks outside the military reservations. Any bills covering such work should be given special treatment, each case to be treated upon its merits.

Fuel Cost of Motor Car Operation.—The Northwestern regional director calls attention to savings effected by the use of kerosene to propel McKen motor cars. McKen motor cars operating on the Ann Arbor and equipped with kerosene carburetors used kerosene during the month of July at a cost of 3.87 cents per mile, or a saving of 6.39 cents per mile under the cost of operating the cars with gasoline. The expense of equipping McKen motor cars with kerosene carburetors amounts to \$500 per car.

Protection of Cotton From Fire in Transit.—The Southwestern regional director quotes a letter from the manager of the Insurance and Fire Protection Section of the Railroad Administration on the protection of cotton from fire in transit. In the past the railroads carrying insurance on cotton were restricted under their insurance contracts to the loading and shipment of cotton in closed cars only, and instructions were given that agents see to it that car doors were securely closed, cleated and all openings closed spark tight. Railroads are asked to observe equal caution under federal control.

The Hazard of Smoking.—Emphasis is placed on the necessity of prohibiting smoking on railroad property where inflammables are handled. Federal and general managers are asked to issue instructions prohibiting smoking in shops, coaling stations, piers, warehouses, storehouses, freight houses and offices, including record rooms, and around freight platforms and all places where inflammables are handled or stored. Watchmen, guards, officers and other employees in charge of property must see to it that the rule is enforced.

Reports of Large Fire Losses.—Hereafter all railroads will be required to send immediate telegraphic reports to the Insurance and Fire Protection Section of all fire losses amounting to \$10,000 or over. This preliminary report will give as full details as are obtainable, including the character of the property damaged and an estimate of the loss, and will be followed by a full report of the investigation of the loss. The report should indicate whether any fire insurance was still in effect on the property damaged or destroyed. If such is the case, insurance companies should be given every opportunity to examine into the loss, as has been their custom in the past.

Shortage of Metals.—The Eastern regional director advises that owing to the curtailment of blast furnace operations this year, and particularly in January and February, there exists a very serious shortage of pig iron which is vitally affecting war necessities, including the steel for proper maintenance requirements of the railroads. It is necessary that every possible effort should be made to get the maximum tonnage of scrap shipped to the steel mills at the earliest possible date as the need is very urgent. The War Industries Board advises that nothing that could be done by the railroads would contribute so much to the steel situation, as the adoption by the railroads of a general "clean up scrap" policy.

It is also urged that all railroads assort scrap into the principal grades that will bring more than \$29.00 per ton, and do this before offering it for sale. The purpose of this request is to save transportation and the delay consequent thereto, because if old material is sorted when offered for sale, it can be shipped direct to the point of consumption and need not be sent to a broker's metal yard for re-handling and re-classification there.

You are, therefore, requested to do all of this that you can accomplish, bearing in mind, however, that if labor is so scarce with the railroads and sorting facilities so meagre, that the net result would be worse if the railroads were going to undertake the sorting rather than to leave it to the old material brokers, it will be better to let the latter undertake the sorting and that the railroads should sell their scrap unassorted.

Storage of Bituminous Coal.—The Eastern regional director announces that the Fuel Administration has decided upon certain changes in the allotment. The new basis provides that railroads may have on hand supplies of bituminous coal as shown below, for example, 90 days for Massachusetts, instead of 75 days. There are certain reductions in the territory most readily served.

MAXIMUM NUMBER OF DAYS SUPPLY OF COAL TO BE MAINTAINED ON HAND	
State	State
Alabama	Delaware
Arkansas	District of Columbia
California	Florida
Colorado	Georgia
Connecticut	Idaho
District of Columbia	Illinois
Florida	Indiana
Georgia	Iowa
Idaho	Kansas
Illinois	Kentucky
Indiana	Louisiana
Iowa	Maine
Kansas	Massachusetts
Kentucky	Michigan
Louisiana	Minnesota
Maine	Mississippi
Massachusetts	Montana
Michigan	Nebraska
Minnesota	Nevada
Mississippi	New Hampshire
Montana	New Jersey
Nebraska	New Mexico
Nevada	New York
New Hampshire	North Carolina
New Jersey	North Dakota
New Mexico	Ohio
New York	Oklahoma
North Carolina	Oregon
North Dakota	Pennsylvania
Ohio	Rhode Island
Oklahoma	South Carolina
Oregon	South Dakota
Pennsylvania	Tennessee
Rhode Island	Texas
South Carolina	Vermont
South Dakota	Virginia
Tennessee	Washington
Texas	West Virginia
Vermont	Wisconsin
Virginia	Wyoming
Washington	
West Virginia	
Wisconsin	
Wyoming	

Agricultural Development.—Attention has been called to the establishment of the Agricultural Section of the Division of Traffic, with J. L. Edwards as manager, at Washington. Mr. Edwards expects at an early date to get in personal touch with the heads of the agricultural work of the various railroads. Many of the railroads have heretofore co-operated in their agricultural work with the agencies of the U. S. Department of Agriculture and also those of the U. S. Food Administration. The Agricultural Section will assist in co-ordinating these activities to the greatest extent possible throughout the country. The agricultural representatives of the railroads will be expected to keep in close touch not only with the growers themselves and their organizations, but with all agencies interested in farm development, especially representatives of the Department of Agriculture, Food Administration, state agricultural departments, county agents, civic bodies, newspapers and magazines, and private parties, such as manufacturers of farm implements and fertilizer, and bankers; seeking the active co-operation of all interests, including local agents and employees of other departments of the railroads, and endeavoring to co-ordinate their efforts along the most useful and practical lines.

Active development work on the part of the existing agricultural departments of the railroads is considered highly desirable, particularly along the lines of increasing the production of foodstuffs and other essential farm crops, bettering the quality, bettering the preparation for market, aiding in finding markets, greater use of labor-saving devices and machinery, more efficient utilization of labor, the use of safer containers, proper loading of cars, heavier car loading, better adjustment of schedules for handling perishables, improvement in refrigeration in transit, furnishing information of prospective transportation requirements for moving farm products, etc.

It is expected that the carriers will continue to prepare and furnish correct and appropriate information for use in answer to inquiries looking to the development of undeveloped raw material and agricultural resources of their territory. This can readily be done by employees reporting to the freight or passenger departments of the railroads. Many lines have assembled valuable data and specimens of minerals, soils, etc. It is expected that the same will be available for use, and that the roads will afford adequate information and service to prospective industries and settlers.

The Inadequacy of Present Depreciation Accounts

Proper Accounting Methods Essential During Government
Operation. Effect of Rules Now in Force

By Owen Ely

THE WIDE-SPREAD ANTAGONISM to the railroads which in the past has been evident in the debates of legislatures and of Congress, springs mainly from the old idea that most roads are over-capitalized. It has been impossible to discover in many cases whether a company's earnings were over or under-stated in reference to the property account (the New York, New Haven & Hartford furnishes a classic example). This, of course, is a condition common to all industry, but it is less to be tolerated in the railroad industry than elsewhere because the government has undertaken to regulate both the amount of railroad revenues and the method of keeping the accounts. The physical valuation of railroads was undertaken to remedy the situation and to establish a fair value for railroad property. The work is proceeding so slowly and laboriously, however, that there is talk of suspending it.

Even though the valuation be abandoned, it is essential that the current accounting for additions and betterments be properly done. The reforms introduced by the Interstate Commerce Commission since 1907 make the property accounts more accurate than they were before that date; and as time goes on the error in the old accounts will be a smaller and smaller percentage of the total investment. The commission has not, however, given the problem the attention which it deserves. Under the war administration it is to be hoped that the director general will recognize the importance of this subject and will, in co-operation with the commission, make a careful study of the accounting problems involved. The government has undertaken to return the roads to their owners in as good condition as when they were taken over, and this implies a proper accounting for new investment and for depreciation of the old property. Moreover, one of the surest means of restoring the credit of the railroads after the war is to assure the public that a railroad balance sheet faithfully reveals the condition of the property, and the income account its true earnings.

Before June 30, 1907, on which date the accounting regulations of the Interstate Commerce Commission became effective, the property accounts of American railroads were not kept according to any uniform principle. Some companies retained the same figure on their balance sheet year after year to represent the investment in road and equipment, additions and betterments being charged to operating expenses in lieu of depreciation. Under these prevailing conditions it was impossible for stockholders to determine how accurately the profit and loss balance measured the accrued profits. The accounting practice in this country even at that time, however, was more nearly correct than that followed in England, where the railroads do not credit to their property accounts the value of lost or abandoned property, although expenditures for renewals, as well as betterments, are charged thereto.

Since 1907 the commission's accounting regulations have required the railroads of this country to distinguish carefully between operating charges and capital charges. Worn out or abandoned property is charged to expenses (or profit and loss) and credited to investment; when a replacement involves any addition or betterment to the property, a net charge is made to the property account to cover the value of the betterment. There are many technical problems involved

in the theory of replacements, principally relating to the standard of "replacement in kind" adopted by the commission. The rapid changes in the cost of supplies, the substitution of new materials for old, and the use of improved facilities has made it difficult to interpret the commission's rules. Nevertheless, in adopting a policy of replacement in kind rather than mere restoration of the original property in terms of money value, the commission has followed the right principle. If money value had been chosen as the measure of replacement, the net income of the roads would have been considerably increased, because the rapid rise in prices of materials would have resulted in charging to appropriations for betterments large amounts which should have been charged to operating expenses. The roads might thus have displayed a fictitious prosperity which would have made it still more difficult to gain needed relief from the government through increased rates.

At the same time that it established rules for replacement accounting, the commission provided equipment depreciation accounts. If the transportation industry were fairly stable, and if the temptation to shift net earnings did not find easiest expression in an arbitrary statement of equipment losses, it would perhaps be unnecessary to insure the life value of the equipment through depreciation reserves or otherwise; in other words, it might be assumed that the value of the units going out of service each year would average about the same in proportion to the total equipment investment. But even under such favorable conditions, the mere fact of the growth of the property would require reserves to be set aside. Where new rolling stock is being constantly added to care for increased business, there is always an abnormal proportion of "young" equipment, with a low mortality rate during the period of its greatest service. Such equipment yields the highest net earnings during the period of least retirements, and it is evident that such earnings should be offset by the actual, though unrealized, depreciation on such equipment. If any particular railroad should then reach a declining period, it would find its equipment fully protected. The failure to provide such reserves may be as important a factor as loss of credit in bringing on a receivership.

If the transportation industry were similar to the average manufacturing industry, depreciation reserves might be maintained for all the principal items in the roadway and structures account, as well as for the equipment. Transportation is not like other industries, however: a railroad covers such a wide area, its facilities and plant are of such a varied character and subject to such different influences of wear and tear, and the amount of its production fluctuates so widely, that the depreciation rules applicable to a factory are of little value. For these reasons, little progress has been made with the depreciation principle as applied to roadway and structures. Although the commission made provision for depreciation accounts under maintenance of way and structures expenses in the 1914 classification, very few roads make charges to such accounts; the total of such charges for Class I roads in 1916 amounted to only \$4,858,355 out of total maintenance of way and structures expenses of \$404,514,144. Few railroads have kept experience tables for rails, ties, ballast, etc. The physical depreciation of station buildings can be worked out, but obsolescence due to traffic conditions,

etc., is an important and variable factor. The commission allows large expenditures for replacements in roadway and structures to be charged to expenses over a period of years or charged to profit and loss as a lump sum.

Equipment differs from roadway and structures in that it is divisible into small units; experience tables can be compiled and an approximate rate of depreciation worked out (although obsolescence is a disturbing factor). Moreover, the danger of oversteating the investment is probably greater with respect to equipment than for roadway and structures, because the equipment though abandoned may be kept on the books, being replaced in operation by borrowed property.

Depreciation Accounts

Depreciation accounts for equipment were established in 1907, and although the roads were not required to make any charges to these accounts, most of the larger companies do so at the present time. The fact that the commission has not undertaken to regulate strictly the rate of depreciation to be charged has brought about a great variety of results, some roads charging two per cent and others five or six per cent. In some cases different rates are charged for the different classes of equipment.

The general method and purpose of the depreciation accounts may be stated as follows: (1) Expenses are charged with an amount representing an estimate of normal loss or depreciated value, not restored by repairs (other losses being chargeable to the retirements accounts or to profit and loss account); (2) the amounts so charged are credited to "reserves for depreciation," and these reserves are drawn on as the various units are retired, thus avoiding the dangers due to postponing retirements, and promoting a higher standard of maintenance; (3) such reserves not being actual sinking funds, do not call for any actual outlay of cash, but in effect restrict surplus and thus make an equivalent amount of cash available, when required, for investment in plant or other assets; (4) through the correct statement of net income, the dividend rate is stabilized and the company's credit increased; and (5) by writing off the loss due to depreciation, and preventing an over-statement of free surplus, the payment of dividends out of capital, and the consequent exploitation of the property is guarded against.

How does the reserve for depreciation affect the actual policy in respect to the operation, hire or purchase of equipment? An ideal theory of equipment depreciation would, perhaps, assume the equipment to be a constantly wasting asset, and would restore such waste by immediate investment of the depreciation fund in new equipment. In practice, however, American railroads have not found it advisable to maintain actual cash reserves from their depreciation charges, or to invest such cash in new equipment. The purchase of new equipment is largely financed through the sale of equipment trust certificates, and the rate of interest required to market such securities may be just as important a factor, in deciding when new equipment shall be bought, as is the operating department's need of rolling stock. The trust certificates are retired in equal amounts from year to year (generally over a period of fifteen years); thus the cash released by the depreciation expense charges may in effect be devoted to meeting these annual payments, and the same practical result be obtained as though the reserve were immediately invested as a cash fund in new equipment. The connection is so indirect, however, as to be of little practical interest. It is perhaps to be regretted that there is not a closer connection between the actual financing of equipment purchases and the accumulating of the depreciation reserve. Possibly the reserve could be made an amortization fund instead of a mere bookkeeping record. At any rate, the fact that at present it represents only an arbitrary accounting procedure results generally in a wide discrepancy between the equipment accounts and actual equipment values.

Rate of Depreciation

The most important problem of depreciation is the determination of the rate, i. e., the yearly percentage of the investment which should accrue to the depreciation reserve. This must depend upon the practical conditions and problems to be met. A correct method for determining the depreciation of a telephone plant probably would not serve as the best basis to apply to a steam locomotive. Among the various elements which enter into the problem are the following: (1) earning power; (2) efficiency of service; (3) amount of service rendered; (4) wear and tear; (5) age in proportion to estimated normal life; (6) special losses, as fire, wreckage, etc.; (7) increased cost of replacement in kind, and different values of various units, due to changes in cost of construction; (8) obsolescence, due to new inventions or new methods of operation; (9) the increased durability and service capacity of new equipment, or of old equipment rebuilt, owing to progress in the art of mechanical engineering; and (10) the varying proportion of the value retained as salvage after retirement.

Earning power would perhaps furnish a basis of depreciation, if it were determinable. It is necessary, however, to include future as well as present earning power, and there are too many elements of uncertainty in such a basis. Financiers and railroad men have often regulated their maintenance appropriations on the basis of current earnings alone; and many a road, in trying to keep up appearances, has mortgaged its future and fallen into the hands of the receiver. Earning power is, therefore, in no sense a reliable gage of depreciation.

Efficiency of operation, the second factor named, does not furnish even an approximate test. It is possible to maintain high efficiency even though the railroad as a whole may be somewhat depreciated or certain parts very much worn out. When a road is first constructed a certain amount of depreciation is taken into consideration and the weakening of certain units is provided for in advance. On the average railroad of today the ties are of varying ages, with but a small percentage new, yet the track may still be able to carry trains of the size and speed anticipated when the roadbed was laid. Rails are replaced less on account of age than because of the constantly increasing weight of locomotives. It is obvious, then, that a large part of the railroad plant, though physically depreciated, may yet render good service. However, leaving out of account traffic conditions, it is obvious that the greatest commercial value of a road is when it is new; for even though it may operate at high efficiency for a number of years, without large replacements being made, the time is always drawing closer when replacements must be provided for, the prospect of which must inevitably affect the value of the property.

The third factor named, amount of service rendered, would probably furnish a fairly accurate test for estimating physical condition, but it would involve the preparation of units and standards of service for all the different parts of the railroad plant and equipment. The science of transportation is still in a stage of rapid change and development, and the great amount of research necessary to prepare such standards would probably not be justified by the result. And even though it were possible to tabulate the total work done (as, for instance, the individual mileage of freight cars, loaded and empty), other factors would have to be taken into account—inadequate repairs, bad operating conditions, over-loading, etc.

The next mentioned factor, wear and tear, corresponds most closely with depreciation, if we exclude the special losses due to wreckage, obsolescence, etc. Nevertheless, the rate of depreciation could hardly be made dependent on the physical condition of the equipment, because this would involve careful periodical inspection (although such inspection

could be made in connection with ordinary repair work). However, the rate could be adjusted approximately for different periods in the life of the equipment so as to vary somewhat with the average condition at various ages, taking into account also the heavier repair costs during later life. Thus, assuming salvage to supply 20 per cent of the cost and the average life to be 20 years, 5 per cent might be charged on freight equipment during the first five years of life, 4 per cent during the second five years, and 3½ per cent during the remaining ten years. Such a method would be fairly simple, and the rates could be made more accurate by keeping experience records.

The fifth factor named, age in proportion to estimated normal life, is the basis adopted under the accounting rules of the Interstate Commerce Commission. It is, of course, the simplest and most easily applied method of accruing depreciation. Nevertheless, the success of this method is dependent upon the careful determination of the average normal life for the various classes of equipment. The large variation in the rates charged by different railroad systems, is sufficient proof that very little study of this subject has been made.

Under the present scheme of accounting, the remaining elements of depreciation (extraordinary losses, increased cost of construction, and obsolescence), are provided for by the insurance and retirements accounts. Insofar as obsolescence involves increased expenditures, such amounts are chargeable to additions and betterments. It is, as a general rule, unnecessary to provide in advance for obsolescence, because the greater earnings derived from the improved facilities will permit the value of the abandoned property to be charged to profit and loss. Nevertheless, it would be safer to make some allowance for obsolescence in the rate of depreciation. So far as the writer is aware, the commission has never paid any attention to obsolescence in its accounting classification.

The problem of salvage or scrap value involves many unrelated factors, such as kind of materials used, condition of equipment when scrapped, efficiency in demolishing, new uses for scrap, market prices, etc. A large proportion of old equipment is not demolished, but is converted into work cars or sold to smaller roads. The percentage of salvage value is, like obsolescence, a very uncertain factor; but an error of 20 per cent in the salvage estimate would mean only about 5 per cent error in the rate of depreciation. The rules provide that in fixing the depreciation rate, the anticipated value retained as salvage shall be taken into account.

It is doubtful whether there is a single railroad in the country today whose rate of depreciation is based on a careful study of the actual physical depreciation of its equipment. Few, if any, of the roads have worked out the elaborate records or formulae which would be required if the insurance principle were faithfully carried out. In other words, the accounting rules promulgated by the commission have so far accomplished very little except to force a more or less conservative statement of income and surplus. And not only has the commission failed to bring about the adoption of uniform rates, but the accounting rules which it has provided do not encourage the adoption of fair rates of depreciation.

One of the main purposes of the depreciation accounts adopted in 1907 was to eliminate as far as possible the charges to renewals. The renewals account was retained in the 1907 classification (the title being changed to "retirements" in 1914) merely to "take up the slack" from the depreciation account. But the commission's rules for charging off equipment losses provide that only such portion of the lost value of the individual unit of equipment can be charged to the depreciation reserve, as has been accrued in the reserve for that particular unit. The difference between the value of the retired unit and its accrued depreciation is charged either to the retirements account, or to retirements and profit and loss. (The charge to profit and loss represents unaccrued depreciation in the early life of the unit before the company began to carry depreciation accounts). Suppose, for in-

stance, that a unit costing \$1,000, with salvage value of \$200, its anticipated life being 20 years, is retired in its 15th year: the rate would be 4 per cent, since $.04 \times 20 \times \$1,000 = \800 , the net loss. Assuming that the depreciation reserve had not been started until the fifth year of its life, the charge would be distributed as follows:

4 per cent depreciation, 5 years, charged to depreciation reserve	\$200
4 per cent depreciation, 10 years, charged to depreciation reserve	\$400
4 per cent depreciation, 15th to 20th years, charged to retirements	\$800
Salvage	\$200
	\$1,000

Under this accounting method there will always be heavy charges to the retirements accounts, since there is always a large proportion of the equipment retired before reaching the average age, and the depreciation rate is based on that age. The writer estimates that with a 4 per cent rate about 10 per cent of the value of retired equipment must always be charged to the retirements accounts; if the rate were 2½ per cent, at least one-third of the loss must be charged to retirements. At the same time, for a long period large charges must be made to profit and loss to cover unaccrued depreciation.

Rules Inconsistent in Application

The rules are thus seen to be inconsistent in application. If a fair rate of depreciation is charged so as to spread over the life of the equipment the estimated net loss, the rule operates so as to force almost double charges to the expense and profit and loss accounts during the early years, the result being to accumulate a large reserve which cannot be used as an insurance fund. Most of the railroads have therefore refused to apply a rate as high as the known approximate rate of loss. If the purpose of the commission was to force the roads to accumulate large reserves to represent the depreciated value of the property (in which case the reserves should not now be listed as an "unadjusted credit"), they should not have chosen such an indirect way of gaining this end, but should have directed the roads in 1907, or as soon thereafter as a rate of depreciation was adopted, to make a lump charge to profit and loss covering all of such unaccrued depreciation.

The published reports of the Interstate Commerce Commission do not reveal the amounts of the total equipment retirements for all United States railroads. Following are the charges to expenses for depreciation and for renewals or retirements of equipment since 1908, for Class I roads:

	Depreciation	Retirements
1908	\$1,714,000	\$1,714,000
1909	2,714,000	2,714,000
1910	3,614,000	3,614,000
1911	49,820,000	15,840,000
1912	1,172,000	1,172,000
1913	73,737,000	17,547,000
1914	88,395,000	24,158,000
1915		
1916		

The amount of retirements charged directly to profit and loss cannot be obtained; the "loss on retired road and equipment," first published in 1915, amounted in that year to \$15,211,000 and in 1916 to \$20,417,850, but it is impossible to determine what proportion of this amount represented equipment losses. Neither is it possible to discover how much is charged to the reserve each year. Although the amount of the accrued reserve of the operating roads has been published since 1911, the figure for the leased companies is not given separately from other "unadjusted credits." It is also probable that many roads have made appropriations to the reserve from profit and loss in addition to the amounts charged to operating expenses. In 1913, for instance, the reserve increased by about \$68,186,000, although the charges to expenses totaled only \$61,583,000. The matter is still further complicated by the fact that since 1914 small credits to the reserve from the depreciation accounts under maintenance of way and structures have been made.

From the best figures obtainable, it appears that of the

total equipment losses in 1915, \$15,582,000 was charged to retirements expenses, about \$15,000,000, or over, to the reserve, and perhaps \$5,000,000 to \$10,000,000 to profit and loss. This is in agreement with the theoretical conclusions formed above in regard to the effect of applying the commission's rules. The aggregate reserve for Class I operating roads is increasing very rapidly as shown by the following figures:

	Amount of Reserve	Increase*
1911	\$91,040,000	\$1,277,000
1912	259,061,000	\$9,175,000
1913	322,947,000	63,886,000
1914	394,337,000	66,890,000
1915	461,627,000	60,940,000
1916 (annual total)	5,67,990,000	56,100,000
1916 (calendar year)	57,194,000	64,144,000*

*Represents an increase for six months.

With the low average rate of depreciation charged it will probably be twenty years or longer, under the present system, before the reserve will become stable (considering all the roads as a system). During this period the accounting procedure will continue to be so involved as to make it impossible to arrive at any fair conclusion from published figures in regard to either the policy of an individual road or the average condition for the whole country.

The Obvious Remedy

The obvious remedy for the fallacy in the commission's rules is to do away with the retirements and profit and loss equipment accounts altogether and use the reserve strictly as an insurance fund, charging the entire value of retired units to the reserve, and accruing depreciation on all equipment even though some units are past the normal age. The latter units would accrue more than 100 per cent of their value, but the excess would be required to offset the unaccrued depreciation on units retired before reaching the average age. Indeed, no attention would need to be paid to individual units, the credits to the reserve being based simply on the entire value of equipment in service, on the same principle as in writing group life insurance. The present reserves would probably furnish enough of a margin of safety, and if the rate was accurately fixed, they would remain nearly stationary, except as affected by the growth of business.

It is a fallacy to assume, as the commission has done, that an average rate of depreciation for all the equipment (or all the units of any class of equipment) can be determined upon, and such a rate successfully applied to the individual units of equipment. Either a separate rate should be adopted and applied to each unit, based on its individual condition; or a general average rate should be taken and applied to the equipment *en masse*. To combine the two methods, as is done under the present rules, leads to complex accounting and confused results.

The classification permits, but does not require, the use of a separate rate of depreciation for each individual unit; this, however, involves so much labor, that it has evidently been found impracticable by the railroads. The alternative, then, is simply to apply a given rate of depreciation to each class of equipment, or to the equipment as a whole, on the same plan that a life insurance company writes group insurance for thousands of men in a factory. The growth of the reserve will then furnish a simple test of the adequacy of the rate.

The railroads of the United States, while they have not perhaps clearly recognized the principles involved, have learned by experience that it is impracticable to charge a rate of depreciation corresponding to the facts of physical wear and tear and loss due to obsolescence. It is to be hoped that the director general and the Interstate Commerce Commission will take cognizance of this situation and revise the rules so that the railroads will be encouraged to undertake a scientific study of depreciation. It is probable that some attention has already been given to the problem in connection with the

framing of the operating contracts, but no details are yet available as to the method to be adopted for protecting the value of railroad properties during the period of government operation.

Advertising Under War Conditions*

By Val Fisher

Publisher, London, Eng.

SOME WONDERFUL THINGS have happened in advertising, through war conditions, and I want to touch on some of those things, that you may be prepared for the conditions that will probably arise as the war goes on. In the last four years the business men of Great Britain have learned more concerning the importance of building good-will through advertising than they did in the forty years preceding the war.

British manufacturers who have not a dollar's worth of merchandise to sell, whose entire plants are employed on government work, are keeping their advertising continuously before the public, because while they are perfectly willing to turn their profits over to the government, while they are perfectly willing for the sake of winning the war to have their factories commandeered and their normal business completely stopped, yet they are not willing to sacrifice their good-will; they are not willing to have their names or their products forgotten.

And so they continue their advertising, continue building their good-will, so that when the war shall be won there will be an immediate demand for the billions of dollars' worth of merchandise that their greatly enlarged factories will then turn out.

This is a time when every manufacturer, every business man, should look far ahead. Good-will cannot be built in a day, even by advertising. The war will not last always. We have all seen the mistake of being unprepared for war; it is almost as great and serious a mistake to be unprepared for peace.

What are you going to do with your acres and acres of enlarged factory space now employed in the making of war products all over America, if you don't build good-will now for the goods you are going to make when the war is won? How are you going to keep the smoke coming out of your factory chimneys after peace is declared, if you don't keep your name constantly before the public now, and build a demand for your peace-time products that will insure a satisfactory business the minute you stop making munitions or other war supplies?

The war has taught the manufacturers and business men of Britain that advertising is not only the least expensive way to sell goods, but that it also has the far more important function of building good-will—a good-will whose benefits, especially in critical times, can hardly be measured. British business men have also learned that advertising can be used in time of war to stop the sale of their goods, and at the same time retain and even increase the good-will of the public. In a few cases British corporations have realized when it was too late, and after irrevocable damage was done, that advertising would have saved them.

Moreover, you Americans must not forget your opportunities for foreign trade. Millions of people in Great Britain and France and Italy and Central and South America will be looking to you for American-made goods when the war is over. Those of you who are best prepared, those of you whose good-will is most firmly established, will reap the greatest benefit.

*From an address made in New York. Mr. Fisher is a member of the London Chamber of Commerce and an associate member of the American Chamber of Commerce of that city.

The Roadmasters 36th Annual Convention

Abstracts of Committee Reports and Papers Presented at the
Meeting Which Was Held This Week in Chicago

THE THIRTY-SIXTH ANNUAL CONVENTION of the Roadmasters and Maintenance of Way Association was held at the Auditorium hotel, Chicago, on Tuesday, Wednesday and Thursday of this week. The sessions were characterized by unusual interest in the reports and papers, which were prepared particularly in view of conditions confronting track men at the present time. The session on Tuesday was devoted to discussions of various phases of the material problem, while labor was the principal theme on Wednesday.

The officers of the association during the past year were: President, A. Grills, general roadmaster, Grand Trunk, St. Thomas, Ont.; first vice-president, J. B. Oatman, roadmaster, Buffalo, Rochester & Pittsburgh, DuBois, Pa.; second vice-president, J. W. Powers, supervisor of track, New York Central, Rochester, N. Y.; secretary, P. J. McAndrews, roadmaster, Chicago & North Western, Sterling, Ill.; treasurer, Coleman King, supervisor, Long Island, Jamaica, N. Y.

The convention was called to order at 9:30 Tuesday morning with over 350 roadmasters in the room. In his opening remarks President Grills placed special emphasis on the fact that the convention was to be considered a war council of the trackmen of American railroads for the purpose of discussing war-time problems of track maintenance and that the discussion was in no sense limited to members of the association.

A particularly fortunate circumstance in this opening session was the presence of three regional directors of the Railroad Administration, namely Hale Holden, director of the Central Western region; B. F. Bush, director of the Southwestern region and B. L. Winchell, director of the Southern region. Each of the directors was called upon to speak, the trend of the remarks in each case being the relation of the men who help to maintain and operate the railroads in this country to those other men who are "over there."

Mr. Winchell gave a brief review of present railway conditions and urged the men in his territory to study the manner in which the problems are solved on other roads in order that they may be able to put into effect on their districts such practices as prove to be most suitable. He also placed special emphasis on the necessity for the men who are "over here" to do their maximum to help the men "over there."

Mr. Holden pointed out the purpose of the present meeting as a means for the study of the war problems. He called attention to the necessity of maintaining the railway machine in the best possible condition for winning the war and that in this connection it is necessary to keep skilled railroad men in this country. While he admired the spirit of the men in waiving exemption from service, he believed it was of extreme importance that such exemptions be obtained for the good of the railroads. He urged an enthusiasm in the operation of the railroads in their present status, and asserted that any considerations as to the relative merits of private or government operation are entirely out of place at the present time, and further the matter of the ultimate disposition of the railroads can be deferred until the period of readjustment after the war.

The necessity for salvaging scrap and all unused material was the keynote of Mr. Bush's remarks, which he illustrated by the results secured in the past two years by the Missouri Pacific, a line of 7,000 miles on which \$600,000 worth of track scrap has been accumulated annually. He described the methods adopted to recover and return much of this material to service.

Conservation of Track Materials

A large number of rails are permanently damaged in track because the maintenance forces are unable to take care of them properly, with the result that they are battered and chipped at the ends. On a number of roads these rails are taken out of track, 18 in. is sawed off each end and the rails are redrilled and used again on branch lines. The average cost for this work, including labor, sawing, drilling, oil and saw blades, is approximately 40 cents per ton. The committee recommends this as good practice.

Cracked angle bars can be welded by the acetylene gas process and used again. The cost of this work is from \$1.50 to \$2 per pair. We believe that it would be better economy to scrap the defective angle bars than weld them. Worn and bent joints can be straightened and built up for 20 cents per joint and used again. The bar is heated in an oil furnace, placed in a die and swaged under a drop hammer. In this manner the bar is swelled to its original section by the addition of pieces of steel 1 7/8 in. by 1/8 in. thick, placed in the center of the bar.

A large number of usable track bolts can be recovered wherever rail is being renewed, if they are oiled before renewals are made. Bolts which are recovered and used in sidings and industrial tracks have an approximate life of eight years.

Old track spikes can be straightened and used again in sidings and industrial tracks at a cost of not to exceed 70 cents per 200-lb. keg. There are a number of different ways of straightening old spikes, but the most approved way and the one recommended by the committee is with a press where from two to four spikes may be straightened at a time. This is a decided advantage over other methods on account of bringing the head back to its original position, where, with the hand method or trip hammer, it is impossible to straighten the heads up.

Worn switch points can be made use of in several different ways: (1) By cutting off a sufficient amount of the worn point and replaning it; the cost of labor for this method is not less than \$20 per switch. (2) The worn point can be built up by the acetylene gas process at an approximate cost of \$2.25 per point, but a point so built up should only be used in sidings.

Worn and broken frogs can be repaired at a large saving over the cost of new frogs. To repair these frogs in the shops costs considerably more than by the acetylene gas process. To repair a 90-lb. spring rail frog in a shop with bolts, rivets and new spring rail, including labor and price of rail, will cost \$70. A new frog of this kind costs \$160. A No. 9, 100-lb. spring rail frog with new short points, bolts and rivets, including labor, will cost \$45 to repair. The cost of a new frog is \$152. Rigid frogs can best be repaired with the gas process at approximately the following cost: New point and both wing rails built up and bolted, including the gas and labor charges, from \$12 to \$14 per frog, and by shop process \$25; saving by the gas process \$13 per frog, with the additional advantage that the frogs can be built up under traffic, if necessary, at a slight additional cost.

No tie plates should be discarded as scrap unless they are entirely unfit for further use, but they should be made use of on storage tracks and industrial sidings. Plates of heavier section can be repunched and used on lighter sections of rail to prevent rails cutting into the ties. This conserves ties.

To conserve ties in track they should be inspected in ac-

cordance with the association's recommended practice. Ties removed from track should be carefully sorted and those fit for sidings or temporary tracks piled separately. Ties fit for fuel should either be disposed of to company employees or to outside parties to be used for that purpose, or they can be loaded and used for engine fuel at a cost of 3 cents per tie for loading and 2 cents per tie for unloading. Good use of track and switch ties can be made for cribbing and docking. No old ties should be burned except those which are absolutely worthless for any other purpose.

J. B. OATMAN, roadmaster, B. R. & P., DuBois Pa., chairman.

DISCUSSION

The reclamation of rails by resawing drew forth a most enthusiastic and interesting discussion, and after attention had been called by William Shea (C. M. & St. P.) to the practice of rerolling rails, the discussion took somewhat the form of a debate on the relative merits of resawing and rerolling. In answer to a question by James Sweeney (C. & E. I.) W. P. Wiltsee (N. & W.) gave an extended account of the method of resawing rails in use on the Norfolk & Western during the past 18 years. In discussing the use of rerolled rails, special emphasis was placed on the necessity for matching the rails carefully by gaging before placing in track. P. J. McAndrews (C. & N. W.) said that this problem could be greatly simplified by carefully grading the rails before sending them to the mill, taking special care to see that the lots of rails shipped in by the various roadmasters were not mixed up in shipments.

H. R. Safford (U. S. Railroad Administration) called attention to the fact that a simple calculation is not always possible in comparing the relative merits of two things or two different processes, that the question is really an economic one, that is, a matter of measuring the good to be obtained against the relative cost. He pointed to the fact that it is not always good practice to reroll rails that have been given extensive wear since this will necessitate rerolling to such a cross section as to make the rail too light for any but minor traffic. In many cases resawing would suffice although where conditions will warrant rerolling will produce much better results.

W. F. Jones, general storekeeper, New York Central, discussed in detail methods of repairing and reclaiming materials. He suggested that small roads without central reclamation plants should send materials to central plants on large roads for reclamation. He urged the Roadmasters Association to appoint a committee in each region to study and recommend reclamation methods.

E. B. Temple, engineering assistant to Regional Director Markham, Allegheny district, emphasized the importance of reclaiming scrap as fast as possible because of the imperative need for materials. He told of the attention that the Railroad Administration is now giving to the collection of all scrap and said that we have now come to a point where the roads must prepare to reclaim much more material than formerly.

M. Griffin, Central Railroad of New Jersey, described the practice of that road in collecting all bolts with defective threads found in renewing rails and sending them to the shop to be rethreaded and returned for use. Renewal of worn switch points was discussed extensively.

J. B. Baker, Pennsylvania, told of experience with several hundred switch points reclaimed by the oxy-acetylene process in the last 18 months. There had been a few failures but the condition after failure was no worse than the condition before renewal was made. Renewed switches are used in main track but he suggested that the roads should be conservative as to this. Different members suggested that from 10 to 30 days were necessary to train men to do this work.

P. J. McAndrews, Chicago & North Western, stated that he

repaired all frogs by the oxy-acetylene process since better results can be obtained than to wait until the frogs are worn too much. T. Thompson, Santa Fe, and others stated that manganese frogs are not successfully repaired.

Discussing the conservation of crossing planks, several members testified to the use of concrete slabs. William Muff, Santa Fe, uses brick creosoted blocks on concrete foundations. The scrap problem was discussed in detail.

On inquiry as to the delay of trains in sorting scrap, J. B. Oatman said that most of this was done while the train moved between stations. H. Van Gorder, Chicago & North Western, suggested that a train once a month was too often and would cost too much, but William Shea, Chicago, Milwaukee & St. Paul, said this was a war measure and it made no difference how much it cost to collect the scrap. It must be done if the government needs material.

Right of Way Fences

A right-of-way fence is as necessary as any other unit that goes to make a railroad, and its proper maintenance is as essential as the upkeep of other parts of the property. A dilapidated fence is not only ugly in appearance, but its condition increases the risk of accidents. For food conservation it is of utmost importance that the railroads keep their right-of-way enclosures in the best condition to prevent any accidental killing of stock. The cost of maintenance as compared with the amount of stock claims paid should not be considered at this time. Instead, the most thoroughly preventive measures should be taken to conserve the supply of live stock.

Wooden posts, especially cedar, seem as yet to be the most favored, but the increasing scarcity of timber will eventually eliminate this kind of posts. Round and split posts are being used, but the round post is preferable because the split post exposes the heart and thereby causes decay and the dry rot formed will easily catch on fire. Iron posts are on the market and are used to some extent, but it seems to be the opinion that they will rust off quickly at the ground surface.

Concrete posts are being manufactured and used to a considerable extent. The initial price of the concrete post and the cost of installation are somewhat higher than for the wooden post, but considering its lasting qualities it is undoubtedly the most economical. A well reinforced concrete post should last forever, as fire, water and climate do not affect it. The round post is preferable, as the corners of the square post will chip off and weaken it. Railroads may make their own posts by installing plants at points where sand and gravel are available.

For general right-of-way fencing the posts should be 7 ft. long. Some railroads are using an 8-ft. post at corners and gate openings, but it seems that a 7-ft. post is of ample length even for that purpose when properly anchored and braced. The 7-ft. post should be set 2 ft. 6 in. in the ground. In swampy or wet ground the post should be tapered at the lower end and driven into the ground with a wooden mallet instead of digging holes by auger or digger. The posts should be placed one rod apart except at corners and gate openings, where they should be placed 10 ft. apart.

Through large towns and other places where appearance is to be considered and also to keep off trespassers, a 10-ft. post is recommended, placed 4 ft. in the ground and 10 ft. apart.

A combination barb and woven wire fence is recommended with (1) a barb wire at the ground followed by a 28-in. woven wire and with three strands of barb wire at the top. (2) a barb wire at the ground followed by a 50-in. woven wire and one strand of barb wire at the top. For use at station grounds where posts are set 6 ft. above ground, a 58-in. woven wire with one strand of barb wire at the top is good practice. When posts are set one rod apart, a stay of heavy wire should be placed in the middle of the panel.

The anchoring of a fence is one of the vital factors in its permanence. The methods of anchoring vary considerably, but when wooden posts are used the following is recommended: The posts at corners and gate openings should have as anchors two pieces of 2-in. by 4-in. by 16-in. pine lumber securely fastened to the post, one at the lower end of the post and the other 12 in. higher. In addition, the posts at corners and gate openings should have a wooden brace 4 in. by 4 in. gained into the corner post 12 in. from the top and into the second post 24 in. from the ground, well spiked to the posts. As counter brace use two strands of No. 8 wire, twisted until it becomes a hard and taut cable.

At sudden or abrupt changes of the ground along the fence line where posts are liable to pull out, two 2-in. by 4-in. by 16-in. anchors should be fastened to the lowest point of the post. Instead of using the wooden anchors at corners and gate posts, whenever practicable it is recommended that these posts should be placed in concrete 24-in. square and 8 in. below the lowest part of the post.

C. NEWBERG, roadmaster, C. & N. W., Chicago, chairman.

DISCUSSION

Chairman Newberg amended the report by adding a description of some steel posts that have had considerable use with material economy in cost of installation. Several speakers told of the successful use of steel posts which had been in service from six to nine years. Special emphasis was placed on the ease of installing these posts. One speaker told of 125 miles of concrete posts used in his district which were set in 1913; a few were broken by rough handling. The report was amended to recommend the use of posts longer than seven feet where required.

Labor-Saving Devices

The success of labor-saving devices is dependent to a great extent upon the energy and ability of the operator. An over-supply of labor-saving devices is perhaps as detrimental as a shortage of such devices. The committee recommended that roadmasters consider well before advocating the purchase of heavy and expensive machines, as it is possible that such purchases may not be justified in view of their cost. It also recommended the importance of securing power-driven appliances which are capable of doing many different kinds of work so as to keep the machines in constant use.

No tool furnished to the track forces in recent years made its appearance at a more opportune time or filled a greater void than the power-operated tie tamper. It is the observation of the committee that the work is more uniform and better than in the case of track tamped by hand, especially since we are getting such a poor class of labor. A tamping machine is of particular value around frogs and switches, water pans, tunnels, etc., as it is possible to tamp with it in places which cannot be reached by a tamping bar or pick. Experience during the four years this machine has been in use teaches that, under normal conditions in the northern states, each machine will be used during the season to tamp about 20,000 ties.

As much new rail is received in high side coal cars, it has become necessary that some mechanical device be used for unloading it. The constant demand for the quick release of cars, the high cost of work trains and the few hours of actual work possible on a line of heavy traffic requires a device that will work rapidly with a maximum factor of safety for laborers. There are rail handling machines in use which are capable of loading or unloading two cars of rail at the same time. Nine men are required for the operation of these machines, one to operate hoists and four men to each car of rails. The machine is operated by air from the train line. Such machines will unload rails more quickly

than could be accomplished by 40 men by hand and without damage to rails or injury to men. Thus a saving of 31 men per day is made possible. This machine can also be equipped with tongs to load or unload as many ties with three men as can be loaded or unloaded by 20 men by hand.

The committee recommends the use of rail laying machines, especially where rail is of a heavy section, thus relieving tong men for other work, the number released depending on the weight of the rail to be handled. To obtain the best results by the use of such a machine, care should be used to unload the rails as near as possible opposite where they are to be laid.

The majority of the committee are in favor of the use of motor cars, particularly on lines of light traffic where the length of sections is such as to warrant their use. Therefore it is the opinion of the committee that the economy in the use of motor cars decreases in proportion to the number of main tracks, which in turn shortens the length of sections. Perhaps the best argument in favor of these cars is in the fact that thousands of them were bought by the men themselves to avoid the drudgery of hand cars. The use of motor car mowing machines, weed burners and chemicals to destroy weeds are of great value in some territories.

On divisions where much ditching must be done by work trains or wheelbarrows, teams with scrapers have been tried with good results and very little labor has been needed. Dirt can be handled in very short cuts, at the ends of cuts and across the track for 20 to 25 cents per yard and it can be hauled 500 to 600 ft. for 50 to 60 cents per yard (with teams at 80 cents per hour and labor at 25 cents per hour).

Where conditions permit mowing the right-of-way with teams and mowing machines, the work can be done by machinery much cheaper than by manual labor.

When heavy ditching has to be done the use of steam ditchers is recommended, together with at least two 16 to 20 yd. side dump cars and a spreader car for short hauls. For a longer haul from four to six side dump cars should be used. A light engine can be assigned to this work. With an outfit of this kind, which includes a train crew, ditcher engineer and fireman, dirt can be handled for 10 to 25 cents per yard, according to the length of the haul. Through long usage the steam ditcher and spreader, especially when the latter is operated by air, have reached such a high state of efficiency that they are practically indispensable and the fact that they can be used for many different varieties of work places them among the most important labor-saving devices of the present time.

A saving of at least 60 per cent over that of manual labor is obtained by using a No. 3 crane for removing ballast from between tracks, preparing for stone ballast, digging drains under tracks, unloading old ballast on fills, strengthening shoulders and filling up holes, loading and unloading rails and for various other purposes.

In rail laying a two-wheel pony car is very handy for distributing spikes, bolts, angle bars, tie plates and even scattered rails. Where a heavy rail is to be replaced in track by a small gang, a pony car makes it possible to load rail and move it to the point where it is needed without sending for additional help or using a flag to get the rail into place. It is also useful for handling ties. With a dump box these cars are very handy for distributing the surplus gravel or stone ballast.

J. W. Powers, supervisor, New York Central, Rochester, N. Y., chairman.

DISCUSSION

Much interest was shown in the records of pneumatic tampers. Many reported successful use of these machines for both surfacing and spotting.

The latter requires frequent moving of the machines

They may be used successfully in any ballast in which pick or tamping bar is used. Skilled workmen are required to secure the best results with trained gangs and good mechanics to look after the maintenance of the machines. Machine tamped track stays up much longer than hand tamped work.

The Best Method of Lifting Track

A report was presented on this subject which outlined the advisability of preparing a complete schedule of work and described the procedure which should be followed in putting the ballast under the tracks. The report was confined largely to detailed suggestions for the conduct of the work and concluded with recommended organizations for gangs of 65 and of 80 men. The report was presented by George Beckingham, superintendent of track, Grand Trunk, Montreal, Que., chairman.

The Government and the Railway Labor Situation

By M. G. Kibbe

In Charge of Railway Division, United States Employment Service, Chicago

The United States Employment Service has undertaken the task of recruiting man power for the most essential service. The railroad division has been organized for the recruiting of all classes of railroad labor. Unfortunately we were slow in starting. The wage was low and when the first call was made for common labor at a higher wage by the government it drew more heavily from the railroads than from non-essential industries. A great effort is now being made to correct this evil. The railroad wage has been increased to compare more favorably with the increased cost of living. The long haul or transportation of labor from one part of the country to another is also being discouraged.

The recruiting of labor at so much per head is being abolished. Fee agencies, a most distasteful practice, must no longer exist. When we need men so badly why should they be asked to pay for an opportunity to work? The government asks for your assistance and co-operation to the extent of placing your orders for men with this branch of the service. Each state has its federal director of employment, and this officer must know how many men you need, as otherwise his powers in drawing from non-essential industries will be of little benefit.

You say you need men and need them badly. How many do you need? They cannot be gotten in a day, and the only way to get them is to make your wants known that they may be requisitioned from candy stores and ice cream parlors and put to work. The time has come for action, not only on the field of battle, but at home. The railroads are suffering for men and they must have them.

At present we are looking to the Mexican for relief, more especially in the Southwest, but Mexicans are always an unknown quantity and undependable. Congressional assistance has been granted but men have been held back on the other side of the border by the political trickster for pecuniary advancement. Avery Turner has been appointed by the Railroad Administration and sent to the Mexican border to assist in the importation and distribution of Mexican labor. By co-operation with the U. S. Employment Service and the U. S. Immigration Service it is hoped to straighten out the tangle and get more men. Should the situation be cleared up the southwest territory can be supplied during the winter months and in the spring we can ship to northern roads.

Most of you are complaining of a shortage of all classes of help, but to go back to the old methods at this time will bring no relief. The old method was to get men through foul means or fair, to induce them to leave one road for

another, to promise them something they were not getting and often these promises were not fulfilled. It mattered not to the agency recruiting, as all it was looking for was the fee of so much per head. The biggest rascal reaped the greatest harvest while both roads and men suffered. The opening of more competitive offices by individual roads will not increase man power.

The increased wage with better housing conditions and better food will induce a higher class of workers to enlist in this class of work. Physical requirements are necessary. Too many down and outs, not capable of doing a day's work, have been recruited for track work in the past.

A clearance section has also been established. This department or branch of service makes a complete tabulation of all labor recruited in each state, and these reports go to the general clearance division at Washington. In this way it is possible to ascertain how much labor is furnished by each state; and you can readily see how essential it is that the state director be furnished with these reports promptly. No accurate account can be given unless all report through the same channel. Each state has been given its quota, an estimated number based upon its population and its former record, and as this record has been incomplete no doubt these figures or percentages will have to be adjusted from time to time.

Chicago has been drained to such an extent that it is absolutely impossible to ship as many men to other states as have been shipped in the past, unless many non-essential industries are closed. This part of the service will be looked after by the war industry and community boards which have already been established. It is their duty to decide what are essential and what are non-essential. This is by no means a pleasant duty to perform. It will work a hardship upon some, but we need their energy and their brains in more important lines. The factories are needed for the manufacture of war essentials.

The United States Employment Service was organized the early part of this year as a branch of the department of labor with only a small appropriation but it has grown to such mammoth proportions that the whole country is depending upon it for service. It already has established some 600 distinct recruiting offices; it no longer suffers for lack of funds and its usefulness to both employer and employee is no longer questioned. Our records show that we are recruiting about 12,000 men per month in Chicago for the railroads alone and we need twice that number. I am satisfied that if the East was as well organized as the West we would not be called upon to supply eastern roads. More skilled labor is required in the East on account of so many war industries being located in that territory, but I anticipate that much of the common labor that has been shipped East will soon drift back into this territory.

Other Business

A paper read by C. W. Gennett, Jr., manager rail inspection department, C. W. Hunt Company, Chicago, on Common Defects in Rails and Means of Detecting Them in Track, will be published next week.

Labor conditions were discussed and the results secured in holding men by improved housing. Some roadmasters reported holding 90 per cent of the normal force; others said such measures are of little avail if higher wages are paid by nearby industries.

The Track Supply Association

The seventh annual exhibit of the Track Supply Association was held in a room adjoining the convention hall, approximately 50 firms being represented. The display this year was characterized by the practical nature of the individual exhibits, the various manufacturers emphasizing those devices of a labor-saving character.

The officers of the Track Supply Association during the past year were: President, E. T. Howson, western engineering editor, *Railway Age*; vice-president, J. J. Cozzens, Union Switch & Signal Co., New York; secretary-treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, F. A. Barbey, Frictionless Rail Co., Boston, Mass.; Edward Coleman, American Hoist & Derrick Co., St. Paul, Minn.; Ex-officio, R. A. Van Houten, Sellers Manufacturing Co., Chicago.

The names of the exhibitors together with the products exhibited and the names of the representatives in attendance, follow:

Air Reduction Sales Company, New York.—Oxygen gas, acetylene gas, hydrogen gas, nitrogen gas, welding and cutting apparatus, welding rods and supplies and acetylene generators. Represented by R. T. Peabody, E. M. Sexton, W. R. Campbell, Wm. McCarthy, Ray Sossong and Ellisorth Mill.

American Hoist & Derrick Company, St. Paul, Minn.—Transparencies and photographs of "American" Railroad ditcher. Represented by Edward Coleman and C. T. Hook.

American Steel & Wire Company, Chicago.—Railroad fence, woven wire fence and American steel fence posts. Represented by L. B. Shanahan, F. J. Hindmarsh, J. W. Collins, A. N. Frouds and W. E. Evans.

American Valve & Meter Company, Cincinnati, O.—Anderson economy and Buckeye switch stands for yard and main track switches. Represented by J. F. McGarry, Dan C. Higgins and F. C. Anderson.

Anchor Company, Chicago.—Anti-rail creepers, efficiency and welded types. Represented by F. B. Bowman, Orlando Metcalf and Geo. H. Chadwell.

Balkwill Manganese Crossing Company, Cleveland, O.—Licensors, controlling Balkwill patents on manganese railway crossings. Represented by S. Balkwill.

Bethlehem Steel Company, Bethlehem, Pa.—New Century switch stand, switch stand model 1217, Steelton positive switch stand model 52-A. Represented by R. E. Belknap, R. W. Gillispie, Neil E. Salsich and J. F. Hennessy.

Carbic Manufacturing Company, New York.—Carbic flare lights and carbic cakes. Represented by G. B. Van Buren, T. J. Hegland and W. H. Norden.

Chicago Malleable Castings Company, Chicago.—Thomas rail anchor tie plates. Represented by J. S. Lewellyn, O. Lutz and W. M. Osborn.

Crerar, Adams & Co., Chicago.—Eureka bonding drills, Calumet track drills, jacks of all kinds. Represented by E. C. Poehler, C. W. Gregory, W. I. Clock, G. D. Bassett, J. A. Martin and Russell Wallace.

The Duff Manufacturing Company, Pittsburgh.—Barrett track jacks, automatic leveling geared rail and ball bearing jacks. Represented by C. N. Thelin and E. E. Watts.

Fairbanks, Morse & Co., Chicago.—No. 41 light inspection car, equipped with two-cylinder kerosene engine. Represented by E. C. Golladay, Benjamin S. Spaulding, L. H. Matthews, F. J. Lee, C. B. Skelton, W. B. Lewis and F. M. Condit.

Fairmont Gas Engine & Railway Motor Car Company, Fairmont, Minn.—Hand car exhibition engine. Represented by W. F. Kasper.

Hauck Manufacturing Company, Brooklyn, N. Y., Chicago.—Hauck kerosene burner thawing outfits, steam thawing outfits. Represented by Willis C. Squire, G. A. Nelson and A. Busch Hauck.

Hayes Track Appliance Company, Richmond, Ind.—The Hayes derails and stands, including the Model H derail, the Model EX derail, and a simplified form of operating stand. Represented by S. W. Hayes, R. W. Shutterback and T. Carpenter.

Ingersoll-Rand Company, New York, Chicago.—Imperial tie tamping equipment and air operated track tools. Represented by Wm. H. Armstrong, Chas. Dougherty and C. W. Melcher.

Lackawanna Steel Company, Lackawanna, N. Y.—Rail joints, safety head angle bar, Abbott joint plates, hook shoulder tie plates, anti-rail creepers and key bolts for track appliances. Represented by Arthur P. Van Schaek, Jay L. Hensch, F. E. Abbott and G. O. Benson.

Luther Grider Manufacturing Company, Milwaukee, Wis.—Power grinders, foot power grinders to replace grindstones, hand power grinders to grind twist or flat drills and miscellaneous tools. Represented by C. R. Prater, F. S. Hixland and J. D. Suter.

The Madden Company, Chicago.—Illustrations three-men rail layer, Veerac motor car, Harris-Muff ballast screen, models of Wagner switch point straightener, Richter blue flag derail, red top fence posts and Blair tie spacer. Represented by H. C. Holloway and T. D. Crowley.

The Alexander Milburn Company, Baltimore, Md.—Portable carbide lamps, Milburn oxy-acetylene welding and cutting apparatus. Represented by S. B. Moats and C. R. Pollard.

Mudge & Co., Chicago.—Mudge Class E-6-K kerosene inspection motor car. Represented by Burton W. Mudge, Robert D. Sinclair, Karl J. Pohl, Robert Deeming, Albert C. Erbe, Ray E. Posson and Jean K. Vanatta.

National Lock Washer Company, Newark, N. J., Chicago.—Nut locks. Represented by R. L. Cincross and A. T. Thompson.

National Malleable Castings Company, Cleveland, O.—Rail anchors, rail braces and tie plates. Represented by T. W. Aishton, J. J. Byers and J. S. Wright.

P. & M. Company, Chicago.—P. & M. Henggi, Vaughan, Ajax, rail anchors, bond wire protectors. Represented by John Ritchie, John Reagan, George E. Johnson, J. E. Mahoney, F. W. Reeve and P. V. Samuelson.

Pocket List of Railroad Officials, New York.—Represented by J. Alexander Brown, Charles I. Dinmore and Harold A. Brown.

Positive Rail Anchor Company, Marion, Ind.—Rail anchors, Fallon girder type guard rail brace and plate, Russe guard rail. Represented by Arnold H. Told, J. A. Shoutly, L. C. Ferguson, Alva M. Bogue and E. A. Seabass.

The O & C Company, New York, Chicago.—Bonzano rail joint, spiral guard rail clamp, universal guard rail clamp, Bonzano rolled steel step or compromise joint. Freeland derails, Sampson rail bender. Represented by B. L. Barber, Bernard McGowan, A. R. Horn and J. V. Wessell.

The Rail Joint Company, New York, Chicago.—Standard compromise frog and switch and insulated rail joints. Represented by W. S. Boyce, J. P. Norton, G. Jenkinson, G. H. Larson, Alex. Chapman, R. W. Payne, E. L. Van Dresar and V. C. Armstrong.

Railroad Supply Company, Chicago.—Tie plates, derailleurs. Represented by A. H. Smith, H. Van Nostrand and E. H. Bell.

Railway Maintenance Engineer, Chicago.—Represented by L. B. Sherman, E. T. Howson, W. S. Lacher and H. H. Simmons.

Railway Review, Chicago.—Represented by Willard A. Smith, Harold A. Smith, J. E. Gougeon, Charles L. Bates and W. M. Camp.

Ramapo Iron Works, Hillburn, N. Y.—Manganese switch point, rolled steel double shoulder switch slide plate, special switch slide plate $\frac{3}{4}$ in. by 7 in., machine heel plate, switch stands, guard rail clamps. Represented by Thomas E. Akers, Arthur Germunder, J. B. Strong, J. Edgar Davidson and W. C. Kidd.

Reading Specialties Company, Reading, Pa.—Guard rail clamps, rail benders, rerailers with clamps, trolley rerailers, compromise joints and derails. Represented by B. John Buell and R. J. McComb.

Rodger Ballast Car Company, Chicago.—Improved operating device for improved Hart convertible cars. Represented by H. S. Hart, J. O. Neikirk, W. J. Hoeselt and W. E. Morey.

Sellers Manufacturing Company, Chicago.—Sellers anchor bottom wrought iron tie plate. Represented by J. M. Sellers, G. M. Hogan, R. A. Van Houten and R. J. Platt.

Southern Railway Supply & Equipment Company, St. Louis, Mo.—Saunders car stopper. Represented by W. D. Achoff and L. Boswell.

Track Specialties Company, New York, Chicago.—Trasco anchor plate, Trasco guard rail clamp, superior compromise rail joint, superior derailleurs, superior rail benders, tie plates, rail braces, Trasco guard rail brace adjustable track shim, slide plate and switch brace and rail joints. Represented by J. A. Bodkin.

United States Switch Company, Eau Claire, Wis.—Model of automatic switch lock. Represented by J. W. Hubbard.

Union Switch & Signal Company, Southvale, Pa.—Keystone insulated rail joint. Represented by J. D. Roett.

Verona Tool Works, Pittsburgh, Pa.—Track tools, track jacks, levels, gages and nut locks. Represented by H. C. Mull, E. L. Ruby and E. Woodlins.

William Wharton, Jr. & Co., Inc., Easton, Pa.—Literature on guard rail frogs and crossing layouts, switch rods and rail clamps. Represented by H. F. McDermott, Charles M. Griffith, J. H. Hock, S. G. Liwellyn and Malcolm Imbrie.

Wyoming Shovel Works, Wyoming, Pa.—Red Edge track shovels. Represented by H. T. Potter, H. C. Emery, G. E. Geer and A. R. Wren.

At the annual meeting of the Track Supply Association on Wednesday morning the following officers were elected: President, Ed. Coleman, American Hoist & Derrick Company, St. Paul; vice-president, W. H. Armstrong, Ingersoll-Rand Company, New York; secretary and treasurer, W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y.; directors, J. V. Westcott, Q and C Company, Chicago, and D. T. Hallberg, P and M Company, Chicago.

EXPORTS OF RAILWAY SUPPLIES FROM ENGLAND for the first six months of the present year, according to the British Board of Trade, were as follows, the corresponding figures for 1917 being given in parentheses: Locomotives, \$3,962,130 (\$3,710,795); cars, \$2,795,385 (\$1,695,290); rails, \$1,495,945 (\$1,572,165).

THE INDIAN WAR LOAN.—The Great Indian Peninsula Railway has adopted a novel method for advertising the new Indian War loan. Notices in English and vernaculars "Help the Empire and buy the war loan," have been printed on the ceilings of cars of a local service train running between Bombay and Kalyan.—*Indian Engineering*.

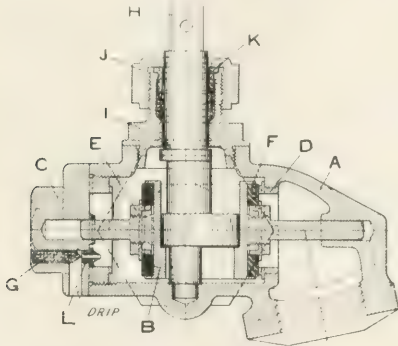
RESTRICTED HOLIDAY TRAVELING IN ENGLAND.—In order to relieve the congestion on the railways during the busy holiday season in England, leave for troops will not be granted if it necessitates railway traveling on Saturdays, Sundays or Mondays. The instructions apply to cadets in officers' training schools.—*The Engineer, London*.

FIRE DAMAGES TO AN ENGLISH RAILWAY.—Damage estimated at \$750,000 was done by a fire which broke out on August 11 in the electric train sheds of the North-Eastern Railway at Heaton, Newcastle, England. Thirty-eight electric coaches and the sheds covering $2\frac{1}{4}$ acres of ground were completely destroyed. Fifty-three coaches were taken out undamaged.—*Railway Gazette, London*.

Steam Heat End Valve with Automatic Drip

IN RELIEVING the condensation at the rear end of passenger train heating lines the general practice has been to open the end valve slightly. This, however, has not proved satisfactory and many different schemes have been devised to take care of this drip automatically. All of these have been arranged to drain through the hose and have frequently caused freezing and decay of the hose. The Gold Car Heating & Lighting Company, New York, has recently developed a new end valve, known as the Acme valve No. 1126, in which the drip is automatically relieved through the valve itself, thus eliminating the continual dripping through the hose.

Referring to the sectional view of the valve, it will be

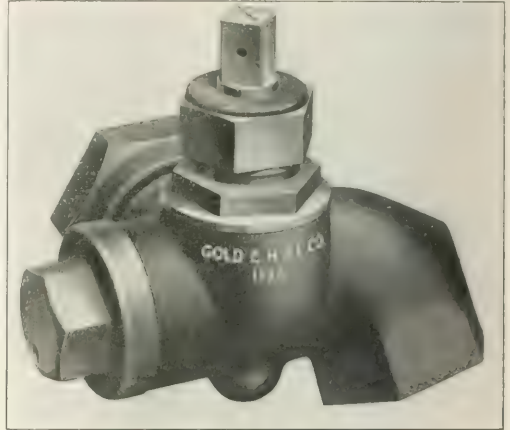


Sectional View of the Acme End Valve

seen that it is of the piston type, similar to existing Gold end valves. In this case the piston is double seated with a composition seat at each end. When the valve is closed, piston *B* is forced to the right by the cam on spindle *H*, thereby automatically opening the drip-port. When the valve is in the open position, the piston is forced to the left, the

seat on this end forming a tight joint which automatically closes the drip-port. A quarter turn fully opens or closes the valve, and it cannot be jarred from its set position by the vibration of train, or unseated by the steam pressure. An adjusting screw *G* is provided in the drip-port *N* for varying the opening.

The valve is substantially built, the body of iron and



End Valve with Automatic Condensation Drip Port

the cam and spindle cast in one piece. The spindle is short and of large diameter and should keep in perfect alinement for years. The area of the passage through it is so large that it offers less resistance to the flow of steam than the train line itself. The seats of the valve are renewable and can be replaced without disconnecting any piping.

In addition to relieving the hose of the effect of the continual drip incident to the relieving of the condensation through the hose coupling, it is also a protection to the trainmen when uncoupling the hose, as the opening between the train line and the hose is tightly closed when the valve is shut.



From a Hun Plane These Camouflaged Guns Might Look Like a Load of Hay

America's Only Terms "Unconditional Surrender"

General News Department

The aerial mail carrier from Washington arrived in New York on Monday, September 16, at 2 o'clock, only 2 hours and 40 minutes after he left Washington, and this time includes a stop of eight minutes at Philadelphia.

The Railroad Administration has issued its first consolidated time table of express-train service on the Pennsylvania and Baltimore & Ohio lines between New York, Philadelphia, Baltimore and Washington. This supplements the recent action making Pennsylvania and Baltimore & Ohio tickets interchangeable for common points between New York and Washington.

Internal revenue collections during the fiscal year ending June 30, 1918, from the transportation taxes imposed by the war revenue law of October 3, 1917, included \$30,002,163 from the tax on freight transportation, \$6,458,994, from the tax on express transportation, \$24,306,350 from the tax on passenger transportation, and \$2,236,699 from the tax on seats and berths, according to a preliminary statement of the commissioner of Internal Revenue.

The Middle division of the Pennsylvania Railroad, Harrisburg to Altoona, is now divided, for purposes of train despatching, into four districts: Harrisburg to Vandyke, 41 miles; Vandyke to Longfellow, 27 miles; Longfellow to Petersburg, 36 miles, and Petersburg to Altoona, 27 miles. This division is traversed every day by a large number of very long freight trains, which must be enabled, so far as practicable, to avoid unnecessary stops. Hundred-car trains are not uncommon.

"Every bad locomotive is a Prussian soldier." This was the keynote of a speech by Director General McAdoo to the railroad shopmen at Altoona, Pa., on September 12. He urged every shopman to put forth his best endeavor in getting locomotives in working order; adding, "Every idle locomotive is working for the Kaiser. Every live locomotive is an American soldier. Every moving locomotive is working for Uncle Sam. Let us get on top of the Prussian locomotives and make American soldiers out of them."

Railroad Disasters in Europe

A press despatch of September 11 reported a collision near Schneidemuehl, Prussia, between an excursion train and a freight, in which 33 children and three other persons were killed, and 17 children were injured. The excursion train had run past a signal set against it.

A press despatch of September 13 reported a derailment near Weesp, Holland, due to the weakening of an embankment by heavy rain, in which 40 persons were killed and over 100 injured. Weesp is eight miles southeast of Amsterdam.

Grain, Coal and Live Stock Movement

During the month of August, the roads of the Central Western region loaded 71,650 cars of grain and grain products, an increase of 22,722 cars over August, 1917, or 46.4 per cent. During the same period 145,213 cars of coal and coke were loaded, an increase of 22,910 cars over the same month last year, or 18.7 per cent. The loading of live-stock amounted to 48,237 cars, an increase of 10,190 cars, or 26.8 per cent. Every effort is now being concentrated on supplying coal mines with cars.

Alaska Railroad—190 Miles Open

That part of the government railroad in Alaska between Anchorage and Seward has been completed. This makes possible the shipment of coal from the Matanuska mines directly to Seward, a distance of 190 miles. At the close of the active working season last year there remained on this

section of the line between Anchorage and Seward a gap of 16 miles, along Turnagain Arm, a branch of Cook Inlet, on which the grading had not been completed. This involved some of the most difficult construction work on the whole line and the laying of steel over this gap marks an important step. Sixty per cent of this railroad is now ready for operation, and it is expected that before the end of the present season rails will also be laid from Nenana, which is about 400 miles inland, southward 50 miles to Lignite Creek, which will make the lignite coal in the Nenana fields available.

Buy Liberty Bonds

The regional directors are advising their federal and general managers that Director General McAdoo desires that each federal treasurer shall be instructed to attach to all pay checks sent out between the present time and the close of the Liberty Loan, a poster reading as follows:

THE UNITED STATES OF AMERICA
NEEDS AS MUCH OF THIS MONEY AS YOU
CAN POSSIBLY SPARE.
HOW MUCH WILL YOU LEND TO YOUR
COUNTRY?

BUY LIBERTY BONDS
OR WAR SAVINGS STAMPS. TO THE EXTENT
OF YOUR ABILITY—EVEN IF IT INVOLVES
REAL SELF DENIAL; AND HELP WIN
THE WAR.

These pasters are to be on white or tinted paper, light blue or pink 5 inches wide by 3 inches high, and should be enclosed in a double red border.

Train-Lot Plan of Moving Freight

In an article in the *Railway Age* of May 24, the trainlot plan of moving freight in the West was described. The plan, which is applied to shipments of grain, flour, lumber, oil, packinghouse products and perishables, is steadily assuming greater importance. Officers of the Northwestern region report that 90 per cent of all the freight traffic now moving through Minneapolis and St. Paul is in train lots. From March 1 to the end of August, 1,591 trains in the Northwestern region alone were operated under train movement notices. These trains consisted of a total of 46,907 cars which moved an average of 10.53 miles an hour.

Helping the Station Agent to Digest Orders

The station agent has many masters to serve, from the top of the official list to the bottom. Railway officers sometimes overlook this fact and become impatient if their numerous orders are forgotten, misinterpreted or misunderstood. In recognition of this situation A. C. Tumy, general freight agent of the Chicago, Indianapolis & Louisville, has sent the following circular letter to all agents on that road:

My dear Sir:—I am sure that you are well acquainted with the fact that some of you must at times be troubled by the fact that you have no little difficulty keeping up with everything. The same is true of our division freight agents. . . . Whenever you are in doubt about a freight rate, an embargo notice, short-line routing or anything else, you are free to communicate with your division freight agent. He will be glad to advise and instruct you. He is there for that purpose, and you may always depend on receiving a prompt and courteous response. . . . Much is expected of us all in these busy times. We are with you and hope that you will be able to give us the best of service.

REVENUES AND EXPENSES OF RAILWAYS

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Disastrous Collision at Marshfield, Mo.

A butting collision of an eastbound troop train and a west-bound freight train on the St. Louis-San Francisco, one mile east of Marshfield, Mo., Tuesday night, resulted in fatalities to 13, of whom 11 were soldiers and the remaining two, the fireman and a brakeman of the troop train. Forty were injured, but most of them not seriously. The accident was due to non-delivery of orders to the freight train and also to the fact that the troop train ran by a block signal set against it. The responsibility for the non-delivery of the orders is being investigated.

Colonel Slifer Acknowledges Receipt of Smokes

That the Railway Regiment's Tobacco Fund is an institution thoroughly appreciated by the American railway units in France is attested from time to time by letters received from overseas. Among the latest of these testimonials is a letter from Lieut.-Col. H. J. Slifer, of the Twenty-first Engineers (Light Railways), which was addressed to F. A. Poor, president of the P. & M. Company, Chicago, and chairman of the tobacco fund. Colonel Slifer says: "The tobacco for the Twenty-first Regiment has commenced to arrive. I dare say that you were right in stating that if we get all of the shipments that are due us, there will be a cloud around the regimental headquarters which may be mistaken for a battle front. I want to thank you and your associates in the name of the officers and the enlisted men. It must have been quite a task to thus look after the comfort of the railway regiments. I note with a great deal of interest the various changes that are being made in the railroad field, and as I receive the *Railway Age* regularly I am very well posted."

Railway Fire Protection Association

The annual meeting of the Railway Fire Protection Association will be held at Chicago October 15, 16 and 17. Charles N. Rambo, manager of the insurance and fire protection section of the Division of Finance and Purchases, United States Railroad Administration, has sent a letter to the regional directors calling attention to the importance of this convention, and asking them to see that representatives of the railroads, so far as practicable, be sent to Chicago to attend the meeting. All railroads were authorized, some months since, to maintain membership in the association. Mr. Rambo expects to circulate, at the meeting, a handbook summarizing the recommendations and information for the benefit of fire prevention officers afforded by the past proceedings of this association, with special reference to the needs of new fire inspectors.

A. H. Smith, regional director, Eastern Region, has called on the principal roads to each send a representative to the meeting, and has notified lines not represented at the meeting to confer with the men who do attend.

Traveling Engineers' Association

At the closing session of the Traveling Engineers' convention, which was held in Chicago last week, A. F. Duffy, assistant manager, Safety Section, United States Railroad Administration, gave a talk on the subject of reducing accidents and personal injuries on American railroads.

The secretary reported that the association now has over 1,300 members, and that over 200 members were admitted during the convention. During the past year the association has invested \$2,000 in Liberty bonds and has contributed to the American and the Canadian Red Cross. Cash balance in the treasury was nearly \$800.

The following officers were elected for the coming year: President, H. F. Henson, Norfolk & Western; first vice-president, G. A. Kell, Grand Trunk; second vice-president, W. E. Preston, Southern; third vice-president, L. R. Pyle, Railroad Administration; fourth vice-president, E. Hartenstein, Chicago & Alton; fifth vice-president, J. H. DeSalis, New York Central; treasurer, David Meadows, Michigan Central; secretary, W. O. Thompson, New York Central; executive committee—W. H. Corbett, Michigan Central;

S. V. Sproul, Philadelphia. Baltimore & Washington; T. F. Howley, Erie, and F. Kerby, Baltimore & Ohio. Chicago was chosen as the next place of meeting.

Change in Division Names of Pennsylvania Lines

A number of changes have been made in the divisions of the Pennsylvania Lines west of Pittsburgh. The Indianapolis division is now known as the Columbus division and includes the lines from Columbus, Ohio, including all yards and terminals at that point, to but excluding Hawthorne Junction, Ind. The Vincennes division, the Indianapolis terminal division of the St. Louis system and the Indianapolis terminal division of the Southwest system have been combined under the name of the Indianapolis division, with headquarters at Indianapolis, Ind., and made a part of the St. Louis system. This division also includes that part of the former Indianapolis division, extending from and including Hawthorne Junction westwardly. The Louisville division is now operated as a part of the St. Louis system.

Express Company Organizes

Department for Theft Prevention

The American Railway Express Company has organized a special agents' department the purpose of which is practically the same as that of the Property Protection Section of the Railroad Administration. The circular creating the new department calls on officers and employees to assist in the worthy cause whenever possible. Assistance and information given by railroad employees and others will be appreciated by the express management. The express companies having been formed into one corporation, this special agents' department is the largest single organization of its kind, covering the entire United States and operating somewhat like the Post Office inspection department.

There are five chief special agents, one for each of the operating vice-presidents; twenty special agents, one in charge of the work for each of the twenty general managers; approximately a hundred additional special agents and a thousand special officers. The chief special agents are: Joe L. Hagy, New York; E. B. Harrigan, Atlanta, Ga.; W. E. Riggs, Chicago; F. W. Schuler, St. Louis, Mo., and C. Cain, San Francisco, Cal. Several members of the new organization were formerly superintendents, and one of the chief special agents was formerly a general superintendent with one of the old express companies. The Property Protection Section of the Railroad Administration and the express company's special agents are co-operating, and offenders are being prosecuted in the federal courts.

Sailing Day Plan Extended in West

A sailing day schedule for I. c. I. freight destined to points in the Northwestern region will be introduced in Chicago about September 23. The schedule, which has been worked out under the direction of J. H. Brinkerhoff, terminal manager of the Chicago switching district, also conforms to the plan for the consolidation of I. c. I. traffic over definite routes to designated destinations, which was introduced by the Northwestern regional director some time ago. The schedules have been printed in pocket size for the use of railway officers and shippers. The book includes a list of stations in the Northwestern region arranged alphabetically and grouped according to states. Letter symbols indicate the days of the week on which less-than-carload freight may be shipped to each station and the route such shipments will take. The plan is temporary and later will be replaced by permanent schedules for all the roads (of all regions) entering Chicago. It is estimated that the temporary schedule will mean a saving of 410 cars a week in the Northwestern region. A permanent schedule is being worked out on the basis of a more detailed study of present facilities and service.

On September 16 the sailing day plan was inaugurated on all railroad lines in California. It is estimated by R. L. Ruby, superintendent of transportation of the Southern Pacific, the Western Pacific and the Tide-Water Southern, that the new arrangement will mean a saving of about 500 cars a week and an increase in the average load per car of about 2,000 lb. A shipping day guide has also been issued for the purpose of informing agents and shippers in California of the details of the plan.

Traffic News

The Bureau of Markets of the Department of Agriculture has announced its readiness to enter into co-operative agreements with operators of rural motor-truck routes, and operators who agree to conform to the general requirements of the bureau are to be given current information from the bureau's offices and authorized to display large metal signs on their trucks. The government hopes to stabilize the rural motor business by requiring adherence to approved business practices. Truck operators who desire to co-operate with the bureau must agree to maintain dependable service and schedules; charge just rates based on cost plus a reasonable profit; keep satisfactory records of operating costs and furnish certain of them to the bureau; use uniform bills of lading approved by the bureau, and provide adequate insurance for shipments.

Grain Loading Shows Increase

A total of 298,581 cars of grain were loaded up to September 7, as compared with 206,698 in the corresponding period of 1917, according to reports compiled by the Railroad Administration showing the figures by regional districts for the weeks ending August 24 and September 7. The increases for the year are shown in all of the regions, although there was a slight decrease during the week ending September 7 in the Eastern, Allegheny and Pocahontas regions. A report of the grain receipts at primary markets in the western district up to September 7 shows a total of 566,876,000 bushels, an increase of 151,470,000 over the corresponding period of last year.

The total grain in elevators at primary markets in the western district on September 7 was 59,286,000 bushels, as compared with 8,028,000 for the corresponding period of 1917. The total included 4,313,000 bushels of corn, 18,676,000 of oats, and 38,297,000 of wheat.

Coal Production

Production of bituminous coal during the week of September 7, while limited by the loss of time on Labor Day, exceeded production during the week which included July 4 by 1,000,000 net tons. The output is estimated at 11,249,000 net tons. The loss of time during the week places production for the coal year to date approximately 17,000,000 tons behind the summer requirements outlined by the Fuel Administration and makes necessary an average daily production during the balance of the coal year of 2,041,000 to make up the deficit. This would be 3.2 per cent in excess of the average daily production to date.

Production of anthracite during the week is estimated at 1,617,579 net tons, 28 per cent less than during the week preceding.

For the week ending August 31, the percentage of full time output lost by bituminous operators on account of car shortage is reported at 11.2 per cent.

A report to Director General McAdoo by the Car Service Section of the Railroad Administration shows the total loading of all kinds of coal for the week ending August 31 to have been 265,247 cars, as compared with 234,647 in the corresponding week of 1917. The estimated total for the week of September 7 was 227,000 as compared with 204,757, making the increase up to and including the week of September 7 over the same period of 1917, 539,438 cars.

The National Coal Association has issued a statement taking issue with declarations by Director General McAdoo that car shortage has not been mainly responsible for the failure to produce sufficient coal. While conceding that the car supply has shown marked improvement during the summer in some districts the statement says: "Shortage of cars at the bituminous coal mines has curtailed production of not less than 82,000,000 tons since January 1 and stands as the dominating factor of all causes of curtailment."

Commission and Court News

Interstate Commerce Commission

The commission has adopted a special rule of practice to the effect that original complaints filed in new proceedings under the Act to regulate commerce, as amended, should name as defendants, in addition to the director general of railroads, the carriers not under federal control, and should specify the carriers, or the principal carriers under federal control, over whose lines the rates, fares, practices, etc., apply. The complainant may name as additional defendants the carriers under federal control over whose lines the rates, etc., apply. The complainant must furnish as many complete copies of the complaint as there may be parties defendant to be served, including receivers and operating trustees of carriers not under federal control; as many additional copies for the director general as there are carriers under federal control specified in the complaint and not named as defendants, and seven additional copies for the use of the commission. Service of the complaint will be made by the commission.

Personnel of Commissions

George M. Crosland has been designated acting chief of the tariff bureau of the Interstate Commerce Commission until a permanent successor to J. M. Jones is named.

J. H. Carmalt has resigned as chief examiner of the Interstate Commerce Commission and pending the selection of his successor, Henry Thurtell, will act as chief examiner.

Court News

Notice of Claim—Interstate Shipment

The South Carolina Supreme Court holds that filing of suit against a railroad for damage to an interstate shipment, under the proviso of the interstate commerce act that if the loss, damage, or injury was due to delay or damage while being loaded or unloaded, or to carelessness or negligence while in transit, no notice of filing of claim shall be required as a condition precedent to recovery, was sufficient compliance with the stipulation in the bill of lading that claims must be made in writing to the carrier at the point of delivery or of origin within four months. —Lindley Nursery Co. v. Southern (S. Car.), 96 S. E. 221.

Liability to Passenger Riding at Reduced Fare

Action was brought against a railroad for the death of a clergyman while traveling on a clerical ticket containing an agreement, in consideration of reduced fare, to exempt the railroad from liability for damages caused by its negligence. The New York Court of Appeals, by a divided court, affirming 171 App. Div. 687, held the release valid, saying in part, by Mr. Justice McLaughlin: "Had the intestate, at the time of the accident been traveling on a pass there could be but one answer to the question. A recovery could not be had. This court settled that question over half a century ago. Wells v. N. Y. C., 24 N. Y., 181. It was there specifically held that such a contract was not against public policy. Does an agreement to sell a ticket at a reduced rate of fare, in consideration of exemption from such liability change the rule? I do not think it does. No good reason can be suggested why it should. If a railroad company and a passenger be permitted to make such a contract at all, then they are the sole judges of the amount of consideration which will compensate the one for being relieved from liability and the other for assuming the risk, whether it be the whole fare or anything less than that. . . . In fairness, it seems to me the agreement should be enforced. The intestate was an intelligent man. He deliberately and voluntarily entered into the agreement. It was printed on the back of the ticket, and as evidence that he had full knowledge and appreciated the effect of the agreement his signature is affixed thereto."—Anderson v. Erie (N. Y.), 119 N. E., 557. Decided April 23, 1918.

Equipment and Supplies

Locomotive Deliveries

A total of 54 new locomotives were shipped to railroads under federal control from the various locomotive works during the week ending September 7, according to a statement issued by the Railroad Administration. Of these 28 were of the U. S. R. A. standard types and the balance other types on former orders of the railroads. The American Locomotive Company shipped 25, the Lima Locomotive Corporation 5 and the Baldwin Locomotive Works 24.

Car and Locomotive Standards

The Committee on Standards for Cars and Locomotives began its monthly meeting at Washington on Tuesday. It is expected to continue in session until Friday. In addition to giving final approval to designs for the 60-foot and 70-foot baggage cars which have been prepared and from which orders for about 1,500 cars are expected to be placed, the committee expected to consider a plan of general instructions governing betterments to freight cars providing they should receive as nearly as possible appliances that will be interchangeable with those in the standard cars. These will probably be embodied in a circular to be issued.

Locomotives

THE TIENSIN PUKOW RAILWAY, China, has ordered 10 Mikado locomotives from the American Locomotive Company.

THE PEKIN KALGAN RAILWAY, China, has ordered 5 Mikado and three Mallet locomotives from the American Locomotive Company.

Freight Cars

H. KOPPERS, Pittsburgh, Pa., is inquiring for one hopper car.

THE EXETER MACHINE WORKS, Pittston, Pa., is inquiring for 28 standard 50-ton trucks and 15 small steel car bodies.

Iron and Steel

THE WABASH has ordered one riveted truss span and two plate girder bridges, 304 tons, from the American Bridge Company.

Miscellaneous

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 50 hard coal car heaters from the Refrigerator Heater & Ventilator Car Company, St. Paul, Minn.

NEW URUGUAYAN ENGINEERING JOURNAL.—A new bilingual engineering review, called Ingenieria Sudamericana (South American Engineering), has recently been founded at Montevideo. It will be printed in Spanish and English and will be devoted to engineering and allied interests in American countries. The publishers are the Engineering Editorial Company, Reconquista 634, Montevideo, Uruguay.—*Commerce Reports*.

COAL SHORTAGE IN IRELAND.—Arising out of the question of reduced train services in Ireland, the president of the British Board of Trade said that there is a shortage of coal there, and the railway companies had, in consequence, been called upon to reduce their passenger facilities. Asked why the coal rationing system was not applied to Ireland, Sir Albert Stanley said that the conditions in Ireland are so totally different, that it would be impossible to apply the same system in Ireland as in Great Britain.

Supply Trade News

The Lidgerwood Manufacturing Company has opened its own branch office in the Union National Bank building, Cleveland, Ohio, for the better handling of the company's contractors hoists, mine hoists and cableway business in that territory. This office will be in charge of Ernest F. Pegg, who has been handling the Lidgerwood line for the W. M. Pattison Supply Company, its former agent. Mr. Pegg is, therefore, familiar with all the Lidgerwood products and well prepared to serve the trade.

Guy E. Tripp, formerly Colonel United States Army and head of the production division of the Ordnance Department, has been promoted to the rank of Brigadier General in the United States Army, and placed in control of the offices having charge of the production of ordnance material in their respective sections of the country. The district chiefs will report direct to General Tripp, who is succeeded as head of the production division by Colonel C. C. Jamieson. Previous to his connection with the Ordnance Department, General Tripp was chairman of the board of directors, Westinghouse Electric & Manufacturing Company, at New York.



Guy E. Tripp

E. O. Griffin, until recently assistant to the president of the St. Louis Southwestern, with headquarters at St. Louis, Mo., has been elected vice-president and sales manager of the Rabok Paint Company, with headquarters at Houston, Tex. Mr. Griffin was born at Madison, N. C., on January 3, 1867. He attended the Southwestern Baptist University, Jackson, Tenn., for two years, following which he took the law course at Vanderbilt University, Nashville, Tenn. He entered railroad service as assistant to the master in chancery on the International & Great Northern in 1889. In the following year he was appointed assistant to the receiver, and in 1895 was appointed assistant to the



E. O. Griffin

general manager. From 1897 to 1903 he was chief clerk to the vice-president and general manager, and from the latter date to 1904 was passenger and ticket agent at San Antonio, Tex. In 1905 he was appointed southwestern passenger agent of the Missouri Pacific, and three years later demurrage agent of all lines entering Galveston, Tex. In 1909 he returned to the International & Great Northern as chief clerk to the superintendent, and two years later was appointed general storekeeper. He was promoted to purchasing agent and general storekeeper in August, 1914, and remained in that position until December, 1916, when he was appointed

assistant to the president of the St. Louis Southwestern Lines in charge of the purchases, stores, tie and timber, fuel and scale departments. He continued in that position until August 1, 1918, when upon the reorganization of the St. Louis Southwestern under Federal control, he was appointed assistant purchasing agent for that part of the road between Texarkana, Ark., and St. Louis, Mo. In addition to directing the sales work of the Rabok Paint Company at Houston, Tex., he will represent the Southern Railway Supply & Equipment Company, manufacturers of a general line of railway hardware; the Scarritt Car Seat Company; the Harry Benjamin Equipment Company; the Byrnes Belting Company; the Aquart Manufacturing Company, manufacturers of coach cleaning compounds; the Falls Hollow Staybolt Iron Company; the Great Western Smelting & Refining Company; the Royal Waste Company, and Leo Krouse of Texarkana, a manufacturer of hardwood lumber and cross ties.

Effective September 1, Captain J. J. Gaillard assumed the position of district engineer in charge of the Atlanta office, Portland Cement Association, succeeding W. Jess Brown, who has resigned to accept a commission as captain in the Ordnance Department, U. S. Army. Captain Gaillard joined the forces of the Portland Cement Association on January 1, 1918, and since that time he has been doing general promotion and inspection work in the district covered by the Atlanta office of the association.

F. J. O'Brien, whose appointment as general manager of the Globe Seamless Tubes Company, Chicago, was announced in the *Railway Age* of September 6, began his business career as a stenographer in the manufacturing department of the Pullman Company in 1894. He was subsequently chief clerk to the general manager and manager of the sales department of the same company, and in 1906 left the Pullman Company to become sales representative of the Kirby Equipment Company. He remained with that company until 1910 when he became identified with the Globe Seamless Steel Tubes Company as sales representative. He was promoted to general sales manager in 1914, and in April, 1917, was appointed manager of mills, with headquarters at Milwaukee. On September 1, 1918, he was promoted to general manager of the company, with headquarters at Milwaukee.



F. J. O'Brien

The Assets of the Orenstein-Arthur Koppel Company of Koppel, Pa., were sold by the Alien Property Custodian in an auction at Pittsburgh, on August 12, to W. A. Chamberlain of Pittsburgh acting for the Pressed Steel Car Company. The price paid was \$1,312,000. Included in this sale were a number of subsidiary companies which were owned by the Koppel company. These were the Koppel Land Company, the Heaver Connecting Railroad, the Koppel Water Company, the Koppel Sales Company, of Koppel, Pa.; the Pennsylvania Car & Manufacturing Company of Pittsburgh; and the Universal Railway Products Company of New York. The company was taken over by the Alien Property Custodian several months ago since which it has been operated as an American concern under the supervision of T. Hart Given. On September 13, the Alien Property Custodian also sold at an auction, also in Pittsburgh, stock in the H. Koppers Company, of Pittsburgh, amounting to \$300,000 and representing the 20 per cent enemy interest in the company. The buyer was Hamilton Stewart, treasurer of the company and secretary of the Harbison Walker Refractories Company. He paid \$100.75 a share for the 3,000 shares.

Trade Publications

PNEUMATIC AND ELECTRIC TOOLS.—The Independent Pneumatic Tool Company, Chicago, has issued a four-page circular describing its pneumatic and electric tools with photographs and dimensions.

DRAW SCRAPERS.—The R. H. Beaumont Company, Philadelphia, Pa., has just issued a new catalogue No. 38 describing and illustrating the Beaumont drag scraper system for the ground storage of coal.

TANKS.—The Walter A. Zelnicker Supply Company, St. Louis, Mo., has issued bulletin No. 246. This is a four-page pamphlet and contains specifications for some of the storage, wooden and car tanks, etc., carried in stock by the company.

EXPANSION JOINTS.—The Ross Heater & Manufacturing Company, Buffalo, N. Y., has issued a folder describing and illustrating the Ross cross-head-guided expansion joints, water heaters, condensers and other apparatus manufactured by this company.

STROM BEARINGS.—Data sheets giving prices and dimensions of all types of Strom bearings have been compiled in a 72-page catalogue by the U. S. Ball Bearing Manufacturing Company, of Chicago, to assist purchasers in making selection of the proper bearings for their needs.

ROME HOLLOW STAYBOLT IRON.—Bulletin No. 2 of the Rome Iron Mills, Inc., 30 Church street, New York, enumerates the advantages of Rome hollow staybolt iron, and bears out a claim of economy with figures comparing the cost of this kind of staybolt iron per engine for the first year and each succeeding year, and the ultimate cost of solid iron, which must be drilled and frequently tested.

PNEUMATIC AND ELECTRIC TOOLS.—The Independent Pneumatic Tool Company, Chicago, has recently issued circular No. 27, illustrating and describing in convenient tabular form the line of Thor pneumatic and electric tools which the company manufactures. These include the Thor cylinder and turbine air drills, electric drills, pneumatic hammers, pneumatic holder-ons and pneumatic sand rammers.

SCALES.—The Standard Scale and Supply Company, Pittsburgh, Pa., has issued an attractive catalogue A-235 of 48 pages, descriptive of its products. Several pages are devoted to the design and construction of railroad track scales and the other scales used extensively in railway service. The catalogue is attractively prepared with profuse illustrations and a complete descriptive index. The information contained is presented in a particularly concise manner.

CALCULATING BEARING LOADS.—The U. S. Ball Bearing Manufacturing Company has compiled in a booklet of convenient size, formulae and calculations necessary to determine the loads on ball bearings resulting from various types of power transmitting elements, with sketches illustrating the various bearing loads. These include belt, rope and chain drive loads, spur, helical and bevel gear drive loads, and helical bevel gear and worm gear drive loads.

INSULATING BRICK.—The Armstrong Cork & Insulation Company, Pittsburgh, Pa., has purchased a four-page leaflet which describes the composition of Nonpareil insulating brick for furnaces and ovens, and cites an instance as proof of the claim that Nonpareil insulating brick will save from 60 to 75 per cent of the heat ordinarily lost by conduction and radiation and makes it possible to attain a desired temperature in less time than would otherwise be required.

HORIZONTAL BORING MACHINE.—A detailed description of the Landis No. 35 floor type horizontal boring, milling and drilling machine, illustrated with numerous photographs of the assembled machine and its parts, is contained in a 15-page catalogue issued by the Landis Machine Company, Waynesboro, Pa. This machine has an almost universal range of adaptability and may be used to bore, mill, drill, tap, spline, oil-groove, or rotary-plane at one setting, and when a swiveling table is used, the work can be finished on all sides without resetting. The catalogue also contains a sketch showing a sectional view of the spindle driving and feeding mechanism, with all of the details numbered.

Railway Financial News

BOSTON & MAINE.—The reorganization plan of this company is commented on editorially elsewhere in this issue.

BUFFALO, ROCHESTER & PITTSBURGH.—The New York Public Service Commission has approved the agreement between the Buffalo, Rochester & Pittsburgh and the Central Union Trust Company of New York, by which the railroad will issue \$1,200,000 equipment bonds at 6 per cent.

CANADIAN NORTHERN.—A temporary board of directors, working in conjunction with the government, it is officially announced, will administer the Canadian Northern Railway probably for some time. Negotiations for the purchase by the government of the Grand Trunk are being continued, and, till some conclusion is reached, it is unlikely that a permanent board will be appointed. At present the Canadian Northern is being administered by D. B. Hanna, A. J. Mitchell and Major Bell, deputy minister of railways.

The Canadian treasury has completed the arrangements for the payment of the purchase money for Canadian Northern Railroad stock held by Sir William Mackenzie, Sir Donald Mann and their associates and for the formal incorporation of the railway properties in the government system. The financial arrangements provide for the payment of \$8,500,000 to the two parties mentioned and the Canadian Bank of Commerce holders and pledges of 510,000 shares of Canadian Northern Railroad stock taken over from them by the government. Sundry other holders having 90,000 shares received \$1,620,000, so the total amount paid for 600,000 shares is \$10,120,000.

CHICAGO & NORTHWESTERN.—This railroad has been the first to notify the Railroad Administration of its acceptance of the standard contract.

CHICAGO & WESTERN INDIANA.—J. P. Morgan & Co. have issued the following statement in connection with the default of this company's \$15,000,000 6 per cent notes which matured September 1: "We have noted Mr. John Skelton Williams's statement, renewing his attack upon us and upon our associates, because of our inability to secure funds at 6 per cent, to finance the obligations of the Chicago & Western Indiana Railway Company. We have nothing further to say except to reiterate our regret that Mr. Williams, while publishing his telegrams to us, refrains from making public ours to him."

DENVER & RIO GRANDE.—See Western Pacific.

MARSHALL & EAST TEXAS.—This company has sold a part of its line extending from Marshall to Elysian Fields, 20 miles, to the Waterman Lumber Company, Marshall, Tex.

UNION PACIFIC.—This company owns \$3,000,000 of Delaware & Hudson three-year 5 per cent notes, as shown by the list of securities in its annual report for December 31, 1917. These notes represent one-third of the issue offered by the Delaware & Hudson in July, 1917.

WESTERN PACIFIC.—In pursuance of a report by the Equitable Trust Company, trustee under the first mortgage of the old Western Pacific Railway Company, as to the sums thus far recovered upon a judgment of \$38,000,000 against the Denver & Rio Grande, the Western Pacific Railroad Corporation has made an offer to holders of the bonds of the old company who did not assent to the plan of reorganization. The new company offers five shares of its preferred stock and seven and one-half shares of its common stock for each \$1,000 face amount of the bonds, together with an amount of cash equal to all dividends which have been or may be paid prior to Oct. 15, 1918, on which date the offer expires. Bondholders accepting the offer are to surrender their bonds with their right to participate in the judgment and to pay in cash the share which they have received on their bonds out of the proceeds of the foreclosure sale of the Western Pacific Railway property, with interest at 5 per cent from July 1, 1916, to Oct. 1, 1918.

Railway Officers

Railroad Administration

Regional

Richard B. Thornton has been appointed inspector of telegraph and telephone of the Central Western region, with headquarters at Chicago, Ill.

Federal and General Managers

G. L. Blair has been appointed general manager of the San Francisco & Portland Steamship Line, with headquarters at San Francisco, Cal., effective September 12.

G. F. Hawks, general manager of the El Paso & Southwestern, at El Paso, Texas, has had his authority extended to include the El Paso Union Passenger depot.

The Pacific & Eastern having been relinquished from government control, the jurisdiction of **J. P. O'Brien** as federal manager of that line has been discontinued.

The jurisdiction of **E. L. Brown**, general manager of the Denver & Rio Grande, with headquarters at Denver, Colo., has been extended over the Denver Union Terminal Railroad.

M. J. Buckley, general superintendent of the Oregon-Washington Railroad & Navigation Line, with headquarters at Portland, Ore., has been appointed general manager of that road, the Southern Pacific lines north of Ashland, Ore., and the Pacific Coast, with headquarters at Portland, Ore., effective September 12.

C. M. Scott, whose appointment as general manager of the Arizona Eastern, with headquarters at Phoenix, Ariz., was announced in the *Railway Age* of August 30, was born in



C. M. Scott

Hamilton county, Ohio, on April 10, 1872. Mr. Scott entered railway service with the Baltimore & Ohio Southwestern, now a part of the Baltimore & Ohio, as chief clerk in the trainmaster's office in 1890, and subsequently became chief clerk in the superintendent's office and train despatcher. In 1896, he entered the service of the Chicago, Burlington & Quincy as chief operator in the despatcher's office at St. Joseph, Mo., and later he became secretary to the general superintendent. In 1900,

he went with the Atchison, Topeka & Santa Fe, in the general freight and passenger agent's office at Prescott, Ariz. The following year he was employed in the chief engineer's office, and later in the general manager's office of the same road, at Prescott, Ariz. In 1905, Mr. Scott entered the service of the Arizona Eastern and the Southern Pacific Railroad Company of Mexico as secretary to the president, with headquarters at Tucson, Ariz. Later he became chief clerk to the president, and in 1907, he was promoted to superintendent of the Phoenix division of the Arizona Eastern, with headquarters at Phoenix, which position he held until his appointment as mentioned above.

Operating

John Ellett has been appointed trainmaster of the Norfolk & Western, with office at Crewe, W. Va., succeeding **D. F. Peters**, promoted.

W. A. Ginn has been appointed general agent of the Chesapeake & Ohio and the Ashland Coal & Iron Railroad, with office at Ashland, Ky.

J. J. O'Neill has been appointed general manager of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., effective September 12.

J. Lord has been appointed trainmaster of the Sacramento division of the Southern Pacific (Pacific system lines south of Ashland), with headquarters at Truckee, Cal., vice **F. E. Keenan**, transferred.

J. E. Fahy has been appointed assistant superintendent of transportation of the Baltimore & Ohio Railroad, western lines, the Dayton & Union Railroad and the Dayton Union Railroad, with headquarters at Cincinnati, Ohio.

L. R. Smith has been appointed supervisor of transportation, with jurisdiction over the Southern Pacific, Pacific system lines south of Ashland, the Western Pacific, the Tidewater Southern, and the Deep Creek Railroad, with headquarters at San Francisco, Cal.

W. G. Choate, assistant to president of the Gulf Coast Lines, has been appointed assistant general manager of the New Orleans, Texas & Mexico, the Beaumont, Sour Lake & Western, and the St. Louis, Brownsville & Mexico, with headquarters at Houston, Tex.

W. C. Showalter, trainmaster of the Northern Pacific at Missoula, Mont., has been promoted to superintendent of the Rocky Mountain division, with the same headquarters, succeeding **F. R. Bartels**, who has been granted a leave of absence to enter military service.

E. W. Lollis, trainmaster of the Chicago, Milwaukee & St. Paul, at Savanna, Ill., has been promoted to superintendent, with office at Des Moines, Ia., succeeding **R. P. Edson**, transferred; **C. E. Corcoran** succeeds Mr. Lollis and **N. A. Meyer** has been appointed trainmaster of the Milwaukee Terminal at Milwaukee, Wis.

Martin W. Clement, whose appointment as superintendent of freight transportation of the Pennsylvania Railroad, eastern lines, with headquarters at Philadelphia, Pa., has already been announced in these columns, was born on December 5, 1881, at Sunbury, Pa., and was educated at Trinity College, Hartford, Conn. He entered the service of the Pennsylvania Railroad on August 1, 1901, as a rodman in the office of the principal assistant engineer of the United Railroads of New Jersey. He later served successively as transitman and assistant supervisor, and on January 1, 1910, was promoted to supervisor in the office of the general manager. He was transferred to the Manhattan division in June, 1913, and to the Pittsburgh division the following December in the same capacity. One year later he was transferred to the New York, Philadelphia & Norfolk as division engineer, and on August 8, 1916, returned to the Pennsylvania Railroad as division engineer to study improvements in and around New York. In November, 1916, he was appointed division engineer under the principal assistant engineer of the New Jersey division, and in June, 1917, he was appointed superintendent of the New York, Philadelphia & Norfolk. He was promoted to superintendent of freight transportation of the Pennsylvania Railroad, eastern lines, on September 1, as above noted.

W. C. Garaghty, maintenance of equipment inspector of the Baltimore & Ohio, western lines, with office at Cincinnati, Ohio, has been appointed safety agent of the South-

west district, with headquarters at Cincinnati, Ohio: **W. J. Head**, trainmaster at Cleveland, has been appointed safety agent of the Northwest district, with headquarters at Cleveland; **H. C. Batchelder**, terminal trainmaster at Akron Junction, Ohio, has been appointed trainmaster at Cleveland, vice Mr. Head, and **T. C. Smith** succeeds Mr. Batchelder.

Financial, Legal and Accounting

C. L. Smith has been appointed acting federal treasurer of the Ft. Dodge, Des Moines & Southern, with headquarters at Boone, Ia.

F. W. Johnston, whose appointment as federal treasurer of the Ft. Dodge, Des Moines & Southern was announced in the *Railway Age* of September 13, has been appointed federal auditor; the announcement last week being in error.

J. W. Edwards has been appointed federal auditor of the Pacific Coast, and **J. L. Platt** has been appointed acting federal treasurer, with headquarters at Seattle, Wash., effective September 12.

E. L. Brown, controller of the Northern Pacific Terminal Company, has been appointed federal auditor, and **Lloyd L. Muilt** has been appointed acting federal treasurer, with headquarters at Portland, Ore., effective September 12.

I. T. Bennett, car accountant on the Litchfield & Madison, has been appointed acting federal treasurer, succeeding **F. M. Campbell**, who remains auditor of that road, with headquarters at Edwardsville, Ill., effective September 4.

A. R. Howard, local treasurer of the International & Great Northern and the Galveston, Houston & Henderson, has been appointed also acting federal treasurer of the Houston & Brazos Valley, with headquarters at Houston, Texas, succeeding **W. C. McLendon**, resigned, effective September 15.

R. Blaisdell, federal auditor of the Oregon-Washington Railroad & Navigation lines and the Camas Prairie, has been appointed federal auditor also of the San Francisco & Portland Steamship Line. **J. F. Meyer** has been appointed acting federal treasurer of those lines, with headquarters at Portland, Ore., effective September 12.

A. C. Spencer, general solicitor of the Oregon Washington Railroad & Navigation Company, has been appointed general solicitor also of the Southern Pacific lines north of Ashland, Ore., the Pacific Coast, the San Francisco & Portland Steamship Line, and the Northern Pacific Terminal of Oregon, with headquarters at Portland, Ore., effective September 12.

G. R. Cottingham, general auditor of the Texas & New Orleans and the Galveston, Harrisburg & San Antonio, has had his jurisdiction extended over Morgan's Louisiana & Texas, the Louisiana Western, the New Orleans, Texas & Mexico, the Beaumont, Sour Lake & Western, the St. Louis, Brownsville & Mexico, the San Antonio & Aransas Pass, the San Antonio, Uvalde & Gulf, the Southern Pacific Terminal Company and the Galveston Wharf Company, with headquarters at Houston, Texas.

Traffic

H. A. Johnson, traffic manager of the Colorado & Southern, at Denver, Colo., has been appointed traffic manager also of the Denver & Salt Lake.

T. L. Peeler has been appointed industrial commissioner for all roads under the jurisdiction of **J. S. Pyeatte**, federal manager, with headquarters at Dallas, Texas, effective September 1.

Harry Parry, assistant general passenger agent of the New York Central, with office at Buffalo, N. Y., has been appointed general passenger agent of the lines east, and of the West Shore Railroad, with headquarters at New York, to succeed **C. C. Howard**, resigned to go into other business.

C. H. Stinson, freight traffic manager of the Wabash, at St. Louis, Mo., has been appointed assistant traffic manager; **H. E. Watts**, general freight agent, at St. Louis, has been appointed general passenger agent, and **F. H. Tristram**,



M. W. Clement

general passenger agent, at St. Louis, has been appointed assistant general passenger agent.

F. W. Robinson, traffic manager of the Oregon-Washington Railroad & Navigation line, with headquarters at Portland, Ore., has been appointed traffic manager also of the Southern Pacific lines north of Ashland, Ore., the San Francisco & Portland Steamship Line, and the Pacific Coast, with headquarters at Portland, effective September 12.

Engineering and Rolling Stock

H. S. Marshall, chief land appraiser of the Chicago, Burlington & Quincy, has been appointed valuation engineer, succeeding **W. W. K. Sparrow**.

The authority of **A. M. Frazee**, electrical engineer of the Duluth, Missabe & Northern, with office at Duluth, Minn., has been extended over the Duluth & Iron Range.

The authority of **W. H. Woodbury**, valuation engineer of the Duluth & Iron Range, with office at Duluth, Minn., has been extended over the Duluth, Missabe & Northern.

F. E. Keenan, trainmaster of the Southern Pacific, at Truckee, Cal., has been appointed district road foreman of engines, with headquarters at Sacramento, Cal., vice **W. L. Hack**, promoted.

W. J. Barnes has been appointed engineer of power plants of the Baltimore & Ohio, western lines; the Dayton & Union Railroad and the Dayton Union Railroad, with headquarters at Cincinnati, Ohio.

Willard Kells, who has been appointed general superintendent of motive power of the Atlantic Coast Line, with headquarters at Wilmington, N. C., as has already been announced in these columns, was born on February 4, 1868, at Dennison, Ohio, and was educated in the grammar and high schools of Cleveland, Ohio. He began railway work on March 1, 1888, as a machinist apprentice with the Erie Railroad, at Susquehanna, Pa., and later was promoted to gang foreman, at Meadville, Pa. On October 1, 1893, he was appointed general foreman of the same shop, and in January, 1896, was promoted to master mechanic, Mahoning division, with headquarters at Cleveland. In August, 1898, he was transferred as master mechanic to the Lima and Chicago divisions, with headquarters at Huntington, Ind. From February 1, 1899, to April 1, 1903, he was master mechanic of the Meadville division at Meadville, Pa., and on the latter date resigned from the service of the Erie to become assistant master car builder of the Union Tank Line, with office at New York. The following month he was appointed master mechanic of the Auburn, Pennsylvania and Seneca divisions of the Lehigh Valley, with headquarters at Sayre, Pa. He was later transferred to Buffalo, N. Y., in the same capacity and was given supervision of all divisions in New York state. He resigned from the service of the Lehigh Valley in December, 1910, to go to the Atlantic Coast Line as assistant to the general superintendent of motive power, with headquarters at Wilmington, N. C., and one year later was appointed assistant general superintendent of motive power, which position he held until his recent appointment as general superintendent of motive power of the same road, as above noted.

A. B. Ford, division master mechanic of the Great Northern, at Great Falls, Mont., has been promoted to general master mechanic, with headquarters at Great Falls, to succeed **J. J. Dowling**, transferred.

The jurisdiction of **A. D. Williams**, superintendent of motive power, Northern district on the Southern Pacific, has been extended to include the Western Pacific, Tidewater Southern and Deep Creek Railroads, with headquarters at Sacramento, Cal.

J. J. Dowling, general master mechanic on the Great Northern, with headquarters at Great Falls, Mont., has been appointed general master mechanic of the eastern district, with headquarters at St. Paul, Minn., succeeding **G. A. Bruce**, deceased, effective September 15.

S. Murray, chief engineer of the Oregon-Washington Railroad & Navigation lines, has been appointed chief engineer also of the Southern Pacific Lines north of Ashland, Ore., the Pacific Coast, and the Northern Pacific Terminal of Oregon, with headquarters at Portland, Ore., effective September 12.

R. E. Chamberlain, division engineer of the Baltimore & Ohio, western lines, with office at Flora, Ill., has been appointed division engineer, with headquarters at Chillicothe, Ohio, vice **A. H. Freygang**, promoted, and **John Hewes, Jr.**, has been appointed division engineer, with headquarters at Flora, Ill., vice Mr. Chamberlain.

R. E. Roe, general master mechanic of the Gulf Coast Lines, has been appointed assistant mechanical superintendent of the New Orleans, Texas & Mexico, the Beaumont, Sour Lake & Western and the St. Louis, Brownsville & Mexico, with office at Kingsville, Tex., and **C. S. Kirkpatrick**, chief engineer of the Gulf Coast Lines, has been appointed assistant engineer maintenance of way of the same three lines, with office at Houston, Tex.

Purchasing

Until further notice, **E. T. Burnett** will perform the duties of purchasing agent of the Norfolk & Western, in addition to his duties as chairman of the Regional Purchasing Committee for the Pocahontas Region.

G. W. Saul, purchasing agent of the Oregon-Washington Railroad & Navigation lines and the Yakima Valley Transportation Company, has been appointed purchasing agent also of the Northern Pacific Terminal of Oregon and the Pacific Coast, with headquarters at Portland, Ore., effective September 12.

Corporate

Executive, Financial, Legal and Accounting

R. B. Albersson has been appointed assistant secretary and assistant treasurer of the Minneapolis & St. Louis, with headquarters at Des Moines, Iowa, and **W. B. Davids** has been appointed assistant secretary, with headquarters at New York.

G. W. Webster, secretary of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been appointed also treasurer, succeeding **C. F. Clement**, formerly treasurer, who is now federal treasurer, as announced in the *Railway Age* of August 9.

I. McQuilkin, vice-president in charge of accounting of the Carolina, Clinchfield & Ohio, has been elected vice-president and treasurer of the corporate organization, with headquarters at Johnson City, Tenn. **Edward C. Bailey** has been elected secretary, with headquarters at New York.

W. G. Besler, president and general manager of the Central Railroad of New Jersey, continues as president under the corporate organization. **F. T. Dickerson**, assistant to the president and assistant secretary, has been appointed also assistant treasurer under the corporate organization.

Felix E. Anderson, assistant to the president of the Terminal Railroad Association of St. Louis and subsidiary corporations, has been appointed also treasurer, succeeding **G. H. Steinberg**, whose appointment as acting federal treasurer of the Alton & Southern, the St. Louis & O'Fallon and other roads in the vicinity of St. Louis was announced in the *Railway Age* of August 3.

Roberts Walker, formerly president of the Chicago, Rock Island & Pacific, has been elected president of the Chicago



W. Kells

& Alton, succeeding **W. G. Bied**, now federal manager. **Charles R. Bosse**, transfer agent in the office of the secretary in New York, has been elected assistant secretary and auditor. **James Williams** has been elected assistant treasurer, and **Charles A. Roberts** becomes corporate counsel. The headquarters of all these officers will be in New York.

J. B. Munson, vice-president and general manager of the Georgia, Southern & Florida, has been elected vice-president of the Southern Railway Company under its corporate organization, with headquarters at Cincinnati, Ohio. **C. B. Hayes**, controller of the Mobile & Ohio, has been elected vice-president of the Southern Railway Company, with headquarters at Mobile, Ala. **C. F. Steele** has been elected vice-president, with headquarters at New Orleans, La. **F. S. Wynn**, secretary, has been made secretary and treasurer of the corporate organization, with headquarters at New York. **W. S. Camp** has been appointed assistant secretary, with headquarters at Richmond, Va. Mr. Wynn has been appointed, also, secretary and assistant treasurer of the Chicago, Indianapolis & Louisville, with headquarters at New York, to succeed **J. A. Hilton**.

C. W. Bunn, general counsel of the Northern Pacific, has been elected vice-president and general counsel for the corporate organization, with headquarters at St. Paul, Minn. **Thomas Cooper**, assistant to the president, has been elected vice-president and land commissioner, with headquarters at St. Paul. **E. A. Gay**, secretary and assistant treasurer, has been elected secretary and treasurer, with headquarters at New York. **E. M. Willis**, assistant to the president of the New York, New Haven & Hartford, has been appointed assistant secretary and assistant treasurer of the Northern Pacific, with headquarters at New York. **F. W. Sweeney**, chief examiner of accounts of the Interstate Commerce Commission at Washington, has been appointed controller of the Northern Pacific, with headquarters at St. Paul. **P. B. Lacy** has been appointed cashier with the same headquarters.

Traffic

William Blackstock Lanigan, whose appointment as freight traffic manager of the Canadian Pacific, with headquarters at Montreal, Quebec, has already been announced in these columns was born on October 12, 1861, at Three Rivers, Quebec. He was educated at St. Joseph's College, Three Rivers, and at Stanstead College. In July, 1877, he began railway work with the Quebec, Montreal, Ottawa & Occidental, now a part of the Canadian Pacific. He subsequently served as telegraph operator on the Grand Trunk until September, 1884, and later served in the same capacity on the Canadian Pacific. He was then agent at various places, and from July, 1891, to December, 1900, was traveling freight agent at Toronto. He later served as assistant general freight agent at the same place, and subsequently became general freight agent, at Winnipeg, of the western division. In March, 1908, he was appointed assistant freight traffic manager of the western lines, which position he held until his recent appointment as freight traffic manager of all Canadian Pacific lines, as above noted.



W. B. Lanigan

Engineering and Rolling Stock

Anton Anderson, principal assistant engineer of the Chicago, Indianapolis & Louisville, has been appointed engineer for the corporation, with headquarters at Chicago.

L. M. Perkins, engineer maintenance of way of the Northern Pacific, lines west, with headquarters at Tacoma, Wash.,

has been appointed engineer for the corporation, with headquarters at St. Paul, Minn.

Herbert W. Cox, real estate agent of the Terminal Railroad Association of St. Louis and subsidiary corporations, has been appointed chief engineer and real estate officer, with headquarters at St. Louis, Mo.

Purchasing

W. F. H. Finke, tie and timber agent of the Southern Railway Company, has been appointed purchasing agent for the corporate organization, with headquarters at Richmond, Va.

Obituary

Payson Ripley, division superintendent of the Atchison, Topeka & Santa Fe, at Chanute, Kan., died in that city on September 10.

George A. Merrill, formerly superintendent of the Cedar Rapids division of the Chicago, Rock Island & Pacific, with headquarters at Cedar Rapids, Ia., died in that city on September 11, following a lingering illness of several months. In the early part of this year, Mr. Merrill was granted a leave of absence on account of illness, as was announced in the *Railway Age* of April 26. Mr. Merrill, who was 51 years old at the time of his death, began railroad work in 1881 as a messenger boy for the Chicago, Burlington & Quincy, at Burlington, Iowa.

John Howe Peyton, president of the Nashville, Chattanooga & St. Louis, at Nashville, Tenn., died on September 14, from the effects of a bullet wound through his temple. Mr. Peyton was born on March 17, 1864, in Howard County, Mo. He was educated at Roanoke College, Salem, W. Va., and began railway work in June, 1881, as a rodman on the Richmond & Louisville. He subsequently served consecutively as a rodman on the Richmond & Danville, instrument man on the Tennessee & Midland and the Farmerville & Powhattan. In 1885 he was appointed resident engineer of the Lynchburg & Durham and in 1888 became resident engineer of the Georgia, Carolina & Northern, and from 1889 to 1891 was assistant to chief engineer of the Charleston, Clendennin & Sutton at Charleston, W. Va. From 1892 to 1898 he was engaged in general engineering and contracting work. He then entered the service of the United States Army; from 1899 to 1900 was on a commission sent to the Philippine Islands by the American Episcopal Church. From 1900 to 1901 he was resident engineer of the Chesapeake & Ohio, and then to 1902 was chief engineer of the Great Eastern. He then served as locating engineer of the Louisville & Nashville until 1903, when he was appointed engineer of construction of the Atlanta, Knoxville & Northern. From 1904 to 1909 he was principal locating engineer of the Louisville & Nashville. In 1909 he was appointed consulting engineer of the North Coast Railroad. The following year he became assistant to president of the Louisville & Nashville; two years later was appointed also chief engineer of construction of the same road, and since January, 1914, served as president of the Nashville, Chattanooga & St. Louis. In 1907, Mr. Peyton issued the first edition of the "American Transportation Problem," dealing with a comparison between transportation facilities afforded by inland waterways and modern railways. A second edition of the book was issued in 1909.



J. H. Peyton

EDITORIAL

Railway Age

EDITORIAL

It was anticipated in some quarters that the work of safety organizations would be materially impeded in the war-time operation of railroads. On the contrary, safety work is becoming increasingly important as a means of conserving man power during a period when it is exceedingly difficult to replace employees lost through the draft, accidents and other causes. The director general of railroads is determined that the services of no railroad employee shall be lost through injuries or death from accident, if precautionary measures can prevent it. He therefore created the Safety Section of the Railroad Administration which is directing the activities of all existing safety organizations and is creating such organizations on Class I railroads which did not have them. The increased responsibility of railroad safety officers was emphasized in the railroad session at the National Safety Council, the proceedings of which are outlined elsewhere in this issue. In fact, the keynote of the meeting was "conserve man power to win the war."

Safety Work to Conserve Man Power

The officers of the Railroad Administration should feel highly gratified with the results following their support of the Roadmasters' convention which was held last week in Chicago. The success of this meeting was due in a large measure to the encouragement which the managements gave to the men who desired to attend and to the presence at the various sessions of regional directors and members of their staffs. The attendance was double that of any previous year, while the interest shown surpassed any previous record. The loyalty to their country and enthusiasm for the work in this time of stress which these men gained from this meeting were alone sufficient to justify all of the expense involved. The relation of their work to the winning of the war was discussed by Regional Directors Bush, Holden and Winchell, and also by others, in a way that brought an increased realization of the responsibility of railway men under present conditions. More than this, the discussion of the possibilities of the more general reclamation of materials and of methods for the conservation of labor, brought out many helpful suggestions. This convention illustrated the great possibilities for good inherent in meetings such as this. The railways need more of them now and in the peace times which are to come.

Roadmasters' Convention Justifies Support

The officers of the Railroad Administration should feel highly gratified with the results following their support of the Roadmasters' convention which was held last week in Chicago. The success of this meeting was due in a large measure to the encouragement which the managements gave to the men who desired to attend and to the presence at the various sessions of regional directors and members of their staffs. The attendance was double that of any previous year, while the interest shown surpassed any previous record. The loyalty to their country and enthusiasm for the work in this time of stress which these men gained from this meeting were alone sufficient to justify all of the expense involved. The relation of their work to the winning of the war was discussed by Regional Directors Bush, Holden and Winchell, and also by others, in a way that brought an increased realization of the responsibility of railway men under present conditions. More than this, the discussion of the possibilities of the more general reclamation of materials and of methods for the conservation of labor, brought out many helpful suggestions. This convention illustrated the great possibilities for good inherent in meetings such as this. The railways need more of them now and in the peace times which are to come.

"Save waste paper but don't waste paper." This, a slogan suggested by the War Industries Board, is one that all of us should bear in mind. The newspapers and periodicals have recently been called upon not only to eliminate exchange copies, reduce the number of free copies to advertisers, etc., but also

Don't Waste Paper

to cut down the number of their pages, etc. These savings will help considerably in saving paper, but they will have to be supplemented by savings in stationery, in packages and by reductions in the use of paper or paper products of all kinds. And similarly waste paper must be saved instead

of being burned or thrown away, for the simple reason that in itself it represents one of the raw materials of paper manufacture. The reason for all these things is not simply due to a shortage of paper; it represents far more. First, there has been a great increase in the government's requirements, incident to the establishment of new departments, to the shipment of commodities in paper containers of one kind or another overseas, etc. The entire output of plaster board, to take one example, is being utilized for the construction of camps, hospitals, etc. Second, paper manufacture uses a considerable quantity of fuel—from one pound of coal for cheaper grades to three pounds for better grades being required for each pound of paper produced. On the basis of averages, a saving of consumption of 25 per cent in paper has been estimated to mean a saving of 2,500,000 tons of coal yearly. Third, many of the chemicals used in paper manufacture are of prime importance for ammunition and for the new chemical warfare brought upon himself by the barbarous Hun. Chlorine, sulphur and caustic soda, particularly, are needed for these purposes. A reduction in the use of paper will further save transportation space; it will save money and it will save labor, all three very important elements at present. In other words don't waste paper—it and the materials from which it and its products are made and the facilities for making it are too valuable under war-time conditions to permit of waste.

An active and logical campaign is being conducted by the Fuel Conservation Section of the Railroad Administration

Air Consumption and Fuel Economy

and air brake men in general to show the great waste in fuel which accompanies the waste of compressed air. Instances reported from time to time indicate that there is a lack of appreciation of the relation between the two. In one instance it was found that locomotive air compressors were being used to supply high pressure air to a shop, while a perfectly good air compressor at the same plant was being operated far below its capacity to supply low pressure air to the yards. By working this compressor to full capacity and by the use of a reducing valve, enough air would be compressed for both the high pressure and low pressure systems without any need of the locomotive air compressors. Tests show that train-pipe leakage is a source of great waste. Leakage of seven pounds a minute on a 50-car train absorbs 91 per cent of the capacity of a 9½-in. locomotive air compressor. If, as a prominent air brake man once said, a label were placed on one of the two compressors that usually accompany locomotives, stating that "this compressor is for the purpose of supplying brake pipe leakage only," the waste due to this leakage would become more evident to the operating men. The trouble is, we think only of the air and not of the coal used to compress the air. Railway men have become accustomed to look upon leaks in the air lines as necessary evils. It has not been profitable to go to the expense of stopping all of these leaks. At the present time the conditions have changed tremendously. We must not look upon wasted fuel from a monetary standpoint. The fuel conditions are such that there is an anticipated shortage of 75,000,000 tons this year. It is not the money that is saved by fuel economy

that is to help win the war, but the fuel itself. It will take a tremendous amount of educational work to get everyone to appreciate this, but it is well worth while. Fuel is fuel, not money, and is far more valuable than what we have to pay for it. Every pound saved will do more towards winning the war than many times the amount of money it is worth.

The annual convention of the Railway Signal Association, which was held in New York last week, indicated clearly the earnestness and the purpose of the railway signal officers and men to do all in their power to carry on the work of the Association in a manner best adapted towards the winning of the war. This is the first convention which has been held since the great change has occurred in the relations which the railroads bear to the government. Because of this change and the proposal to amalgamate the various railroad associations, there was considerable speculation beforehand as to the number of men who would be in attendance. It was gratifying to both that the sessions were well attended, while the members were earnest and enthusiastic in their work. It is to be regretted that the railway managements have not urged more of their men to attend such meetings in the past, as signal men cannot help but benefit from an interchange of ideas which can only take place in gatherings such as this. At the conclusion of the meeting last week the men left with an added incentive to help win the war by doing all in their power to back up the government in the efficient operation of the railways, as the work of the association is directed along the lines of facilitating traffic and increasing the safety of operation. Some of the important matters considered were the studies being made with reference to handling trains by signal indications without train orders, the problem of signaling single track roads and the development of automatic train control devices.

"Bullets or Bolts"

"EVERY TRACK SPIKE SAVED means more bullets." This sentiment, expressed by several speakers at the convention of the Roadmasters' Association at Chicago last week, summarizes the material problem now confronting the railways of this country. Non-essential industries have already been denied the steel which they ordinarily require, but the railways are essential to the war program and their needs are therefore being supplied. However, the rapidly increasing military requirements have brought about a condition whereby there is not a sufficient steel producing capacity to meet the demands for munitions as well as for the so-called essential industries, including the railways.

Obviously one or the other must give way and at this critical time no railway man desires to curtail the supply of shrapnel, bullets or shells in order to give him rails, spikes or car steel so long as there is any reclaimable material along his line which can be made to serve until the crisis is past. This is the basis for the appeal which the Railroad Administration is making for the collection and reclamation of all materials. In past years the decision as to the extent to which materials should be reclaimed was based on considerations of economy. Now this is secondary to the ability to save material at any reasonable cost.

No road can determine the savings it can effect until it gives the most careful attention to this subject. On one line the track walkers carry wire hoops on which they string nuts and washers picked up in the course of their regular work. These materials are now worth about eight cents per pound, but in order to compensate the stores department for its expense in handling and sorting them, a credit of only

three and one-half cents is allowed the maintenance of way department. Even on this basis, the credit on this account alone in one recent month on the road referred to averaged \$40 per section, indicating that in that period each track walker collected over one-half ton of nuts and washers. Extended over the railway mileage of this country, this would release every month for bullets over 30,000 tons of steel now going into nuts and washers.

On this same road, it had previously been the practice for the section forces to collect the drawbars found along the right of way at the section headquarters where they were loaded on a scrap train once each month and sent to system headquarters. This practice has been changed so that these drawbars are taken to the station daily by the section forces. They are then loaded on the way freight each day and sent to the nearest car repair point where they may be needed. In this way local demands are supplied promptly with greatly decreased transportation, while the bars are returned to service with the minimum delay, which in itself reduces the stock necessary to keep on hand. The advantage of this plan is indicated by the fact that one local train on this road handled an average of 26 drawbars per day last month. This again released more shrapnel for the use of our men in their march to Berlin.

These are typical of hundreds of ways in which the railroads of this country can assist in supplying their own needs for steel and thereby reducing their actually necessary demands to the minimum. There is no more effective way for railway men to assist in the winning of the war than this. It is therefore their duty to use it.

Increases of Railway Earnings and Expenses

A QUESTION WHICH is of great interest and importance to the owners of railroad securities, to the officers of the Railroad Administration and to the traveling and shipping public is whether the advances in freight and passenger rates made in June will prove sufficient to offset the increases which are occurring in railway operating expenses. An analysis of the statistics showing the earnings and expenses of the large roads in July, as compiled by the Interstate Commerce Commission, does not inspire much optimism.

In July, 1918, freight rates in eastern territory were about 43 per cent higher, and in southern and western territory about 25 per cent higher than in July, 1917. These advances in rates, assuming no increase in traffic, should have resulted in an increase in earnings of approximately \$80,000,000. The actual increase in freight earnings was \$80,000,000, indicating that there was some increase in the amount of freight handled. In July, 1918, passenger rates throughout the country were about 50 per cent higher than in July, 1917. Assuming no increase in business handled this should have caused an increase in passenger earnings of approximately \$37,000,000. The actual increase was \$31,000,000, indicating a decline in passenger business. The total increase in earnings which the advances in freight and passenger rates should have theoretically yielded was \$117,000,000; and this is just what it did yield, showing that total freight and passenger business was practically stationary. Larger earnings from other sources made the total increase in earnings during the month \$120,000,000. At this rate the increase in earnings annually would be approximately \$1,450,000,000.

Operating expenses in July, 1917, were \$238,000,000, and, as reported for July, 1918, they were \$317,000,000, an increase of \$79,000,000. But the figure for July, 1918, is really not correct. It includes only \$25,000,000 for advances in wages—in other words, only the first of the sev-

eral advances in wages granted by the director general—whereas, as shown in detail elsewhere in this issue, several additional advances since have been granted. Some of these are retroactive to January 1, 1918, others are not. In the aggregate all the advances in wages the Railroad Administration has made will aggregate at least \$50,000,000 a month. Now, allowing nothing for advances in wages, the increase in operating expenses in July would have been approximately \$55,000,000, or at the rate of \$660,000,000 a year. Add to this advance in wages at the rate of \$600,000,000 a year and they may aggregate \$650,000,000—and you have an increase in operating expenses at the rate of approximately \$1,300,000,000 a year, or only \$150,000,000 a year less than the rate at which earnings are increasing. Furthermore, the train service employees, numbering about 350,000, already are asking for further advances in wages.

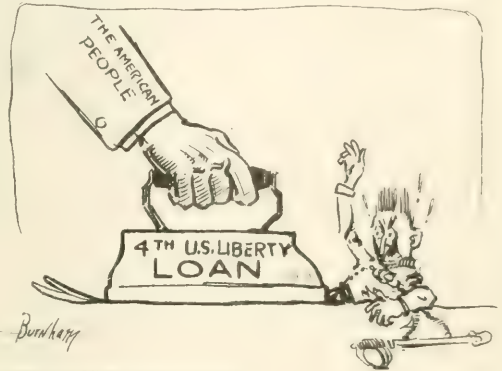
The operating income of the railways in the first six months of government control was approximately \$300,000,000, less than the amount which will be required, on the average, to pay six months' standard return to the railway companies. In other words, the government incurred approximately that much deficit in operating the railways. It would appear that with increases in expenses so nearly keeping pace with increases in earnings, on the present basis of rates and wages, the Railroad Administration cannot grant any further large advances in wages without incurring the danger of being forced to make further advances in rates in order to make up the deficit already incurred and to prevent an additional one from being incurred.

Of course, the foregoing estimates are based chiefly on the statistics of a single month. Unfortunately, however, every estimate of the annual increase in operating expenses which is made, whether based upon the experience of a single month, or of a series of months, is larger than the last preceding estimate. In our issue for August 9 we estimated the annual increase for Class I roads at \$1,040,000,000. In our issue for August 30, on the basis of later information we estimated it at \$1,200,000,000. Now, on the basis of July results, it is necessary to estimate it at the rate of \$1,300,000,000. It would appear that one of the main things needed on the railways just now is a tremendous drive to keep down operating expenses.

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THE DRIVE FOR SUBSCRIPTIONS to the Fourth Liberty Loan will already be under way by the time this brief note comes to the attention of many of its readers. Six billion dollars is to be raised in 4¼ per cent Liberty Bonds between September 28 and October 19. Railwaymen have what is at once a difficult and an easy task before them in this drive.

The difficult part lies in the way in which they must live up to their former records in these loan campaigns. It may bear repeating that in the first loan they subscribed creditably; in the second loan they doubled their first loan totals; then in the third loan they considerably more than doubled their second loan totals. The total amount which will be raised in the fourth loan, \$6,000,000,000, is double that of the third loan. It certainly does not seem too much to say



One of the Best Ways to Flatten Him Out

that railwaymen to keep up their enviable record and their proper proportion may again be expected to double their own totals.

The easy part of the task is the far-reaching intensive organization rapidly being built up to solicit railwaymen's subscriptions; office committees, terminal committees, division committees, shop committees and all sorts of committees—every man in railway service will be reached.

But insistence on 100 per cent subscriptions does not seem to be enough. There should be 100 per cent subscriptions, but in addition subscriptions in 100 per cent amounts. The average subscription per railroad subscriber in the Chicago district in the third loan was \$72, worked out on a basis of 84 per cent of the employees as subscribers. The Liberty Loan Committee of the Seventh Reserve District has estimated that on that basis and on the basis of 100 per cent subscribers in the fourth loan to double the total of railwaymen's subscriptions an average subscription in the fourth loan should be expected of \$120 per railway subscriber. In view of the recent wage awards and the good pay which railwaymen are now receiving that amount should easily be reached, particularly inasmuch as payments may be made in eight monthly installments, the eight months period not beginning until January in the case of those still paying on the third loan.

Show what you think of Kultur—of the happily rejected Austrian peace squeal—of the actions of a race of barbarians that murders women and children, that wantonly destroys places of worship, that mutilates prisoners—SUBSCRIBE. Then show your respect for our soldiers over there who carry the message of right and liberty to the misguided Hun—Lend like they Fight—Subscribe to your UTMOST.



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Contest: New York World

Doings of the United States Railroad Administration

Short Lines Reject Proposed Contract; Wage Increases Aggregate Over \$600,000,000

DIRECTOR GENERAL McADOO has announced the delivery of 47 new locomotives to various railroads during the week ending September 14, of which 27 were built by the American Locomotive Company, 5 by the Lima Locomotive Corporation and 15 by the Baldwin Locomotive Works. Of these, 5 were of the standard Mikado type and the others were on orders previously placed by the railroads.

Wage Increases Aggregate Over \$600,000,000

The orders issued by Director General McAdoo making increases in the wages and changes in the working conditions of railroad employees have followed each other so rapidly and have overlapped to such an extent that it has been difficult to follow them carefully. Recent estimates indicate that the increases already made, if applied to a full year, would aggregate between \$600,000,000 and \$650,000,000 per annum, as an addition to a payroll which for the Class I roads amounted to \$1,750,000,000 in 1917. Moreover, the end has not yet been reached because the Board of Wages and Working Conditions has still to present to the director general its recommendations on the application of the telegraph operators for a further revision of their wage scale. The number of employees of the Class I roads last year was 1,740,000. They received an average of somewhat over \$1,000 a year and their estimated increase this year therefore averages over 30 per cent or more than \$300 per man. These figures are merely rough estimates because the facts that the increases as ordered have been applied to the wages in effect at a previous date, including any increase received in the meantime, and that the classification of employees used in the orders is different from that according to which statistics have been kept, have made it impossible to calculate with anything like exactness the full effect of the orders as measured in money. The difficulty is further increased by the fact that the number of employees in service has fluctuated considerably since the latest statistics were compiled and in many cases has been largely reduced.

The first order increasing wages issued since the government assumed control of the railroads was General Order No. 27, issued on May 25, and based on the recommendations of the Railroad Wage Commission. It applied to all employees receiving less than \$250 a month and was made retroactive to January 1, 1918. The basic feature of the order was a scale of increases per month, ranging up to 43 per cent, together with daily, hourly, mileage and piecework scales based on the monthly scale, the increases to be added to the wages in effect on December 31, 1915. The total addition to the payroll as a result of this order was estimated at \$300,000,000 to \$325,000,000 per year. As this included any advances which had been made by the railroads since that date it was found that many employees would receive little or no advance from the order. Cases of this kind and others where the employees were not satisfied with the result were submitted to the Board of Wages and Working Conditions for further consideration and recommendation to the director general.

Supplement No. 2 to General Order No. 27, issued on July 3, extended the increases in wages to the employees of the Pullman Company, operating department, effective on January 1, 1918. It was estimated that this involved an additional increase of \$2,750,000.

On July 25 the director general issued Supplement No. 4 to General Order No. 27, making a revision of and further

increases in the wages of mechanical department employees, based on the recommendations of the Board of Wages and Working Conditions. This order applied to machinists, boilermakers, blacksmiths, sheet metal workers, electrical workers, carmen and molders and their helpers and apprentices, estimated to include in round numbers 500,000 men. The order superseded the provisions of General Order No. 27 as applied to these employees and provided minimum rates and increases based on the rates in effect as of January 1, 1918. The increases were made retroactive to that date and involved an additional increase in the payroll, above that resulting from General Order No. 27, estimated at approximately \$150,000,000 a year.

An addendum to Supplement No. 4 issued on September 1 and effective on that date established new rates for coach cleaners. Supplement No. 5 to General Order No. 27, issued on August 9, extended the provisions of Supplement No. 4 to the corresponding classes of employees of the operating department of the Pullman Company.

Supplement No. 7 to General Order No. 27 was issued on September 5 and provided a new scale of increases for clerical forces and stationary engineers and firemen, oilers, boiler washers, power transfer and turntable operators, and common laborers in shops, roundhouses, stations, storehouses, warehouses, docks and yards. Various grades of increases over the rates in effect on January 1 were provided and made effective on September 1, superseding after that date the provisions of General Order No. 27 for the classes of employees affected.

Supplement No. 8 to General Order No. 27, issued on September 5, applied to employees in the maintenance of way department, except mechanics and helpers who were provided for in Supplement No. 4, including building, bridge, painter, signal, construction, mason and concrete, water supply, maintainer, plumber, coal wharf, coal chute, and fence gang foreman and their assistants, pile driver ditching and hoisting engineers, bridge inspectors, track foremen and assistants, track laborers, and miscellaneous employees. The increases were based on the rates of January and were also made effective September 1, superseding after that date the provisions of General Order No. 27.

Both supplements were based on the recommendations of the board. Generally speaking, the wage increases contained in Supplements No. 7 and No. 8 amounted to \$25 a month or 12 to 13 cents an hour, including any increase granted under the general order. A statement issued by the Railroad Administration said the two supplements affected nearly one million employees and it has been estimated that they involved an additional increase in the payroll of from \$150,000,000 to \$175,000,000, per annum.

The Board of Wages and Working Conditions is expected to submit its recommendation to the director general on the application of the telegraph operators for further consideration. The train dispatchers, who were not satisfied with what they received from the general order, also applied to the board, but on the ground that they are officers their application was transferred to the director general's office, and has been considered by the Division of Operation.

The brotherhoods representing the transportation department employees have also recently applied for further consideration of their wage scales on the ground that the application of the increases of the general order to the rates in effect in 1915 has re-established certain differentials and

other relations which had been ironed out as the result of the wage adjustments following the Adamson law. It is expected that they will be given a hearing about the first of the month.

Director General Declines Proposal for Test Suit on Compensation Contract

Director General McAdoo on September 19 gently but firmly declined the proposal of the committees representing the National Association of Owners of Railroad Securities for "co-operation in securing an adjudication" upon the questions at issue between the government and the association's committees as to the form of the compensation contract with the railroads, which the director general had previously decided against them. The proposal, which was adopted at a meeting of the financial committee of the association, and laid before the director general by Samuel Untermyer, was in brief that the contracts be executed by



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U. S. Railroad Administration Flag for All Vessels Under Its Control

the carriers except one and that a friendly test suit be instituted on behalf of that one. If the suit were decided adversely to the carrier the controversy was to be deemed ended but if the decision should be adverse to the government it was proposed that all contracts be amended to conform to the decision. The director general preferred to end the controversy in about half an hour.

Counsel for the various roads have been meeting with the representatives of the Railroad Administration adjusting those details of the contracts which must be arranged before they are presented for signature.

Labor Day Ticket Sales at Washington

As illustrating the enormous tax on railroad facilities at the present time, a report has just been made showing that on the two days preceding Labor Day, a larger number of railroad tickets were sold in Washington than ever before. In order to provide for the expected heavy business, extra ticket windows and clerks were arranged for at the Union station. Including sales both at the Union Station and at the consolidated ticket office, a total of 13,636 tickets were sold on Friday, August 30; these tickets aggregating \$97,411.31. On Saturday, August 31, a total of 23,013 tickets were sold, aggregating \$127,503.94. Tickets for the two days, therefore, aggregated 36,649, for which \$224,915.25 was collected.

The greatest number of sales made on any previous day, was on December 22, 1917, when a total of 13,047 tickets were sold, aggregating \$78,605.20.

Further Increase in Express Rates Proposed

Director General McAdoo on September 19 requested the Interstate Commerce Commission to advise him as to how express rates shall be further advanced sufficiently to provide the American Railway Express Company with \$12,000,000 of additional revenue with which to pay increased wages. The express company has suggested a method estimated to produce \$23,679,000, of which approximately half would go to the director general, under the arrangement by which slightly over 50 per cent of the express revenues go to the railroads for express privileges, and the other half would be available for wages. There may be some interest for railroad men in the fact that the director general did not ask the commission as to whether additional revenues are needed but merely as to whether the method suggested, in its opinion, is proper, and if not what method would produce the desired result. The commission promptly gave notice that on October 8 it will hear testimony and argument at Washington by the express companies and any other persons interested in regard to the questions proposed by the director general.

Mr. McAdoo's letter to the commission was as follows:

"The amount realized from the advances in express rates recently allowed by you, approximately \$10,000,000, has been entirely absorbed by the American Railway Express Company in making advances in the wages of its employees. I am satisfied that those wages must be still further advanced and that approximately \$12,000,000 of additional revenue must be had for that purpose. I have applied to the express company for a suggestion as to what advances should be made in the present express rates to yield that additional income and have received from that company the memorandum attached.

"Acting under Section 8 of the federal control act I request you to advise me:

"1. Whether in your opinion, assuming that approximately \$12,000,000 of express revenue must be raised, the method of advance suggested by the express company is a proper one? If in your opinion it is not, will you kindly state what method should be followed.

"2. If in your opinion the method suggested by the express company is proper, will the amount of advance proposed by it yield the sum required; namely, approximately \$12,000,000? If not, what advance under that method will be required to produce that result? If you believe that some different method should be adopted, please indicate the amount of the advance which should be made.

"At the present time the express business is being conducted at a deficit which will be largely increased by the advances in wages which must be made. This deficit is borne by the Railroad Administration. You will therefore appreciate the importance of as speedy action as may be consistent with a proper consideration of the questions submitted."

The method suggested by the express company was as follows:

"It is suggested that the rates in Zone 1, both intra and inter-zone be increased three scales; that is to say, that the minimum rate of 55 cents be increased to 71 cents, and each rate above that increased accordingly, and further that 10 cents per 100 lb. be added to the commodity rates. This will make an increase of first class as a maximum of 16 cents or 17 cents per 100 lb.; on second class 12 cents, and on commodities 10 cents; with proportionate increases on shipments of less than 100 lb.; that the rates both intra and inter-zone in all other zones be increased by advancing two scales and adding 10 cents per 100 lb. to commodity rates. This will result in a maximum increase on first class of 10 cents or 12 cents, second class eight cents and commodities 10 cents per 100 lb., with a proportionate increase

on shipments of less than 100 lb. It is estimated that this will produce on Zone 1 business \$17,987,000 and on all other business \$6,642,800, or a total of \$23,679,000, of which the express company will get \$11,780,808, the balance \$11,898,697 going to the director general in increased express privileges."

The above was made public by the commission after Charles E. Elmquist, Washington representative of the National Association of Railway and Utilities Commissioners, had written a letter to the director general suggesting that the matter be presented to the interstate and state commissions for hearing and consideration.

Short Lines Reject Proposed Contract

The committee representing the American Short Line Railroad Association on Tuesday definitely declined to accept the form of contract offered by the Railroad Administration to be entered into with the short line railroads relinquished from federal control in the week before July 1. The contract offered proposed to take the short lines back under a limited or partial form of federal control, without guaranteed compensation, under which possession of the property would remain with the company subject to the right of the director general to take it into actual possession at a later date under a new contract. It proposed that the company should continue to operate its property and retain all revenues and pay all expenses without any obligation on the part of the director general for the payment of expenses or for any risk or accident. It provided for the rescinding of the order of relinquishment and for division of joint rates on the basis in effect before federal control unless such division should be found to be unfair by the Interstate Commerce Commission after investigation. The short lines were also to receive their proportionate share of any increase in rates and were to be guaranteed an equitable allotment of cars and, where feasible, of motive power. They were to pay the per diem rentals in effect or such as might be established by the director general, and the Railroad Administration was to pay similar rentals for equipment belonging to the short lines.

In place of compensation it was proposed to insure to the company in any year the same proportion of competitive traffic which it had enjoyed during the three years ending June 30, 1917, or to make an allowance to the company in money if traffic were not so routed. Short lines were to be allowed the right to use the purchasing agencies of the director general in purchasing materials and supplies, to have the benefit of standard prices fixed for supplies, and to have repairs done in the shops of the trunk line railroads to the same extent as before federal control and at reasonable prices. The company was to be required to accept the contract in full adjustment, settlement and satisfaction of any and all claims against the director general.

The proposed contract was drawn by the representatives of the Railroad Administration after numerous conferences with the short line committee, one of which last week was attended by the director general. The short line committee proposed several modifications which were not allowed and on finally rejecting the contract asked for a further hearing before the director general. The representatives of the short lines are insisting on a basis of compensation such as that provided for in the federal control act which is being used as the basis for the contracts with the larger railroads.

Mechanical Standards Adopted

The Committee on Standards for Cars and Locomotives at its meeting last week adopted most of the specifications and general design which had previously been approved for the proposed standard 70-foot baggage cars and for the proposed 60-foot cars, although the matter of truck design


was not definitely decided. Specifications for the 70-foot car are now in the hands of the purchasing committee which is expected to ask for bids shortly. Revised specifications for the lighting equipment, to which there had been some objection on the part of the lighting specialty companies, were adopted on the recommendation of a sub-committee after consultation with six prominent electric lighting engineers.

The committee gave consideration to the use of substitutes for steel for headlining of baggage cars, eliminated fish racks from the 60-foot cars, appointed a committee to make a special study of the use of folding devices and began work on proposed standard rules for the inspection of spark arrester devices in locomotive front ends and for the inspection of ash pans to insure greater fire protection. The committee also recommended standards for tinware in accordance with the standards approved by the Master Mechanics' Association.

Fuel Conservation at Stationary Plants

On September 25, fuel conservation circular No. 14 was issued by the Fuel Conservation Section, covering the use of fuel at railway stationary plants. About 17,000,000 tons of coal will be consumed in these plants on the roads in the United States and its cost, delivered to the furnace door, will be approximately \$60,000,000. The attempt to conserve the fuel used in these miscellaneous power and heating plants is apt to be relatively more fruitful than the efforts directed towards locomotive fuel consumption, because the general efficiency of small isolated plants is usually much lower than that of the locomotives and they are ordinarily subjected to less thorough supervision. The circular mentions many methods by which savings can be most readily affected in respect to the design and equipment of the plants and their maintenance, and to the methods of operation.

* * *



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Lend Like They Fight

Annual Meeting of the Railway Signal Association

Zinc-treated Ties, Take-siding Indicators and a Number of Other Details Are Considered

THE ANNUAL MEETING of the Railway Signal Association was held at Hotel McAlpin, New York City, September 19 and 20, with about 250 members in attendance. W. H. Elliott, (N. Y. C.) president of the association, occupied the chair, and H. S. Balliet, (N. Y. C.) acted as secretary of the meeting.

The president, in his opening address, dwelt mainly on the changes in the relations of the railroads to the government during the past year. He said, in part:

"Our association, among others, has been approved by the director general of railroads to continue the valuable work we have been doing; and until events arise which may make other action desirable we should each do our part in carrying on committee work and the work of the association

... but, of course, without detriment to our regular work at home. Without the transportation furnished by the railroads the participation of this country in the war would be almost impracticable, and to the successful results now being accomplished the use of signals and their proper maintenance has in large measure contributed. In practically no other department is the work so entirely one of safety. While the use of signals increases the capacity of a road it is to the increased safety of operation of trains that the growth of signaling in this country has been largely due. The work of the association in establishing standards and practices has been of great benefit. In unity we find strength.

"At the request of the director general of railroads this association has conferred with other approved associations in formulating recommendations looking to the amalgamation of all into one association. No opinion can be expressed at this time as to the final outcome. It is desirable that we cordially comply with the expressed wish of the director general and assist in the formation of an amalgamated association, confidently leaving to the future to determine the details of our work and the organization we may maintain.

"The regional committees of the association have done much good work and should be encouraged to continue their work of education and co-operation.

"Our service flag shows that 59 of the members of our association have enlisted in the service of our country. Of this and in our knowledge of the high personal character, ability and experience of these men we are justly proud; to them we extend our confidence, honor and regard, knowing full well that in all situations in which they may be found they will acquit themselves with honor to their profession and to their country."

The secretary reported 78 new members, and three reinstated, but this addition was more than offset by the deaths, lapses and 59 names put upon the reserve list because of being in the military or naval service, leaving the net membership at present at 1,191. The soldiers, however, should be added to this number, as the only technical change in their status is that while they are in the national service they are not required to pay dues. Each issue of the Proceedings of the association contains a picture of the service flag, with stars indicating the number of members thus set apart.

The board of directors reported the treasury in good condition. W. H. Arkenburgh has presented to the association his signaling library, which is to be kept by the secretary.

Zinc-treated Ties

The most interesting discussion of the meeting was on a subject which did not appear in the program, namely, the

resistance of ties as affecting the economical operation of track circuits. Consideration of questions about creosoted ties brought out the fact that because of the scarcity of creosote oil at the present time zinc-treated ties have been used in many places; and the zinc in the ties comes too near being a good electrical conductor. A number of members said that they had been obliged to shorten their track circuits where these ties were used. It appears that trouble with ties is most prevalent in hot and dry weather and least so in wet and cold weather. After about one year the difficulties usually disappear. On the Union Pacific track circuits have worked satisfactorily on track sections 2,000 ft. long with zinc-treated ties. Brine from refrigerator cars has caused similar trouble. The bad effects of brine have been somewhat modified by oiling the roadbed; but those who have used oil finally concluded that the best remedy was to shorten the track sections.

F. W. Bender (C. R. R. of N. J.), said that on one section of that road $1\frac{1}{4}$ miles long, at Whitehaven, Pa., a section which, for sixteen years, has been operated with four cells, two series of two each, with one-half ohm resistance between the battery and the rails, and a normal current of about 600 milliamperes at the battery end of the block and 110 milliamperes through the five ohm relay at the other end, the introduction of zinc-treated ties made trouble. Because of a derailment 2,580 new ties had to be laid in this section and these were zinc-treated; and at once it was found impossible to make the relays pick up. To properly operate the signal it was necessary to put in 16 cells of battery; four banks of four cells each. The leakage caused by the ties resulted in a current at the battery end of 4.2 amperes, in dry weather; and after a rain this rose to 9 amperes; and only 80 or 90 mills could be got at the relay.

Some of the zinc-treated ties were tested, conductors being attached to the tie at two points 4 ft. $8\frac{1}{2}$ in. apart; and the following resistances were found: 2,200, 1,700, 401, 400, 388, 329, 326, 260, 220, 125, ohms. The zinc-treated ties in some cases generated a current of their own, a difference of potential of 20 milli-volts being recorded at two points on the tie 4 ft. $8\frac{1}{2}$ in. apart. The block section was divided in the middle but still the current required was very excessive.

Mr. Bender propounded the question whether it would not be more economical to use untreated ties; in other words, whether the zinc treatment prolongs the length of life a sufficient amount to cover the excessive cost of battery. At present the cost of battery material for this one section amounts to from \$75 to \$100 a month, as compared with \$3.75 before the change in the ties. To divide the section into five or six short sections would cost from \$1,200 to \$1,500.

Mr. Bender knew of some roads which would not permit the use of zinc-treated ties in block signaled territory. He understood that the conclusion had been reached by those roads that the additional life of the ties was purchased at too high a cost. Just now there is another reason for economizing in zinc and copper, because the government needs these metals in the prosecution of the war.

The whole question was referred to committee No. 4, C. F. Stoltz (C. C. C. & St. L.), Cincinnati, chairman, for investigation, with instructions to make public, as early as possible, any instructive conclusions reached by the committee.

Committee Reports

Taking up the several committee reports the meeting discussed first that of committee No. 2, mechanical interlocking, C. J. Kelloway (A. C. L.), chairman. This committee presented a specification for the improved Saxby & Farmer interlocking machine, and a unit specification for painting, including material. There was a considerable amount of discussion of the interlocking, and a brief discussion of the painting, but both specifications were finally adopted and submitted to letter ballot.

This committee also reported a specification for pipe compensation which, after a long discussion, was approved for submission to letter ballot, except the table shown on page 258 of the September issue of the *Journal* of the Association. This table was criticized as not containing enough detail to enable workmen in the field to use it with facility. The committee will present a revised table at the next meeting.

Committee No. 10, J. A. Peabody (C. & N. W.), chairman, made a report summarizing a number of subjects on which it had presented discussions in the March and other preceding meetings. It reaffirmed its opinion that overlaps are not desirable for following movements, and this was approved for submission to letter ballot. The same action was taken concerning the designs presented by the committee and printed in the March *Journal*, pages 46 to 62 inclusive, for fixed stop boards, speed limit boards, resume speed, yard limit, crossing one mile, whistling post, etc.

This committee reported on "take-siding indicators," and presented drawings showing the practice on eight different railroads. The drawings appear on pages 276 and 277 of the September *Journal*. Of the large number of railroads which had been communicated with by the committee the great majority reported that no such indicators were in use.

There was a long discussion on the fundamentals governing the application of these indicators, as laid down by the committee. The declaration that such an indicator should always be located not less than breaking distance from the switch was criticized by several members, as was also the recommendation that the light on the indicator should always be a flashing or winking white light; and the list of fundamentals was finally referred back to the committee for further action.

This committee presented a large amount of matter as information, including a report on the problem of signaling single track roads, printed in the March *Journal*, pages 36 to 46 inclusive; a report on various types of light signals for day and night indications, given on pages 6 to 11, inclusive, of the March *Journal*; and notes on various automatic-stop inventions, given on pages 62 and 63 of the March *Journal*. An account of the use of position light signals on the Pennsylvania Railroad, presented as supplemental information, was printed in the *Railway Age* of July 26, page 177.

Committee No. 3, F. B. Wiegand, chairman, submitted typical circuits for power interlocking, shown in diagrams printed in the March *Journal*, pages 26 to 30. This matter was accepted as information. It also presented a specification for power interlocking which, after a long discussion, was referred back to the committee. This specification is printed on pages 198-204 of the *Journal* for June.

A specification for impregnated fibre conduit for the protection of insulated wires and cables, printed on pages 211-216 of the *Journal* for June was, after considerable discussion, and the acceptance by the committee of numerous changes in detail, approved for submission to letter ballot.

Committee No. 5, L. R. Mann, chairman, presented some revisions of certain rules in the code for the maintenance of mechanical interlocking plants, as shown in the *Manual* of 1913. The rules, as revised, were approved for submission to letter ballot, the meeting having first instructed the committee to renumber the instructions as made necessary by the revisions.

This committee presented some information, printed in the *Journal* for June, pages 170-171, concerning the handling of trains on single track without train orders, summarizing replies from 15 different roads, without, however, giving the names of the roads. The rules for operating trains by signal indications, without written orders, as in use on the Nashville, Chattanooga & St. Louis between Cowan, Tenn., and Sherwood, are given in the *Journal* for June, pages 172-177.

Committee No. 13, on electric testing, P. M. Gault, chairman, presented a revised drawing (No. 1422) of an adjustable resistance for testing, and this was adopted for submission to letter ballot. The committee proposes to present at a future meeting a smaller instrument.

Committee No. 6, standard designs, F. P. Patenall, chairman, presented a number of new and revised designs. The meeting adopted and submitted to letter ballot the designs for a signal blade, page 17, March; a semaphore lamp No. 1100, page 188, June; electric lamp No. 1222, page 189; details of same, page 190; ladders, etc., Nos. 1362-1372, pages 9-15 March; double tang ends No. 1376, page 16, March; and crank bearings for 6-in. pipe, No. 1398, page 191, June.

A specification for signal roundels, lenses, and glass slides was presented by R. E. Trout, chairman of a sub-committee of Committee No. 6, and this, after slight changes suggested by one or two members, was adopted for submission to letter ballot. The committee will add to the specification a paragraph relative to packing and marking. Some information on the subject of illumination was presented as a supplement to this report.

A drawing, No. 1257, showing the application of interlocking fittings to a single switch, presented by Committee No. 6 for discussion, was made the text of a long talk on switchrods, dealing principally with the question whether they should be fitted in a vertical or a horizontal position; and it was voted as the sense of the meeting that the horizontal rod is preferable.

A specification for single phase track transformer, presented by Committee No. 8, C. H. Morrison, chairman, and printed on pages 266-273 of the September *Journal*, was adopted and submitted to letter ballot, after correcting a few typographical errors. The same action was taken on a revised specification for alternating current motor semaphore signal, given on pages 217-226 of the *Journal* for June.

Committee No. 11, R. B. Elsworth, chairman, presented a code of directions for installation of lead type stationary storage battery, printed in the *Journal* for March, page 22, and revised in the report printed in the June issue, page 195. This was approved for submission to letter ballot. The same action was taken on a design for a concrete battery box No. 1343, page 193, of the *Journal* for June, and a battery jar, No. 1053, page 194, after a correction had been made in certain figures on the last named drawing.

Committee No. 7, E. G. Stradling, chairman, presented a report recommending the use of the 2-ohm relay in track circuits provided the recommended limiting resistance, shown by the committee in the table on page 7 of the March *Journal*, is used in series with the battery. This was approved and ordered submitted to letter ballot, after eliminating the clause which would confine the recommendation to caustic soda battery. The table referred to (page 7 of the March *Journal*) showing battery voltage limits, was also ordered submitted to letter ballot.

Committee No. 12, R. C. Johnson, chairman, reported that a draft had been made of a form of contract for the installation of block and interlocking signals, copied in large measure from the standard of the American Railway Engineering Association, but the draft was not yet in shape to be printed; the committee proposes to have it ready to be shown in the next *Journal*.

Officers

The officers of the association chosen for the ensuing year are as follows:

President, R. E. Trout (St. L.-S. F.); first vice-president, C. J. Kelloway (A. C. L.), automatically promoted from second vice-president; second vice-president, F. W. Pfefling

(U. P.); secretary-treasurer, H. S. Balliet, Grand Central Terminal, New York City. The following are added to the Board of Direction for two years: G. E. Ellis (Interstate Commerce Commission); H. K. Lowry (C. R. I. & P.); B. Wheelright (Grand Trunk); E. E. Worthing (Southern Pacific).

The Roadmasters Have Successful Convention

Latter Part of Program Includes Papers on Rail Defects and Supply of Cross Ties

THE COMMITTEE REPORTS and part of the papers presented at the thirty-sixth annual convention of the Roadmasters' and Maintenance of Way Association, which was held in the Auditorium Hotel, Chicago, last week, were abstracted in the *Railway Age* of September 20. Abstracts of two additional papers presented at that meeting which were not available in time for that issue are included in this article.

The convention was the most successful one in the history of the association. An attendance of over 600 roadmasters was recorded, this being almost double that of any previous year. This large representation of officers engaged in track maintenance from all parts of the country was in large measure the result of the support which the Railroad Administration gave through encouraging men in this branch of the service to attend the meeting. The sessions were characterized by unusual interest and by active discussion.

At the annual business meeting on Thursday morning the following officers were elected for the ensuing year: President, J. B. Oatman, roadmaster, B. R. & P., DuBois, Pa.; first vice president, J. W. Powers, supervisor, N. Y. C., Rochester, N. Y.; second vice president, W. P. Wiltsee, principal assistant engineer, N. & W., Roanoke, Va.; secretary, P. J. McAndrews, roadmaster, C. & N. W. Sterling, Ill., (re-elected); treasurer, Coleman King, supervisor, L. I. R. R., Jamaica, N. Y., (re-elected); directors, F. J. Meyer, roadmaster, N. Y. O. & W., Walton, N. Y.; L. M. Denny, supervisor, C. C. C. & St. L., Indianapolis, Ind.; and J. E. Bone, roadmaster, Mo. Pac., St. Louis, Mo.

The annual report of the secretary showed that 152 new members had been received during the year, bringing the total membership to 1098. The report of the treasurer showed a balance of \$1648 in the treasury.

Common Defects in Rails and Means of Detecting Them in Track

By C. W. Gennett, Jr.,

Manager, Rail Inspection Department, Robert W. Hunt & Co.,
Chicago

The reports of defective and broken rails generally require the assignment of the individual case to one of six or seven classes. Four classes are sufficient to cover all conditions of what may be termed honest failures; that is, such a condition of the rail as requires its removal from the track, but excluding failures directly due to bad maintenance of track or equipment. The four classes recommended for these reports are:

Class 1.—Broken rods; meaning, literally, rods which have broken completely through the section into two or more parts with a generally square or angular fracture through the cross-section and without sign of the final complete fracture having been caused, or contributed to, by any of the other three classes.

Class 2—Broken bases, covering all cases of pieces broken out of the base, such as crescent or moon-shaped breaks, and including also complete structures obviously resulting from a piece originally breaking out of the

assess 3-Head failures; including all rails otherwise satisfactory, but

Class 4—Web failure: This class includes all defects in the web and the felt holes, which are caused by the following defects, such as splits in the head,

Various subdivisions of these classes might be made in some cases to afford more complete statistics, but, generally speaking, it would seem to be better policy to concentrate all efforts on obtaining accurate records of failures positively known to result from defective manufacture and assign them to the proper one of four classes than to invite possible confusion and error by requiring a more extended and detailed description.

Defects of rails might be broadly classified as either apparent or concealed. Apparent defects are those easily discernible upon inspection at the mill. They consist of flaws occurring on any part of the surface and which result, when seen by the inspectors, in causing the rail containing them to be classified as No. 3 or scrapped according to the size or number of flaws in it. If a flaw occurs near the end of a rail, it may be sawed off, leaving a short length of rail satisfactory for shipment, but frequently a reinspection of short rails locates other flaws so that short length No. 2 rails may result. No 2 rails are always painted white on both ends and, in addition, two prick punch marks are placed on the web about two feet from each end, so that the rails can be later identified in the track. Short length rails are invariably painted green on each end.

Pipes are often found on the ends of rails, usually in the web or near its junction with the head, and occasionally blisters occur on the web. The detection of either pipes or blisters results in scrapping the rail. Seams resulting from the opening of blowholes in the sides of the ingots when being rolled may occur on any portion of the rail section and manifest themselves in faint lines running in a longitudinal direction. They are generally more easily seen on the head and on the base, but are often hidden from view by scale, so that inspectors sometimes fail to notice them and the rails pass shipment as No. 1, when they should have been No. 2. Laps resulting from imperfect rolling methods are defects which the mills have very largely overcome, but they sometimes show, especially on the sides of rails and cause rejection.

Concealed defects, that is, defects that cannot be discovered by any examination of the rail's surface, are the most important and dangerous. They are without question the direct cause of most of the failures which have been divided into the four classes above mentioned. Flaws, or pipes, or seams, can be detected as described and ample precaution taken to prevent rails containing them from being used in main line tracks, but defects that are concealed in some way afford no protection against the use of the rails, and in many cases no manifestations of the defect occur until rupture results.

The four classes for defective rails suggested above have

been put in what may be considered the order of their danger, and they will be so considered here.

BROKEN RAILS

Broken rails may result from innumerable causes, some of a chemical and some of a physical nature. It is easy to imagine rails made of steel unduly hard and brittle and hence without resistance to shock. Such steel will produce broken rails, but the physical and chemical tests laid down by the specifications protect against such conditions to a very large extent. Unfortunately, however, specifications are not what might be termed 100 per cent positive in this respect and examinations of some broken rails have shown them to be of such a chemical composition that their use was unwarranted. Rails have also been known to contain hard spots, due, perhaps, to an imperfect fusion of some of the materials added to the steel when it is in liquid form and no specified chemical or physical tests are apt to detect such conditions. Still, again, rails seem to have a faculty of "just breaking," giving the square or angular fractures across the section that have been mentioned, and beyond the fact that steel has a limit of endurance, which has in these cases probably been exceeded, we are totally unable to assign a cause for the failure.

Such cases as these offer no signs of weakness to either the track-walker or the expert. With transverse fissures they constitute a most dangerous menace to traffic. Transverse fissures are first of a silvery color, invariably in the head of the rail and on the gage side. Their development or growth may extend to the surface, in which event air is admitted to the fracture and discoloration occurs. I am told that such cases can be detected by examining the gage side of track carefully for indications of vertical rust streaks, which are said to be sure evidence of fissures, but, notwithstanding, many failures have occurred when the fissures did not extend to the surface and hence offered no possibility of detection.

BROKEN BASES

Prior to the general adoption of newly designed rail sections several years ago, the principal features of which are heavier or thicker bases, the most prolific source of rail trouble was due to the thin flanges of the older sections breaking out in the form of half moons or crescent shapes. Much relief has resulted by using the new sections with the thicker flanges, but the cause of the trouble is so intimately connected with maintenance conditions that broken bases still constitute a serious class of rail failures. The piece of the flange that originally breaks off, generally at a tie, is almost always found to show a seam on the surface of the fracture. Rail manufacturers assert that seams are a perfectly natural effect, to which all rails are susceptible, but the fact remains that various conditions of treatment may greatly influence their production. Be that as it may, the seams on the base, which escape the inspector's attention, being often covered at the mill with newly-formed scale, offer such a reduced strength to the section that it is unable to resist the strains of unequal tie bearings. Pieces, therefore, break out and in many cases complete rupture of the section occurs soon afterward.

Pains must be taken to prevent fractures occurring in this way from being ascribed to class 1, that is, to "Broken Rails." The question as to which class the failure belongs can almost always be answered by examining the fracture across the base. If it is straight from flange to flange, it should be classified as a broken rail; but if it contains a jagged or re-entrant angle, it should be put almost without a doubt in the class of broken bases.

HEAD FAILURES

Any condition of quick-flowing metal on the head of the rail, widening or mashing of the head so that the angle bar

fit is lessened, or any signs of dark streaks along the polished surface of the rail, are almost sure indications of head failure. Segregated steel is the chief cause attributed to this condition and segregation is one of the natural defects of all steels. Segregation is the condition resulting from the solidification of liquid steel, whereby some of the chemical elements automatically seek the center and top part of the ingots that remain molten longest. It occurs in that part of the ingot in which the pipe or shrinkage cavity always forms and while both piping and segregation may be retarded or reduced in amount, the total elimination of these natural defects requires discarding the top of each ingot.

Obviously some difficulty exists in determining the amount of each ingot that should be discarded and sometimes when too little discard has been made shipments of segregated, and sometimes piped, rails unintentionally result. Segregation is always found in the top parts of the ingots, and therefore possibly in those rails that are lettered *A* or *B*, and defects of the character described as head failures are very largely confined to those rails. As might be expected, segregation results in a hard, high carbon core comprising the center of the rail section, surrounded by metal of lesser carbon content, and, therefore, softer. As mentioned, it may flow rapidly, especially on curves, it may mash down in spots and it may develop the actual cavity from which the term split head is derived. Split heads are not, as a rule, the same as piped rails, for pipes ought by all reason to be limited to the center of the ingot, and hence confined to the web of the rail, while splits are invariably found only in the head. Defects possessing these characteristics are not dangerous, but rails containing them should be watched carefully and replaced at an opportune time.

WEB FAILURES

These failures are comparatively rare, consisting for the most part of the separation of the base from the head through some kind of longitudinal fracture in the web. Cracked webs can be observed by careful inspection and such rails ought to be removed. The defect often occurs at or near a joint, the fracture probably running into the bolt hole, possibly in such a way that the bars more or less shield it from view. Causes for such defects are not well known, but no doubt loose joints contribute their share, while on rails that have been shipped in vessels it is possible that some damage to the ends may have occurred in the process of loading and unloading that would account for failures of this type.

Rail failures are steadily on the decrease, recent statistics indicating that there were only one-fourth as many failures in five years on rails rolled in 1912 as there were in the same time on rails rolled in 1908. Last year there was approximately one failure for every two miles of track reported; that is, one failure out of every 600 rails of all makes, weights and conditions. Notwithstanding what records may show, we all know that the subject of defective rails is still a very serious one and that to meet it requires the fullest and most complete co-operation of everyone concerned. "Safety first" must be the motto and the price of safety is eternal vigilance, not only at the mills where the rails are rolled, but, also, in the track where the rails are used.

Inspecting Ties; the Outlook for an Adequate Supply

By John Foley

Forester, Pennsylvania Railroad, and Associate Manager of the Forest Products Section, United States Railroad Administration, Washington

The lack of a surplus of ties today is not a development of yesterday. Throughout the more than two years during which you have not had labor enough to put in all the ties

you desired, those who make a business of producing ties have been pleading shortage and high cost of labor as reasons why they were not meeting railway demands.

Coincident with the unified operation of railroads came complaints to the directors of regions producing ties in quantity, that the roads of other regions were taking ties needed by the local roads and by paying high prices for them were forcing the latter to unwarranted expense. The consequence of these complaints was the issuance last March of an order prohibiting the purchase of ties at prices in excess of those paid December 31, 1917. This order stopped the advancing of prices which was prevalent at that time. It also stopped the production of ties very largely wherever railroads which had advanced prices in 1918 reduced them to the 1917 basis. Many producers who quit then in resentment over the reduction have not resumed operations. Formerly, when an individual railroad reduced the prices of ties the owners of the ties could ship to a road which paid more. But when the reduction was general, many producers concluded they would engage in a more stable industry. Fortunately, all railroads did not reduce prices; some did not need to and some merely did not buy any until the matter was adjusted.

The ill effects of this order were soon apparent, and in April the prohibition was removed so far as the ties on a road's own lines were concerned. By that time the regional purchasing committees had been organized, and the result of their deliberations over ties was the formulation of the following principles to govern buying:

No railroad under control of the director general may purchase ties on any railroad under his control with which such road connects.

Any railroad under control of the director general may purchase ties on any railroad not under his control with which such railroad connects. The prices shall be fixed on the various lines by the individual railroad companies, subject to approval by the regional purchasing committee, and at such figures as will cause the production of a sufficient number of ties to meet the requirements of all the railroads.

Every railroad should endeavor to secure the maximum output of ties on its line, so that its own requirements can be met with the minimum amount of transportation.

Ties on railroads which produce more than are needed, for their own use, should be transferred under the supervision of the regional committees to railroads on which a shortage exists.

Possibly some of the railroads which protested against shipments from their lines would not have done so had they suspected they would have been saddled with the responsibility and work in the above program. Some are saying they cannot spare any ties, but it is a fair assumption they can ship as many as contractors could under former arrangements. The principles laid down are the logical development of the idea that the railroads under government control are one. For them to compete with one another in the procurement of their ties would be as ridiculous now as it was unfortunate before.

The above rules to govern the purchase of ties were not well received by the tie trade. Naturally, the contractors who had been shipping from one railroad to another, at prices dependent on the necessities of the latter, felt that their business opportunities were lessened by the new plan. However, they advanced no reasons why they should not find entirely satisfactory the sale of their product to the railroad along which it was produced.

In working out the details of executing the above buying principles, the central advisory purchasing committee, in conference with the regional purchasing committees, decided that the fixed prices should be published and should apply to the ties of all purchasers, large and small. They also decided that payment for ties should be prompt—as nearly on a cash basis as was practicable under the conditions on each road. These decisions were welcomed by small producers of ties, but, of course, are objected to by those who dealt in the ties which the small producers may now sell direct. The attitude of the Railroad Administration is that the dealer is not barred by the present plan from selling as many ties as he can procure from those who require his assistance to make ties or to deliver them to a railroad. There

is no limit to the quantity of ties which a railroad may contract to accept from any owner of them.

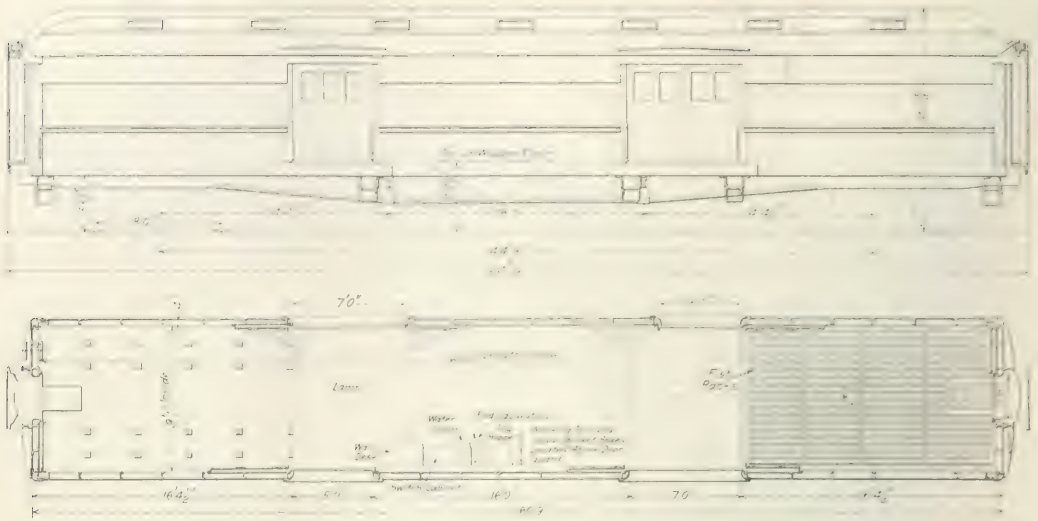
Gradually the feeling among tie contractors that the administration policy is antagonistic to them is disappearing. At first the contractors jumped to the conclusion that the railroads would develop organizations duplicating those of the contractors. This has not been done by the railroads which for years have bought under the present plan, and it is not contemplated, though advances in prices were quite generally made. You know the prices being paid along your lines and you have a good idea what ties cost to buy, make and deliver. If you are satisfied that the prices published are not sufficient to justify the production of ties, acquaint your responsible officials with the facts, since prices are "fixed by the individual railroad companies, subject to the approval of the regional purchasing committees."

Prices which bore some relation to one another could not be fixed for the various railroads until a standard was adopted. Consideration of this subject proved how timely was the statement made by a representative tie producer at the 1918 annual meeting of the American Wood Preservers' Association, that "there is another bad feature about the tie business. Every railroad has a different specification and none of them live up to it." Among 50 railroads which are representative of conditions throughout the United States, there were 30 different sizes and shapes of ties specified as standard. Each of these was known as one to five designations. Ties of exactly the same size would be 1's, 2's, A's B's on different roads. Different roads used the same designation for ties of different sizes.

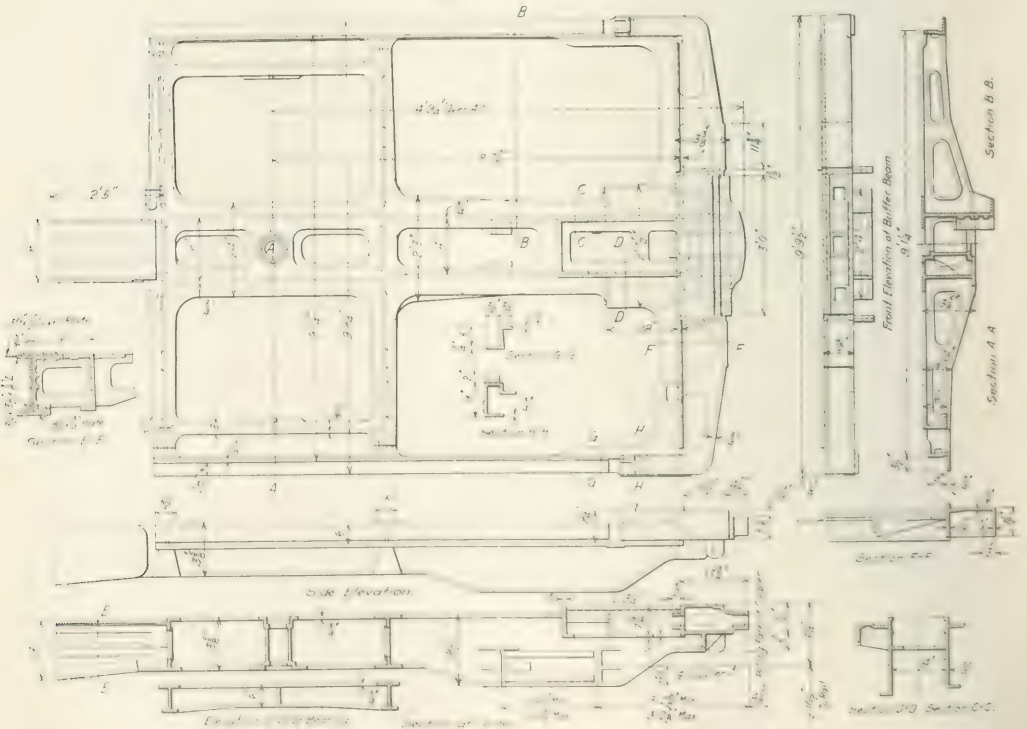
You have seen the standard specification which was adopted after full consideration of all existing standards at meetings throughout the country. It omits nothing which could not be agreed upon as essential anywhere. It includes nothing which cannot be lived up to everywhere, like making ties from live trees only, when, as a matter of fact, millions of excellent ties have come from wind-thrown pine trees in the South. It includes every kind of wood generally used for ties and provides for such others as may be locally desirable. The specification covers all the sizes of ties for which any real desire is expressed. It omits two American Railway Engineering Association standards, the 6-in. by 9-in., because only one railroad specified such a tie to provide for those not thick enough to be 7 in. by 9 in. and the 7 in. by 10 in. because ties of that size are not known in the trade, being manufactured at sawmills, and bought as lumber by the one railroad using them in quantity.

Ties smaller than the standard 6 in. by 6 in., which are fit for some service in secondary tracks, together with culls of larger size, are purchasable as "usable rejects," as heretofore. The desire is that no tie be wasted if it can be of use. The specification provides for the conservation of timber by including a graduation of sizes which will utilize with the least waste those portions of any tree large enough.

In conclusion, Mr. Foley placed special emphasis on the fact that the inspection of ties is to be done by employees on the individual lines along which the ties are produced. He urged that this inspection be made conscientiously, not only for those ties to be used on the home road, but for those to be shipped to other lines as well. As a check on this inspection, he urged the roads which are receiving poor ties to call the matter at once to the attention of the central purchasing committee. He stated that the government is giving the closest attention to the development of all possible sources of supply in this country and is also studying the possibility of importing ties. Based on reports from all sections of the country, he believed that the tie situation is now better than it was two months ago as respects quantity production and that better ties are being produced. While there may be some shortage next year, he did not believe that it would be as serious as is expected in some quarters.



Floor Plan and Elevation of the Standard Baggage Cars for the U. S. R. A.



Unit Cast Steel Double Body Bolster and Underframe End Construction

Railroad Administration's Standard Baggage Cars

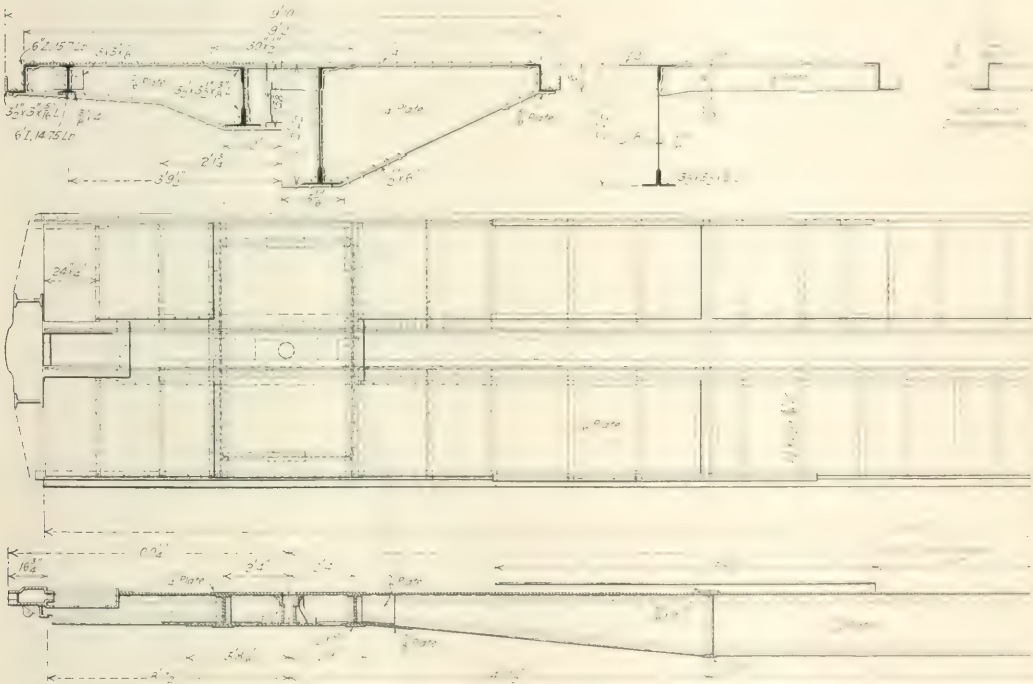
Designs for 60-Ft. and 70-Ft. Cars of All-Steel Construction for Passenger Service

THE UNITED STATES RAILROAD ADMINISTRATION for some time has been working on the designs of two standard types of baggage cars, to be 60 ft. and 70 ft. long, respectively. These cars are of steel construction throughout, with the exception of the floor, and are generally similar in design. The side elevation and floor plan illustrated are for the 60-ft. car, while the details shown are those incorporated in the design of the 70-ft. car. The designs meet the Railway Mail Service requirements as to strength, and in some respects are stronger than called for by the Post Office Department specifications.

The underframe is made up of fishbelly center sills of the built-up type and Z-bar side sills. The center sill webs

of the double body bolsters. The principal transverse members are built up of $\frac{1}{4}$ -in., single flanged diaphragms with fillers of the same thickness between the sills, and have continuous top coverplates 9 in. wide by $\frac{5}{16}$ in. thick. A $\frac{1}{2}$ -in. by 6-in. plate, about 55 in. long, is riveted to the bottom flanges of the diaphragms, the center sill fillers, and the center sill flanges.

The bolsters and end construction of the underframe may be either built-up or of unit cast steel construction. In the built-up underframe the center sills extend through to the end of the car body, the spring buffer casting being riveted between them. The transverse members of the double body bolster are each built up of two diaphragms of $\frac{5}{16}$ -in.



Underframe for the 70-ft. Standard Baggage Car with Built-Up Ends

are of $\frac{5}{16}$ -in. plate, spaced 16 in. apart and reinforced top and bottom with $3\frac{1}{2}$ -in. by $3\frac{1}{2}$ -in. by $\frac{3}{8}$ -in. angle flanges. At the top these angles are applied on the outside of the web plates only, while at the bottom they are applied both outside and inside. The center sill construction also includes a top coverplate 15 in. wide by $\frac{1}{2}$ in. thick. At the deepest section the sills measure 26 in. over the flanges. This section is maintained for a distance of 11 ft. 6 in. either side of the transverse center line, at which points are located the main transverse members. At these members the reduction in the depth of the section begins and reaches the minimum of 12 $\frac{3}{4}$ in. over the flanges at the back side

plate, placed back to back. A top coverplate, 5 ft. 9 in. wide, is riveted to the flanges of these members, the side sills and the center sills. From a point 16 $\frac{3}{4}$ in. forward of the front transverse member of the bolster to a point 24 $\frac{1}{2}$ in. back of the rear transverse member, the center sills are closed by a $\frac{3}{8}$ -in. bottom coverplate. The lower flanges of the transverse members are reinforced by $\frac{1}{2}$ -in. by 8-in. plates, which are continuous from side sill to side sill. Side bearing supports are provided by 6-in., 14 $\frac{3}{4}$ -lb. I-beams, placed longitudinally between the transverse members of the bolsters, 3 ft. 9 $\frac{1}{2}$ in. on either side of the longitudinal center line of the car.

The side sills are 6-in., 15.7-lb. Z-bars, with the lower

flanges turned out. A 3½-in. by 3-in. by 5/16-in. angle, with the short leg turned up, is riveted to the lower flange of the Z-bar, the face of this angle serving as a means of attachment of the outside steel sheathing of the car.

Alternate types of construction are provided for the end frame of the car. This may be either a unit steel casting or built up of structural sections. The end frame of the built-up construction is designed to be of equal strength to that of the cast steel end, which is stronger than required by the Railway Mail Service specifications. The main vertical members are 12-in., 40-lb. I-beams, framed into the bumper casting at the bottom and built into a transverse girder at the top. There are four intermediate end posts of 4-in., 8.2-lb. Z-bars, two of which are to be omitted in working to Post Office Department specifications. The corner posts are built up of Z-bars, placed in the same position as the intermediate posts, and two angles which are so placed as to provide a means of attachment of the outside steel sheathing and the inside end sheathing.

The side frame is made up of channel posts pressed from ½-in. steel. The side plate is a 4-in., 8.2-lb. Z-bar, placed with the web horizontal and the outside flange downward. The top of the belt rail is 3 ft. ¼ in. above the lower face of the side sills. It is made up of the 4-in. by ½-in. strip on the outside, riveted through to a 4-in. by 2-in. by ¼-in. angle on the inside of the sheathing. The sheathing is ½-in. plate, to the inside of which is applied ¾ in. of hairfelt insulation. The interior sheathing is No. 20 corrugated steel.

The carlines are of ½-in. pressed channel sections. On either side these are in one piece from the side plate to the roof of the clerestory with a separate section for the latter. The roof is covered with copper bearing steel plates insulated inside and the ceiling is of sheet steel.

The underframe structure is covered with 1/16-in. steel plate, which is riveted to the center sill cover plate, to the side sills and to transverse supports flanged from ¼-in. plate. On this is laid five 3-in. by 2½-in. intermediate longitudinal stringers with specially gained stringers over the top flanges of the side sills. Between these stringers the steel plate is covered with a ¾-in. layer of hairfelt, held in place by 1-in. by 1-in. wood strips placed against the stringers. On the stringers is laid a transverse floor of 13/16-in. by 5¼-in. material, finally surfaced with a maple floor of ¾-in. by 3¼-in. tongued and grooved material placed longitudinally except between the doors, where it is placed transversely.

The general arrangement of the 60-ft. and 70-ft. cars is similar. The 60-ft. car is carried on four-wheel trucks, while the 70-ft. car has six-wheel trucks. The trucks may be either of the built-up pattern or the cast steel frame type. In either case the general arrangement is the same, being of the equalized pedestal type. The wheels are 36 in. in diameter and are mounted on axles with 5-in. by 9-in. journals. The six-wheel trucks have a wheel base of 11 ft. and the wheel base of the four-wheel truck is eight feet. Both cars have two doors on each side, one having an opening of five feet and the other of seven feet. The side door on one side is placed opposite the narrow door on the other side of the car. In one end of the car a fish rack is placed over the floor, which is fitted with drainage facilities.

The 70-ft. cars are 70 ft., 9 in. long over the end posts and have a clear length inside of 70 ft. The uncoupled length over the diaphragms is 74 ft., 1¼ in. They are 9 ft. 1 in. wide inside and have a maximum width of 10 ft. 7½ in. over the eaves. The maximum height from the top of the rail to the top of the roof is 14 ft. 13/16 in. The 60-ft. cars are 60 ft., 9 in. long over the end posts, have an inside clear length of 60 ft. and a length, uncoupled, over the diaphragm faces, of 64 ft. 1¼ in. The height and width clearances are the same in both cases.

Returns of Class I Roads for Calendar Year 1917

THE BUREAU OF RAILWAY ECONOMICS has issued a bulletin, No. 128, giving a summary of the principal railway statistics of Class I roads for the calendar year 1917. The figures are preliminary and tentative and are in some cases liable to correction and adjustment. An average operated mileage of 232,699 miles of line is represented in the statistics. The income account with comparisons for the previous year is as follows:

	Year ended December 31		Increase 1917 over 1916
United States	1917	1916	
Railway operating revenues.....	\$4,012,966,824	\$3,563,665,875	\$449,300,949
Railway operating expenses.....	2,828,179,893	2,356,133,528	472,046,365
Net operating revenue.....	1,184,786,931	1,207,472,347	\$22,685,416
Railway tax accruals.....	214,096,050	156,966,020	57,130,030
Uncollectible railway revenues.....	698,724	121,865	576,859
Miscellaneous operating income.....	9,983,157	2,889,285	7,093,872
Total operating income.....	979,977,326	1,082,377,547	102,596,421
Hire of equipment and joint facility net rentals.....	Dr. 36,243,040	Dr. 41,963,035	5,719,995
Net operating income.....	943,734,286	1,040,610,712	96,876,426
Non-operating income.....	116,863,294	83,230,843	33,632,451
Gross income.....	1,160,538,015	1,244,341,355	83,803,340
Deductions from gross income:			
Interest on funded debt.....	404,313,382	406,441,179	2,127,797
Interest on unfunded debt.....	13,658,809	13,976,185	317,376
All other deductions.....	153,417,687	180,032,037	26,614,350
Total deductions.....	571,389,878	600,449,401	29,059,523
Net income.....	589,148,137	643,891,954	54,743,817
Disposition of net income:			
Income appropriated for investment in physical property.....	47,242,473	61,750,678	14,508,205
Other income appropriations.....	25,582,319	47,892,603	22,310,284
Total appropriations of income.....	298,203,505	284,750,579	10,452,926
Balance to credit of profit and loss.....	293,944,632	359,141,375	65,196,743

The total capital securities outstanding on December 31, 1917, not excluding duplications resulting from intercorporate relations, amounted to \$16,494,786,532. The equipment in service included 61,512 steam locomotives, 354 other locomotives, 2,329,683 freight train cars, 52,949 passenger train cars, and 99,616 company service cars.

The average number of general and division officers during the year was 18,465 and their total compensation was \$57,224,997. The total number of employees, excluding officers, was 1,714,238 and their total compensation was \$1,681,571,049, an average of \$980.94.

Including the estimated road and equipment investment of non-operating subsidiaries, the approximate total property investment of mileage operated by Class I roads is given as \$17,783,000,000.

In the following table are given some of the principal averages and ratios:

Average per mile of line:		
Operating revenues.....	1917	\$17,811.00
	1916	\$15,587.00
Operating expenses.....	1917	\$12,179.00
	1916	\$10,215.57
Net operating revenue.....	1917	\$5,102.06
	1916	\$5,371.43
Income.....	1917	\$931.96
	1916	\$680.63
Operating income.....	1917	\$4,177.09
	1916	\$4,687.36
Revenue less freight and passenger demurrage.....	1917	\$1,697.961
	1916	\$1,571.175
Revenue less freight and passenger demurrage.....	1917	\$69.772
	1916	\$50.002
Average per train-mile:		
Operating revenues.....	1917	\$1.00
	1916	\$0.88
Operating expenses.....	1917	\$0.68
	1916	\$0.58
Net operating revenue.....	1917	\$0.93
	1916	\$0.90
Average per freight car-mile:		
Revenue less freight and passenger demurrage.....	1917	\$1.00
	1916	\$0.88
Miscellaneous averages and ratios:		
Operating income.....	1917	\$0.48
	1916	\$0.54
Average receipts per ton-mile (cents).....	1917	7.06
	1916	7.06
Average receipts per passenger-mile (cents).....	1917	0.04
	1916	0.04

Railroads Organizing for Liberty Loan Campaign

Instructions Issued That No Effort Should Be Spared to Make Campaign An Overwhelming Success

THE RAILWAY MEN of the United States are out to make a new record for Liberty Bond subscriptions in the coming Fourth Liberty Loan Campaign. They subscribed for the first loan on a creditable scale, they doubled their first loan totals in the second campaign, and then they considerably more than doubled their second loan totals in the third campaign. If history repeats itself, as they say it does, the fourth loan totals are going to make the world sit up and take notice.

No stone is going to be left unturned to secure a big subscription. Under Director General McAdoo's leadership as expressed in Circular No. 56, the regional directors are instructing their federal and general managers to organize the railroads and as in the Third Loan campaign there will be a great number of committees reaching every man in railway service.

Circular No. 56

It is the intention of the director general that a copy of Circular No. 56 should be given to every railway man. The circular in question has two pages, the first reading as reproduced in the center of this page and the other giving the details of the loan and the methods of subscribing on the partial payment plan. Employees will be allowed to pay for their bonds in eight monthly payments, but in cases where third loan payments are still being made the eight months period may be dated from the first of the year. The full details are given in the circular as follows:

The Fourth Liberty Loan campaign will begin on September 1 and close October 19, and in order to encourage employees to subscribe thereto federal managers are authorized to take such amount of the bonds as may be necessary to care for such subscriptions, and current federal fund may be used as bonds.

Officers and employees will be permitted to pay in installments covering a period of not exceeding eight months, provision being made so that such installments may be paid by deduction on the pay roll.

In connection with the Third Liberty Loan it was permitted that payments on new subscriptions might begin at the expiration of the period covering installment payments on subscriptions to the Second Liberty Loan, in order to avoid making payment on both subscriptions at the same time.

For that reason payment to the Third Liberty Loan in many cases will not be completed until June, 1919. Since the last loan, however, employees generally have received substantial increases in wages, and therefore it is unnecessary to avoid the making of payments on two subscriptions at the same time.

Payments on subscriptions to the Fourth Liberty Loan may, however, when the subscriber is also making payments on subscriptions to the Third Liberty Loan, commence with the month of January, 1919, the period of eight months running therefrom. In cases where employees are not making payments on subscriptions to Third Liberty Loan bonds,

of installment payments, and will be charged interest on deferred payments both at 4½ per cent. When the last installment payment is made the bond will be delivered to the subscriber. Adjustment of interest will be made in the last month's installment payment. Coupon (covering interest) will be paid during the period of installment payments) will be detached by the federal treasurer and the interest collected. Subscribers will, however, receive proper proportionate credit on account of such coupons in the adjustment of interest to be made in the last installment payment, as described above.

Should employees leave the service before completion of the payments, the amount paid will be refunded without interest.

full at the time of subscription; or, if they subscribe on the installment plan, they shall pay the first installment at the time of subscription, and the balance of the subscription price in four equal installments, to be paid on the first, second, third, and fourth anniversaries of the date of subscription, and shall receive the bonds

Employees should not hesitate to place their subscription with the federal treasurer of the road on which they are employed for fear that their local district may not receive credit for subscriptions, for arrangements are being made so that the subscriptions of railroad employees will be reported according to their homes, and the local district will in each case receive corresponding credit to apply toward its quota.

Instructions are being issued to regional directors relative to the formation of committees, etc., to organize and promote this work, with which committee when appointed all railroad employees are urged to cooperate.

While bonds are being issued in both coupon and registered form, I advise and urge that employees subscribe for registered bonds, which in case of loss or destruction by fire will be replaced by the United States Treasury.

Instructions to Regional Directors

In addition to sending out the circulars the director general has sent a letter to all regional directors instructing them further concerning the extensive and intensive campaign for Loan subscriptions. This letter reads in part as follows:

I enclose herewith a copy of circulars of railroad employees to the Fourth Liberty Loan. A supply of these circulars is being sent to you, for the use of your immediate staff.

Please instruct the distribution and bulletining of these circulars in order that they may come to the attention of all railroad employees.

Please also instruct federal managers in your jurisdiction to promote the organization at once of Fourth Liberty Loan Committees to encourage officers and employees of your region to subscribe to the approaching Liberty Loan. These committees should co-operate with the regularly constituted committees of the Liberty Loan Organization.

Arrangements should be made so that subscriptions of employees will be classified according to their residences. The amount in the aggregate subscribed by employees of each particular federal reserve district should be subscribed with the reserve bank for that district, accompanied by a list showing the amount of each subscription and names of subscribers arranged according to the residences of the subscribers, so that each local community may be properly credited therewith.

No deduction or allowance shall be made from the amount of subscriptions of employees, filed with the federal treasurer, on account of possible discontinuance of payments by employees, but on the contrary, the subscriptions of the federal treasurer to the federal reserve bank (or banks, if his road lies in more than one federal reserve district) shall in the aggregate equal 100 per cent of the subscriptions of officers and employees filed with him.

UNITED STATES RAILROAD ADMINISTRATION
OFFICE OF THE DIRECTOR GENERAL OF RAILROADS

WASHINGTON, SEPTEMBER 18, 1918

CIRCULAR NO. 56

The patriotic support of railway employees to the Third Liberty Loan was more than gratifying. On some railroads practically every employee became a subscriber for one or more of these bonds.

Now that the Fourth Liberty Loan is about to begin, I earnestly urge all railroad officials and employees to cooperate in securing a "100 per cent" result on every railroad. I believe that where the officials and employees unite in a patriotic support the response will be even more gratifying than that to the Third Liberty Loan.

I realize that there are many instances where railroad employees are not financially able to assume additional obligations. In such instances there should be no criticism of the failure of an employee to subscribe to the Fourth Liberty Loan. I believe, however, that when the urgency of the need is presented to employees, that few will fail in their financial support of the Government.

My attention has been called to the fact that in the past loans many employees have subscribed through their banks and through other agencies than the railroad. No effort is made to look up against employees for subscribing to bonds in this way, but it is a matter of pride to the Railroad Administration that the employees on each railroad shall receive the credit for all subscriptions they make.

Government bonds are the safest investment in the world, and in making such an investment railroad employees at the same time have an opportunity to help win the war and give needed support to our noble sons and brothers who are risking and giving their lives upon the battle fields and upon the seas.

I hope that 10 per cent of the railroad employees will subscribe to the bonds of the Fourth Liberty Loan. I can think of nothing more inspiring than the great body of railroad employees effectively banded together to work for the success of the Fourth Liberty Loan, and I urge upon each railroad employee patriotically to do his share. In this way we can shorten the war, save many lives, and bring a glorious victory to America and to generations of people everywhere.

Wm. G. F. R.

Buy Bonds to Your UTMOST

There are several ways in which the full force of the organization can be brought to bear on the problem of securing the credit for the Liberty Loan campaign. It is suggested that the organization of committees and other features of the campaign.

(b) A form of circular to be distributed to officers and employees, by federal managers.

The attached circulars and forms are intended as suggestive merely and are not to preclude the expression of individual initiative.

My attention has been called to the fact that in past loans many employees have subscribed through their banks and through agencies other than the railroads. No criticism should be made of employees for thus electing to subscribe for bonds, but it is a matter of pride to the Railroad Administration and to each railroad if the employees on that railroad receive the credit for all the subscriptions they make.

The Fourth Liberty Loan campaign is as important as the great battle now being fought in France. Everything possible should be done to bring the situation home to each railroad employee. Once this is done I know they will respond even more patriotically than they have in previous loans. Let us roll up a total of railroad subscriptions that will serve notice on Berlin that the railroad employees of America are in this fight to a finish.

Instructions to Federal Managers

Each regional director is doing his part to help the campaign along and long letters of instruction have been sent to every federal and general manager the country over. In addition to suggesting methods of appeal to the men, and directing the prompt printing of circulars, subscription blanks, etc., these letters have advised the federal and general managers concerning the form of organization and procedure which should secure the best results. The eastern regional director in his letter emphasizes that, "No effort should be spared to make this campaign an overwhelming success." He has detailed the following as the best method:

The best methods for securing the maximum results in this campaign have been carefully considered, and it has been determined that the following form of organization should be immediately formulated upon each railroad and substantially the same methods and procedure will be followed by all lines in this region.

All committees should co-operate fully with regularly constituted committees of the Liberty Loan organization. The importance of the work should be thoroughly impressed upon all.

I. *General committee.* Headed by the federal manager or other executive officer designated by him, who will issue necessary instructions and who will select other officers and employees to serve on this committee with him.

II. *General office committee.* A general officer to be designated by the federal manager who will be assisted by a committee made up of general officers and employees who necessarily must devote a portion of their personal effort to this work. This committee in turn shall appoint captains under their jurisdiction in the various general office departments.

III. *Divisional committees.* Three or more representative division officers and employees.

While these officials and employees can devote only a portion of their personal time to this work they must realize the importance of the ultimate success of this Liberty Loan campaign and should follow up daily the work of such captains and leaders under their jurisdiction in the respective branches of the service as they may think it wise to appoint. It is suggested that representatives of the various crafts and classes of employees be utilized to the fullest extent in the furtherance of this campaign.

IV. *Terminal committees.* These committees should be composed of three or more officers and employees.

V. *Shop committees.* A committee should be established at each shop composed of three or more of the officers in charge and employees. It may be necessary that further sub-committees be appointed in the mechanical department to cover all outlying shops and the numerous sub-committees and captains thereof should be appointed in all large shops and yards.

VI. *Divisional committee.* The divisional committee shall see that all other classes of employees not specifically covered herein are properly organized under their jurisdiction.

It is the intention that every employee of the railroad shall be personally urged to subscribe for as large an amount of Liberty Loan Bonds as possible. It is important that no employee should be overlooked and that they should be solicited repeatedly by the captain or leader having jurisdiction until such subscriptions as they may be willing to make have been secured.

A daily record should be made and turned in to each of the sub-committees, and in turn to the general committee, showing the amount of subscriptions received for the day. As these records are turned in from day to day to local committees, renewed efforts should be concentrated upon all employees not making subscriptions or not making sufficiently large subscriptions.

In all solicitations of subscriptions, observe carefully the intention of the director-general as contained in Circular No. 56. While it is desirable to urge employees earnestly to subscribe, every employee should be allowed to feel that he is a free agent and that his action is not being influenced by the fear of coercion or the fear of criticism.

Daily telegraphic or telephone reports should be made by the general committee of each carrier as to the results being secured on their respective lines to the undersigned, and for that purpose it will therefore be necessary that all the general committees, sub-committees, team captains, etc., shall make daily reports to the officers under whose jurisdiction they are

just what progress is being made and the further efforts which are essential to bring about the desired results.

Complete instructions and forms for recording the subscriptions, making payroll deductions and remitting the amounts collected should be issued by the appropriate officers of each railroad.

Federal treasurers should be instructed to place subscriptions with federal reserve districts according to the residences of subscribers, at the same time filing with the federal reserve bank of the district in which the subscriber resides a list of the local committees, the amount of subscriptions which should be properly credited to each and the names and the amounts of each subscriber making up such subscription.

Federal treasurers will be authorized in due course, under proper regulations, to use, as far as may be necessary, current funds on hand for the payment, as the same become due, of the installments on the bonds subscribed for.

All subscriptions received from railroad employees will be credited to the local committees according to the residences of subscribers. Inquiries from local banks should be answered in line with the foregoing.

Railway Business Association Activities

THE REGULAR QUARTERLY MEETING of the general executive committee of the Railway Business Association was held at the Chicago Club, Chicago, on September 18, with President Alba B. Johnson in the chair.

Railways After the War

W. W. Salmon, chairman of the committee on railways after the war, presented a plan of work for this committee which was approved by the general executive committee. Mr. Salmon's report was as follows:

"Your committee enters upon its work completely unhampered by any declaration of our association in favor of specified policies or measures. The one dogma by which you are bound is that the public interest is paramount. I am sure I shall have the generous support of the general executive committee and of the association at large in proposing that your committee establish its program upon the highest plane of effectiveness possible to you with available resources. This work has been undertaken because we believe it vital to the well-being not only of our own group of industries, but of the nation. It is the purpose of the general executive committee to afford you the fullest measure of relief from personal labor through staff and special service."

Chairman Salmon suggested that it would be valuable for each member present to volunteer any ideas he might have as to the purpose to be sought by the committee and the method to be pursued. The consensus of impressions thus elicited was that in view of the complexity of the subject, any arrival at conclusions should be preceded by the most thorough examination of material, consultation with specialists and detailed committee conference.

The secretary presented a report, prepared at the request of Chairman Salmon, comprising some account of the material which the office has been preparing. The first step was the compilation of a card catalog of books, pamphlets, magazine articles, and newspaper clippings, the titles of which suggest that they might have a bearing upon the subject. This list includes about 400 titles. The second step was an endeavor to determine in advance what to look for in this mass of material. This object was approached by drawing up a rough list of the phases which a responsible legislator would have to deal with if he were drawing a bill. When such a list shall have been discussed and revised by the committee and by the members of the association, the result would be a program of subjects to be studied.

The association, under that plan, could proceed to extract from the books and other documents in the catalog material bearing on each of the listed aspects and to classify it for practical use. When this task had been completed the committee could take up these subjects, one by one, with the mate-

rial bearing upon it and with the aid of well-informed persons each at the appropriate stage.

Meantime, a widespread dissemination of the list of aspects could be made with a view to obtaining guidance as to the prevailing public thought. It need hardly be expected that general public opinion will yet be found very clear or positive. What we may hope for is a response indicating which are the phases that are regarded by the public as most important for them to be enlightened upon.

Touching the question of co-ordinated effort, it is the view of some that the outcome of the proposed railroad conference authorized by the Chamber of Commerce of the United States to be called by the directors should be some form of federated activity independent of the National Chamber and giving opportunity for occupational and other organizations, including the Railway Business Association, to co-operate for the common end.

It was decided to take up in future meetings, topic by topic, the aspects as they have been developed by the association office research.

Government Purchasing Policies

A. L. Humphrey, chairman of the committee on government purchasing policies, reported progress in several of the matters which members have requested the committee to take up with the Railroad Administration. The Division of Finance and Purchases in various conferences has shown a disposition to give careful consideration to subjects laid before it by the committee. Responsive to suggestions concerning prompter remittances by railroads for goods delivered members are reporting substantial improvement, especially in the clearing up of the oldest accounts. In the matter of the warranty covenant against commission agents re-

quired by the Department of Justice in government contracts, the Railroad Administration has decided to ask for a modification as affecting railroad transactions, and has made it evident that it will press its request vigorously. Railroad purchases are more complex than those covered by previous modifications, namely, fuel and certain textiles for the army quartermaster, but it is believed a method is being worked out which will permit legitimate commission selling in the railroad field while eliminating what is regarded as illegitimate.

Other Business

The secretary was requested to notify the honorary vice-president, Mr. Post, and to spread upon the minutes for reference as affecting future honorary vice-presidents, that the intention of the committee in creating that office was not only to honor retiring presidents, but also to obtain their counsel and that it is the earnest desire of the committee that the honorary vice-president shall attend as many meetings of the general executive committee as he can.

The following new members were reported since the last meeting: Buffalo Wire Works Co., Inc., Buffalo; Joliet Railway Supply Co., Chicago; A. G. A. Railway Light & Signal Co., Elizabeth, N. J.; Keyoke Railway Equipment Co., Chicago; Chas. R. Long, Jr., Co., Louisville; Chicago Bridge & Iron Works, Chicago; Kearney & Trecker Co., Milwaukee; National Waste Co., Philadelphia; Liberty Steel Products Co., New York; and Seeger-Walraven Co., Atlanta.

The committee on finance and administration, in a communication from Chairman H. H. Westinghouse, reported a budget which was approved.

Decision was postponed as to the character, time and place of the next annual meeting.

Safety Council Discusses Conservation of Man Power

Unification of Safety Work Under Federal Control Adds New Interest to Railway Session

THE SEVENTH ANNUAL CONGRESS of the National Safety Council was held at the Hotel Statler, St. Louis, Mo., on September 16 to 20, inclusive. The Steam Railroad Section of the council convened on Tuesday afternoon, September 17, with H. J. Bell, safety supervisor of the Northwestern region, in the chair, and remained in session for three days as this meeting was the first under government control and the first since the unification of safety activities on American railroads, it marked the beginning of a new and distinct period in safety work.

The principal address of the first day was by H. W. Belnap, manager of the Safety Section of the Railroad Administration, who outlined in considerable detail what is expected of the railway safety organizations in the promotion of safety work. His speech was of especial significance to those present as a pronouncement of the policy of the Railroad Administration with regard to the conduct of safety work. Members of the Railroad Section were gratified to learn that the government intends to pursue a vigorous safety campaign in order to conserve human life as effectively as possible during a period of incessant drain on the man-power of the nation. Not only was this idea emphasized by Mr. Belnap, but it was very forcefully expressed in a telegram received at the congress from W. G. McAdoo, the director general. He said in part:

Today man power means so much to the safety of the nation that the conservation of the health and promotion of activity, not only of the workers on our railroad, but in all industries, can be a constructive duty as well.

What the Railroad Administration Expects of Railway Safety Organizations

Mr. Belnap's address was in part as follows:

It has often been stated that the accidents which swell the total are caused by the negligence of the injured employee. A general assumption of that nature is absolutely unwarranted. Men cannot properly be charged with willful negligence in case of injury until it is clearly established that proper instruction and supervision have in each instance been given to the injured employee, and I am convinced if a careful study is made of each accident, it will be found in thousands of cases that this very lack of instruction and supervision has had an important if not a controlling influence in the occurrence of the accident.

To gain the confidence and good will of all officers and employees in railroad service, it is absolutely essential that a real and constructive safety campaign be energetically carried on, if accident prevention work is to be a success. For the purpose of standardizing this work as far as it is possible and practicable to do under date of May 27, Circular 5 was issued, directing that each railroad under federal control organize a general or central safety committee, as well as safety committees on each division and in the principal shops and terminals, these latter committees to

be composed of both officers and employees, the superintendent of the division to be chairman of the division committee and the ranking officer in each shop or terminal to be chairman of those committees.

This organization became effective on August 1, 1918.

It is realized that local conditions on the different railroads must be taken into consideration, and that they govern, in a measure, the plans and activities of each safety organization. What is expected briefly summarized is:

1. That all officers in executive positions shall give safety work their active co-operation; that they shall regard it as of the same importance as other branches of railroad work, and that they shall take an intensive interest in it and do everything they consistently can to make it successful.

2. That the fundamental principles of safety shall be wisely and energetically instilled in the minds of the men who do the actual work of operating the railroads, and they all shall become imbued with the importance of safety, knowing that since it is they who are killed or injured, all employees must take an active interest in the work and understand from instruction and practice that proper observance of the requirements of safety is a work of the men, by the men, and for the men.

3. That the proper officers of railroads shall give attention to all reasonable and practical suggestions and recommendations made, in order that unsafe conditions and unsafe practices may be promptly eradicated. In each instance proper acknowledgment of suggestions and recommendations shall be made to the end that those making them may be appraised as to their disposition and of the fact that due consideration was given to such suggestions or recommendations.

4. That officers and employees shall co-operate to the maximum and that proper efforts shall be made to get all to realize that in safety committee meetings officers and employees meet on a common level—all being members of the committee, and each having an important duty to perform in the prevention of avoidable accidents.

Mental Safety

L. Kramer, federal manager of the St. Louis-San Francisco and the Missouri, Kansas & Texas, addressed the Railroad Section on the subject of Mental Safety. Among other things he stated that no individual is the master of his own destiny, but a great organization composed of men, all thinking along safe lines, can prevent injuries, much suffering, loss of time, money and lives. If railroad men as a whole would exercise their minds as much as they do their jaws, and develop their mentality as well as their muscles, the claim departments could be abolished, the hospitals used only for medical cases and much human suffering would disappear from the homes of employees.

A Conductor's Part in Accident Prevention

This was the subject of a paper by J. C. Clark, assistant to the general manager, in charge of safety, on the Oregon Short Line. He said, in part:

Some time ago two trains had a meet at a siding located on a grade of about one per cent. The train going up grade had right of track, arrived at the siding first and stopped on the main line between switches. The train coming down the hill was unable to stop for the switch, and struck the train standing on the main line. The conductor was a man of long experience, and he knew that the engineer was not entirely familiar with that district, so he was riding the engine. When about one mile from the side track, where the other train was standing, he told the engineer that he was running too fast, and that he had better begin to slow down for the switch. The engineer, however, drifted some distance farther before applying the air brakes, and as a

result collided with the opposing train. . . . The conductor knew the engineer was using poor judgment, but he hesitated to exercise his authority as the conductor of the train, and a few seconds' hesitation in this particular instance resulted in a serious accident.

All members of a train crew, especially if they are experienced men, are quick to see the possibilities of an accident, but there is a great tendency on the part of many of them to take a chance. It is up to the conductor, as the responsible man of a crew, to see that no chances are taken. As a rule, the conductor will act promptly to avoid hazards, but if his will or judgment is opposed by the engineer or the brakeman he is apt to hesitate too long. I think, in some cases, this hesitation is due to the fact that the conductor and engineer are held equally responsible for the observation of a large number of the operating rules. . . . I believe better results could be obtained by putting the responsibility of operating a train squarely up to one man.

In discussing Mr. Clark's paper, J. L. Walsh, superintendent at Dallas, Tex., on the lines under J. S. Pyeatt, federal manager, emphasized the duty of conductor to the public. Freight conductors, in particular, should notify shippers and consignees loading or unloading cars, when trains are to be moved.

Fundamental Principles of Safety

As the Safety Section of the Railroad Administration has undertaken to establish a safety organization on every large railroad in the country and, therefore, all railroads alike are interested in safety, it was deemed advisable to present for the consideration of the Steam Railroad Section, certain general features of the subject that are basic or fundamental with the view of suggesting an outline of procedure that may be employed by all railroads in accident prevention work. These were covered thoroughly and concisely in a paper by T. H. Carrow, supervisor of safety of the Pennsylvania Railroad, Eastern Lines.

Getting Close to Men: Intensive Instruction by Foremen

C. W. Hammond, division safety agent of the New York Central, Cleveland, Ohio, read a paper on this subject, an abstract of which follows:

I know one foreman in my district who has had as many as four different gangs of men to supervise in one week. When Saturday night came he was the only man left to talk safety to. I have also seen 46 new men arrive one night at one of our camps used for housing track employees and at 6 o'clock, after breakfast, of course, there were only seven men to go on the job. You hardly have a chance to talk safety to these men, for as a rule, they are a safe distance away.

I believe that the foreman of track employees should be a man who will not only be able to talk safety to his men, but be able to compel them to exercise caution at their work. This is sometimes rather a hard thing to do, as I have seen four different nationalities working under one foreman, he being the only man who was able to speak the English language. This does not happen often, I find, and I believe it would be much better to separate the different nationalities that safer and more efficient service may be obtained. . . .

There is, perhaps, no better time to teach safety than before starting to work in the morning or at noon. If you want to touch a man along almost any line you can get the best results when he has a full stomach; therefore I find that noonday meetings are most successful to carry home safety ideas. . . . Another way of teaching safety to groups of men is to talk to them at their respective lodge meetings.

Maintaining Interest in Safety

J. A. Doyle, safety inspector on the Chicago, St. Paul, Minneapolis & Omaha, presented a paper on this subject, reading in part substantially as follows:

The practice on our line, and on a number of other lines, of requiring an applicant for a position to fill out a questionnaire referring to the principles of safety, is an excellent plan. It brings the matter to the man's mind at a time when he is willing to accept and agree to carry out the principles of safety in order to secure a position, and he is made to feel that compliance is necessary in order to hold the position after he gets it. The questionnaire exacts promises from him that he will avoid certain dangerous practices; that he will at all times look out for his own safety, as well as that of his fellow workers.

The older men among the general employees are harder to win over. They are of a "show-me" disposition, and, while the unconverted on our line are small in number, we are continually trying to "show" them. Their confidence must first be secured and all suspicion wiped out as to safety work being an annex of the claim department, etc.

The safety meeting is the place where most men are won over to the cause, though I sometimes feel that interest is lacking at these meetings for different reasons. One reason is, that the same line of procedure is followed meeting after meeting; another is that often many who are present cannot grasp sufficient knowledge from the discussion to permit of their entering into the work intelligently. I think that if a novelty—something out of the ordinary—would be introduced occasionally, it would stimulate interest. Plan debates on safety matters. To make it possible for all present at safety meetings to understand fully the matter which might be before the meeting, it is a good plan to have a small blackboard in every meeting place.

Prevention of Accidents in Yards, Especially Hump Yards

C. B. Floyd, assistant to the general safety agent of the New York Central Lines, spoke on this question. He said, in part:

Men responsible for the general conditions of yards must be trained to the necessity of having the yards, as regards tracks, lights, obstructions, etc., in good order; every reasonable precaution against defects in equipment should be taken before cars are sent up to be humped; the rider should be assured as to the conditions of brakes, making a personal test of them while cars are in motion coming up the hill before being cut off. The cut-off man should make sure the rider is ready before making the cut; no cars should be cut off unless there are men enough aboard to properly control them, and numerous other precautions should be taken with which we are all more or less familiar. One very important feature, I think, is the kind and make of club supplied. Every care should be used in selecting these, more particularly as regards the kind of material, shape, length, etc.

L. G. Bentley, secretary of the general safety committee of the Chesapeake & Ohio, led the discussion on Mr. Floyd's paper. He stated that the handling of coal in hump yards was particularly dangerous because of the obstruction of tracks and injuries to employees from falling lumps. C. W. Hammond stated that lights were placed at the end of yard tracks on the New York Central at night so that car riders would be able to gauge the proper time at which to apply brakes. The brake club, exhibited by Mr. Floyd, brought out a diversity of opinion on the proper shape of a club. It was agreed, however, that brake clubs should be of substantial material to prevent the possibility of sustaining injuries through breaking them.

Prevention of Accidents Due to Coupling and Uncoupling Cars

E. M. Switzer, superintendent of safety of the Chicago, Burlington & Quincy, presented a careful study of this subject, an abstract of which follows:

In the five years ending June 30, 1917, 735 railroad employees were killed and 12,702 were injured in coupling accidents. These constitute six and one-half per cent of all accidents to men in train service in the United States, including train accidents. Of all fatalities to train service employees, 11 per cent are due to coupling accidents. These statistics indicate that accidents in coupling and uncoupling cars constitute a considerable part of all accidents to trainmen and that a larger proportion of them result in death and, no doubt, in total disability than other kinds of accidents.

A common cause of coupling accidents is the practice of kicking drawbars while cars are coming together. Probably every railroad having a safety organization has issued instructions against it. That the campaign against the practice is succeeding, if slowly, is attested by statistics for the past five years. Whereas in 1913, 259 accidents were due to this cause, the number was reduced materially in the ensuing years, being only 180 in 1917, or 25 per cent less than five years previous.

Other important causes of coupling accidents are as follows:

1. Adjusting coupling slack with the foot.
2. Pulling the pin by hand without using the uncoupling lever.
3. Misjudging the slack in a train.
4. Misjudging the adjustment of slack in a train.
5. Losing footing while uncoupling moving cars.
6. Going between cars unnecessarily and contrary to rule.

L. F. Shedd, safety agent of the Chicago, Rock Island & Pacific, read a discussion of Mr. Switzer's paper. He emphasized in particular the necessity of regular inspection of equipment to discover defects likely to cause injury. In addition, it is important that every trainman and switchman be his own inspector. He asserted that it is possible through constant efforts to induce the men to exercise care in this regard. He cited the record of Rock Island switchmen in the Kansas City Terminal, as testimony to increased carefulness on their part. In seven successive months, not a single switchman was killed or injured.

Other Papers

Accident Prevention for Trackmen.—This subject was covered exhaustively in a paper by Robert Holland, division roadmaster of the St. Louis-San Francisco, Neodesha, Kans. He enumerated 28 distinct dangerous practices in track work which should be eliminated in the interest of safety. In the unavoidable absence of Mr. Holland, his paper was read by F. Whittemore of the Nashville, Chattanooga & St. Louis.

W. W. Fuller, supervisor of safety of the Seaboard Air Line, read a discussion of Mr. Holland's paper. The prevention of accidents to trackmen in the South, he said, was a particularly difficult problem because of the ignorant and irresponsible type of laborers, largely negroes, upon which the railroads have to depend.

Successful Methods of Securing Attendance at Safety Meetings.—In an address before the congress as a whole on September 17, Marcus A. Dow, general safety agent of the New York Central lines, outlined the methods he has used with success in securing good attendance at large safety meetings or rallies open to employees in general and their families. Success in these undertakings, he said, depended upon three things: namely, a good program, effective advertising and the co-operation of officials. He described in detail how these ends were achieved.

General Discussion

In the general discussion which followed the regular program of the Railroad Section, considerable attention was given to the advent of women in railroad work and the steps which are being taken to provide for their safety. In shops on the Pennsylvania Railroad, a matron is provided wherever women are employed and in addition two women have been placed on each first aid team. On the Baltimore & Ohio women engaged in hazardous occupations are required to wear a standard one-piece garment, a standard flat-heeled shoe and a standard cap.

Through the courtesy of Marcus A. Dow of the New York Central Lines, the safety films, "The House That Jack Built" and "The Rule of Reason" were shown at the meeting.

Election of Officers

R. C. Richards, chairman of the central safety committee and general claim agent of the Chicago & North Western, was elected chairman of the Railroad Section for the ensuing year to succeed H. J. Bell. J. T. Broderick, supervisor of special bureaus of the Baltimore & Ohio, was elected vice-chairman, to succeed T. H. Carrow, and F. Whittemore, superintendent of safety of the Nashville, Chattanooga & St. Louis, was elected secretary to succeed C. M. Anderson, supervisor of safety in the Southern region. Twenty-five new members were admitted to the Section during the past year and many more are expected to join in the coming year as a result of the action of the director general in authorizing railroads under federal control to support memberships in the Council. Over one hundred were present at the first session of the section and the attendance continued good throughout the entire convention.

Exhibits

Exhibits of devices of interest to railroads were shown in the hotel by the following companies:

E. C. Atkins & Co., Indianapolis, Ind.—Saw guard.
 Dreger Oscega Apparatus Co., Pittsburgh, Pa.—Pulmotests.
 Endicott-Johnson & Co., Binghamton, N. Y.—Safety shoes.
 Glauber Brass Mfg. Co., St. Louis, Mo.—Drinking fountains.
 F. A. Hardy & Co., Chicago, Ill.—Safety goggles.
 Howe Safety Appliance Co., Granite City, Ill.—Machine guards.
 Improved Aluminum Gasco Protector Co., Waukegan, Ill.—Gas masks.
 H. D. Lee Mercantile Co., Kansas City, Mo.—Overalls.
 Life Saving Devices Co., Pittsburgh, Pa.—Lungmometer.
 Mine Safety Appliances Co., Pittsburgh, Pa.—Miscellaneous safety devices.
 Protective Signal Mfg. Co., Denver, Colo.—Manufacturing protective signals.
 Safety First Supply Co., Chicago—Miscellaneous safety devices.
 Safety Service & Supplies Co., Chicago—Miscellaneous safety devices.
 Sargent Company, Chicago—Safety water sage.
 R. P. Smith & Sons Co., Chicago—Safety shoes.
 D. Square Co., Detroit, Mich.—Safety electric switches.
 Standard Optical Company, Geneva, N. Y.—"Stoco" glasses.
 Stonehouse Steel Sign Co., Denver, Colo.—Safety signs.
 Strong, Kennard & Nutt Co., Chicago—Miscellaneous safety devices.
 Surety Guard Company, Chicago—Machine guards.
 Sweet-Orr & Co., Inc., Chicago—Overalls.
 Trumbull Electric Co., Plainville, Conn.—Safety electric switches.
 Utility Garment Co., Chicago—Overalls.

Unified Operation of Railroad Terminals

THE YARDS AND TERMINALS COMMITTEE of the American Railway Engineering Association has issued a preliminary report on the "Unit Operation of Railroad Terminals in Large Cities," which is published in bulletin 208 just issued. This report contains a catechism on the unit operation of terminals with appendices on "Unified Operation of Terminals," by John F. Wallace; "Unit Operation of Large Terminals," by H. J. Pfeifer, chief engineer of the St. Louis-East St. Louis Terminal District; and "Improvements in Operating Methods of Intermediate Transfer Railroads," by E. H. Lee, president of the Chicago & Western Indiana. An abstract of this report follows:

Fundamental Principles

Under the unification of terminals are the following fundamental principles, which must be understood and applied:

- (1) A terminal is a clearing point and not a storage point.
- (2) Each and every facility within the unified terminal limits must be considered absolutely a part of the whole plant. The word "facility," as used, includes "man-power."
- (3) The use of each part must be co-ordinated with a view to its effect upon the best use of the plant as a whole.
- (4) Each individual operating organization must be co-ordinated and directed under one head.

The full application of these principles should give the most economical operation of the plant. By accomplishing the most expeditious and efficient movement of cars: by avoiding duplications, as in switching, clerical and other work, and of facilities; and by employing man-power as well as physical facilities and mechanical power to capacity, where and when necessary.

As prerequisites to terminal unification, the following information should be obtained and analyzed:

- (1) A situation or key map on a small scale showing or indicating: (a) The entering lines; (b) The terminal facilities of each line; (c) The interchange connections and junction points of the lines in the district to be unified; (d) The location and capacity of yards; engine terminals, including coaling and water stations, cinder pits, sandhouses and engine parking tracks; freight houses, transfer platforms and team-tracks; (e) The location and track capacity of large industries and private warehouses.
- (2) Larger scale maps, indicating the facilities of each road, in sufficient detail, for critical study.
- (3) Topographical maps of the territory, where necessary.
- (4) Record of traffic handled by each line, divided: (a) As to local or through, as referred to the district; (b) As to prevailing and possible routing; and (c) As to preponderance of direction of tonnage due to commodities and seasons.
- (5) Outline of present method of operation, considering:



The First Eight-Wheel Switcher for the United States Railroad Administration

Note: This locomotive was built by the American Locomotive Company, and was described in the Railway Age of September 1, 1914, page 54.

Lend Like They Fight

(a) General movement; (b) Transfer or interchange movement; (c) Use of individual facilities, yards, engine facilities, freight houses, etc.

(6) It is the thought that the investigation of and recommendation for any terminal unification should be made by a representative committee composed of representatives of all departments—transportation, engineering, mechanical and traffic officials, including, where complex situations are involved, at least two members from other locations than the terminal under study.

Catechism on Unit Operation of Railroad Terminals

In the operation of the unified terminal facilities, the load should be distributed evenly among all units so as to secure their constant normal use at the most intense efficient rate, coupled with the avoidance of any excess peak load on any unit, treating both the individual carrier's terminal and the unified terminal always as a part of the railroads as a whole.

Certain captions under which improved conditions may be obtained by unification have been selected and, while constantly bearing in mind the fundamental principles first enumerated, questions are asked under each caption which will suggest changes that will be fruitful of good results in any unification where local conditions are favorable.

INTERCHANGE.

(1) Are you now handling the maximum number of cars by the most economical or direct route, either existing or reasonably attainable?

(2) Can the number of interchange movements be reduced advantageously by combining movements from various origins to various destinations?

(3) Can you extend the practice of reciprocal interchange now working so advantageously at many points?

(4) Are you interchanging directly between yards instead of on assigned interchange tracks? Could not delay and re-handling be reduced by so doing?

(5) Are you, as far as practicable, making interchange with regular crews who are familiar with the routes and the work to be done?

(6) Can the volume of direct interchange be increased by minor track changes or changes in practice?

(7) Are interchange facilities at any point inadequate for periods of heavy traffic under new conditions, and, if so, is it practicable at reasonable cost to make the necessary increase in capacity, or is it better to relieve the situation by rerouting interchange?

(8) Have you any separate route of interchange that could be discontinued to advantage by consolidation with another route?

(9) Can you have cars grouped, either in cuts or solid trains, before they reach the terminal, so as to reduce terminal switching?

(10) Can interchange in any terminal be reduced to advantage by rerouting through outside junctions?

CONSOLIDATION OF INDUSTRY AND TEAM-TRACK SWITCHING.

(11) Have all industrial plants sufficient track capacity and other facilities so that cars may be promptly placed, loaded or unloaded to the full capacity of the plant during each working shift without unduly frequent switching or interference with plant operation?

(12) Can you arrange for "one line" switching of individual or grouped industries or team-tracks?

CONSOLIDATION OF YARDS.

(13) Can greater efficiency in yard operation be obtained through the consolidation of the yards of one or more railroads: (a) By dividing large terminals into zones and assigning as great a number of receiving yards to as small a number of classifying yards as possible, thereby assembling the maximum number of cars into the minimum number of classifications? (b) By pooling similar yards of neighbor-

ing railroads so as to conserve yard room, avoiding both the duplication of switching and interchange between yards? (c) By consolidating existing facilities, adapting such combined facilities to a new program of operations which disregards prior uses, with or without minor physical changes; or by pooling the same in the sense that one line's facilities are used to serve the overflow of traffic confronting a neighboring line's facilities? (d) By combining the use of two or more yards to adapt them to the segregation of freight with respect to commodities or destinations?

CONSOLIDATION OF ENGINE TERMINAL FACILITIES.

(14) Can you re-assign or co-ordinate the use of engine terminal facilities so as to avoid or reduce delay and congestion, reduce expense and engine miles, or improve supervision?

(15) To what extent can neighboring engine terminal facilities be adapted to the economical housing and handling of engines grouped according to the nature or location of their service or their size without regard to road ownership?

CONSOLIDATION OF CAR INSPECTION.

(16) Has "single inspection" been instituted wherever cars are interchanged?

(17) Can greater efficiency be obtained by consolidating the car inspection forces at adjacent yards, junctions or stations?

(18) Are car inspections and repairs so made as to insure safety and prevent further damage to equipment and lading?

(19) Is such inspection made so as fully to detect violations of loading rules and are these rules effectively enforced in every case of such violation?

(20) Has the force of inspectors been educated to the making of effective inspection and is the inspection followed unremittingly by the making of adequate repairs?

CONSOLIDATION OF CAR-REPAIR WORK.

(21) Can you obtain greater efficiency through extending consolidation of car repair forces and facilities: (a) By combining in one repair yard the work of one or more roads? (b) By combining the forces and facilities in a given zone?

(22) Do you require car inspectors at outlying points to repair cars as far as possible and to make light repairs to cars in industrial districts where cars are "made empty" or placed empty for loading?

(23) Are you keeping maximum number of cars in service by giving preferred attention to those needing light repairs?

CONSOLIDATION OF CAR RECORDS.

(24) Can the number of records and incidentally the amount of clerical work be reduced: (a) By the consolidation of car record departments? (b) By the consolidation of car record forces in yards reasonably near, one to the other, whether these yards are combined or not? (c) By the elimination of certain intermediate car records on each road through a more comprehensive and manifold use of train and yard reports so as to supply the greatest amount of information from each report?

CONSOLIDATION OF FREIGHT HOUSE FACILITIES.

(25) Can the freight houses of two or more lines be so combined that certain houses may be used for inbound and others for outbound business?

(26) Can the use of a freight house be discontinued, transferring its business to another, or to a combination of other freight houses?

(27) Can certain freight houses be assigned to designated commodities (perishable or non-perishable)?

TRANSFER OF FREIGHT BETWEEN FREIGHT HOUSES.

(28) Are you preventing transfer of freight between freight houses: (a) By loading more intelligently at originating points? (b) By utilizing more fully in both directions

drays, tractors, trucks, tunnels, or other means of conveyance, so as to reduce the use of trap cars and save rehandling?

CONSOLIDATION OF L. C. L. BUSINESS AT TERMINALS

(29) Are you co-ordinating: (a) The routing of l. c. l. freight; (b) The use of freight houses at either end of the route; (c) The use of transfer stations; to avoid (1) Congestion; (2) Unnecessary local transfer of freight between houses; (3) Light loading of cars?

(30) Have you adopted "Sailing Days" for l. c. l. freight: (a) To secure better and heavier loading of cars? (b) To avoid breaking bulk in transit? (c) To reduce loss and damage in transit? (d) To avoid "overs and shorts" by such stowing in the car as to make individual shipments readily accessible in "peddler" cars at intermediate stations?

(31) What may be done in the way of extending railroad service to include "store door delivery" of freight?

CONSOLIDATION OF TEAM-TRACKS.

(32) Can team-tracks in reasonably adjacent territory be consolidated and thus bring about: (a) Reduction in classification? (b) More intensive use of valuable terminal property? (c) More prompt release of cars? (d) Greater convenience to the public? (e) Avoidance of a needless duplication of operation or maintenance? (f) The use of yards near passenger stations for baggage, mail and express when desirable?

BUREAU OF COLLECTION OF FREIGHT CHARGES.

(33) Where the collection of freight charges is necessary at other than stations, have you given consideration to: (a) Collection for all railroads by zones as a matter of economy and public convenience? (b) Collection for all railroads from all sources by a designated bureau?

CONSOLIDATION OF WHARVES, DOCKS AND ELEVATORS.

(34) Can you obtain greater efficiency in the use of waterfront facilities of one or more railroads by the consolidation of: (a) Coal piers; (b) Grain elevators; (c) Merchandise piers; (d) Other piers; so as to (1) Reduce number of units operated; (2) Take full advantage of most modern facilities to reduce double handling of freight; (3) Release facilities for other uses; (4) Reduce switching or floatage; (5) Secure more prompt release of cars?

(35) Will beneficial results follow the placing of all waterfront facilities, or those in certain zones, under single control?

CONSOLIDATION OF PASSENGER STATION FACILITIES.

(36) Can you obtain greater efficiency in operation through extending the consolidation of the passenger facilities of one or more railroads: (a) By combining the forces of two or more lines using the same station? (b) By using one or more stations for handling the business of two or more lines, thus enabling certain stations to be closed? (c) By co-ordinating the use of stations so as to handle in the same station the traffic from or to certain regions? (d) By continuing the use of adjacent stations, but consolidating their forces? (e) By abandoning passenger service on certain sections of a line, the traffic affected to be accommodated on other lines?

CONSOLIDATION OF PASSENGER STATION SWITCHING.

(37) Can you obtain greater efficiency in operation through extending the consolidation of passenger switching: (a) By combining the switching of two or more roads, using the same station, where each now performs its own switching? (b) By combining the switching operations of adjacent stations? (c) By extending any existing joint service to include all switching operation of passenger equipment within the terminal? (d) By reassigning coach yards so as to reduce haul of equipment to a minimum and to obtain maximum efficiency?

(38) Can an existing freight or other yard and terminal

be converted into a purely passenger facility, effecting economy, reducing congestion in both freight and passenger traffic, and decreasing haul of empty passenger equipment?

(39) Can you use wye tracks or loops for turning trains?

CONSOLIDATION OF TICKET OFFICES.

(40) Are city ticket offices, other than at stations, so consolidated that all tickets for each road are sold by each ticket clerk?

(41) Are ticket forces now consolidated at stations used jointly?

(42) Can ticket forces of adjacent stations be consolidated to advantage?

(43) Have you analyzed the necessity of continuing city ticket offices outside of stations?

(44) Have you analyzed the ticket sales in the office to develop the relative number of tickets sold to a certain few heavy traffic destinations, with a view of improving the service by confining sale of such tickets to one or more windows?

(45) Have you considered at depot ticket offices the limited consolidation of sale of railroad tickets to heavy traffic destinations, with the general sale of Pullman tickets, to improve service to the public.

CONSOLIDATION OF TELEGRAPH OFFICES

(46) Can you obtain greater efficiency in the use of telegraph facilities of two or more lines: (a) By further consolidation of adjacent offices? (b) By using the offices of one line in handling trains on an adjacent line? (c) By through routing of messages? (d) By consolidating or co-ordinating relay offices? (e) By a more general use of the telephone, telautograph, automatic telephone, or other means of transmission; attracting attention by visible or audible signals?

CONVERSION OF TWO OR MORE SINGLE-TRACK LINES INTO A MULTIPLE TRACK SYSTEM.

(47) Can you convert two or more single-track lines into a multiple track system, establishing currents of traffic, to expedite train movement; to increase safety, capacity and train tonnage; and to promote economy?

SEGREGATION OF FREIGHT AND PASSENGER TRAFFIC UPON SEPARATE TRACKS WHERE TRAFFIC IS NOW MIXED ON SEVERAL SINGLE OR DOUBLE-TRACK LINES.

(48) Have you considered the possibility of consolidating the passenger traffic of several lines, now carried over three or more main tracks, upon two main tracks? (a) For the purpose of providing a better entrance to a passenger station? (b) For the purpose of setting free badly needed tracks for use in freight service? (c) For the purpose of securing freedom from interruption by passenger train movements of freight, transfer or switching movements?

ROADWAY AND STRUCTURES.

(49) Have you, with the intensified use of terminals, made proper arrangements for the maintenance and improvement of all yard and main tracks and structures to such standards as will render them reliably serviceable under the new conditions?

(50) Are there limitations of curvatures, clearances or other conditions that may interfere with plans of unification in any case?

(51) Are the terminal buildings located and so maintained that the maximum efficiency of the terminal operation may be attained?

(52) Are trains delayed on account of inconvenient or remote locations of billing offices?

(53) Are terminal buildings reasonably accessible to the homes of employees? How should this condition be improved?

(54) Are proper conveniences in the way of rest rooms provided for female employees; and are the buildings properly lighted, ventilated and heated?

Regional Reports to the Director General

Two of the Regional Directors Describe the Steps Which Have Been Taken to Consolidate Facilities for Common Use

A. H. SMITH, director of the Eastern region, and Hale Holden, director of the Central Western region, have made reports to the director general covering the progress that has been made under federal control.

Unification of Railroads in Eastern Region

An estimated annual saving of approximately \$36,000,000 by consolidations and co-ordination of facilities and by other economies in the Eastern region is shown in a report by Regional Director A. H. Smith, dated August 29. made public by Director General McAdoo.

The estimated annual saving in money for each item where it can be determined or approximately estimated, is summarized as follows:

Passenger and freight station facilities and taxes.....	1,060,544
Engine house facilities and taxes.....	969,728
Inspection facilities and forces.....	264,314
Miscellaneous facilities and forces.....	4,150,401
Freight operation.....	3,793,231
Passenger operation.....	8,668,038
Total.....	\$18,335,000

The arrangements listed in these statement have actually been placed in effect, or ordered to be made effective at an early date. There are a large number of similar arrangements under way that will be made effective in the near future, which will be reported from time to time as they are consummated. The report covers the present Eastern region only, on the assumption that a similar report will be made by the regional directors of the Alleghany and Pocahontas regions, including the period when those regions were included in the Eastern territory.

In addition to the foregoing, arrangements have been made which have resulted in great economies and improved service, which it has not been undertaken to reduce into money, because it is so variable and difficult to measure. The report declares that it is fair to say, however, that conservatively estimated, this additional saving will approximate fully as much as that which it has been possible to measure, namely, \$18,335,000.00.

Among these are mentioned the following:

The prompt and preferred movement of government and allied assignments through closer co-operation with the several government departments and representatives of the allied governments. Assembling into solid trains and forwarding to seaboard the large quantities of meat, provisions and supplies for our allies and army in Europe, routing of same by the roads best fitted to handle such class of traffic, and concentration on the destination roads best equipped to make the delivery, in many instances direct from the pier to steamer. This results in prompter movement of important war traffic, avoids congestion at seaboard, permits prompt release of equipment and reduces switching. In this connection, mention might be made of the safe and expeditious movement of an enormous number of troops to cantonments and embarkation camps, a large percentage of the soldiers that have gone to Europe having embarked at ports in the Eastern region.

The arrangement for assembling into solid trains of domestic fresh meat and perishable freight for movement in solid trains from Buffalo, Chicago, and Cincinnati and other western points on certain days of the week for movement via roads best fitted to handle it. This permits of a fast schedule, reduces liability as to loss and damage and permits of reduction in the feeding requirements.

The arrangement for assembling into solid trains of do-

mestic fresh meat and perishable freight for movement in solid trains by designated routes best suited for the handling of such traffic which permits of a reduction in time, affords proper refrigeration protection, and reduction in loss and damage.

The arrangement for assembling oil from the mid-continental fields to eastern points into solid trains for handling via designated routes, which permits of better service, less intermediate switching and junction handling, the efficiency from which has been such as to increase the available tank car supply.

The general classification of freight eastbound by originating roads with the view of running it through to general destinations with the elimination of intermediate switching.

The zoning of traffic from the west to the east with the view of arranging it by direct and through routes, of reducing the amount of traffic handled through the busy gateways of Chicago and St. Louis, and particularly of moving business through the Niagara frontier, and avoiding the congested Pittsburgh gateway. This arrangement provides for the movement from the Northwest of a greater amount of traffic across the Great Lakes through Michigan for points in northern New York state and northern New England; and the movement of traffic from the central west through intermediate junctions between Chicago and St. Louis for handling via the Niagara frontier; reducing switching, expediting movement of traffic, and increasing the capacity of the available facilities.

It has also been arranged that the greater portion of the traffic from St. Louis will be routed through the Niagara frontier. Buffalo, Chicago and New York trunk lines will be used to a greater extent for the through traffic, while the short lines operating through St. Louis, Peoria, Chicago and intermediate junctions to Toledo, Detroit and other Michigan points will be utilized to a greater extent for the short haul traffic. This plan also provides that business moving through the Buffalo gateway for New England points on the Boston & Maine and north thereof will move via Albany and Mechanicsville gateways and avoid the Maybrook and Harlem river gateways, which will keep the freight out of the congested New York district. It further provides that traffic from and through the state of Pennsylvania will move to a greater extent via the Delaware & Hudson through Albany and Mechanicsville gateways for the same purpose.

Handling company fuel and material by most direct routes, saving unnecessary haulings, which under private control was sometimes done to give the greater proportion of a through rate to the receiving line.

The interchange of labor to eliminate accumulations of less carload freight.

The quick transfer of power to roads where most urgently needed. All roads are required to report surplus equipment and it is assigned as the need appears, keeping the available power in service and avoiding accumulations.

The common use of repair facilities to repair and get into service cars and locomotives of other than the owning roads.

The intensive loading and through movement in solid cars from origin to destination of less carload freight, and general adoption of the "sailing day" plan, increasing the loading per car and expediting the movement of this important class of traffic.

The co-ordination of floating equipment at New York harbor, resulting in greatly increasing the efficiency of marine equipment and the more economical movement of traffic in the harbor.

The control of traffic through permits to eliminate long hauls, cross hauls and movements from one port to another, and the diversion of traffic to such ports as are best able to accommodate it, including the diversion of traffic away from the congested conditions of New York harbor to the South Atlantic and Gulf ports, and to Montreal.

The arrangements recently made for the use of the Baltimore & Ohio through the Youngstown district to relieve other lines and facilitate traffic movement.

The utilization of the Pittsburgh & Lake Erie, New York Central and Baltimore & Ohio for handling flow of lake coal from mines on the Pennsylvania Lines West.

The co-operation established between the rail and water transportation systems, i. e., with the coastwise steamship lines, the Erie canal, and the Great Lakes lines.

The appointment of terminal managers at important centers to co-ordinate the facilities and operations of the several railroads.

The elimination of competition as between railroads for the purchase of ties, equipment, etc., and unifying control of purchases through an organization that has been effected of the purchasing officers of the railroads in the various districts into local or group committees to co-operate in the matter of consolidation and co-ordination of purchases as far as practicable in their several zones, standardizing prices and practices to give all the roads the benefit of the lowest quantity prices, and by consultation with the regional purchasing committees effecting the most economical administration of their own departments.

Abolishing of the freight and passenger traffic associations, including the statistical bureaus connected therewith, succeeded by the freight and passenger traffic committees, which have inaugurated a practice of establishing car capacity loading as minimums in fixing new rates on low class commodities, revising and standardizing rates to conserve revenue by removing the downward tendency of rates resulting from reducing the higher to the lower, and the publishing of tariffs in consolidated and simplified form, all of which will result in the saving of large sums to the railroads annually.

The report to Director General McAdoo continues:

Starting from the first of the year, the primary accomplishment in the Eastern region was the outline of an organization pro tem, consisting of six district committees, each committee made up of the chief executive of the railroads in their respective districts, with local committees of operating officers at the important terminals and commercial centers. The desire of the United States Railroad Administration for prompt unification of facilities and operation of the railroads with a view of greater efficiency and economy was immediately presented to those committees and their efforts were directed from the beginning to this end.

This organization is virtually intact today, except that the railroad presidents have been replaced by federal or general managers and the district conferences have become either separate regions or sub-districts of the Eastern region, thereby showing that the plan or organization for the conduct of the properties in the Eastern region as established at the first of the year has been the foundation of the plan of subsequent organization which became effective June 1.

This organization, based upon the devotion of the personnel to the specified leadership, and its undivided support to the purposes of the director general and staff has accomplished the adaptation of all the roads of the region to the wishes of the government and has assisted primarily in the establishment of United States Railroad Administra-

tion standards of various kinds. There has been virtually no friction whatever in the work of the organizations, which has had the effect of placing the officers and employees of the Eastern region in a receptive attitude for obedience to such United States Railroad Administration standards in current conduct of the work as rapidly as such standards are available.

The new organizations under the district directors, federal managers and general managers, which have been in the process of formation for the last two months are approximately established, the changes having taken place without any interference with the work of the roads. The necessity of effecting every possible unification and co-ordination of facilities and operations to bring about the greatest efficiency and economies, of dispensing with the services of every needless official or employee, and at the same time giving to the public the benefit of the greatest measure of convenience and service at the lowest possible cost, is being kept constantly before the organization. You may be assured that no effort will be spared in this direction.

Conditions in the Central Western Region

The director general has given out a short report made to him by Hale Holden, director of the Central Western region. In substance the report is as follows. In general there was a free movement of all classes of freight and where slight congestion occurred at Kansas City terminals, this was cleaned up by a re-routing of freight. On the Ogden rout of the Southern Pacific fire and accidents to snow sheds would have delayed freight had not fruit been deferred to the Atchison, Topeka & Santa Fe, via Fresno, and other freight to the Western Pacific.

Except for the accidents to the snow sheds, there were no serious accidents in the region. Loading has been as follows:

1918	1917	Total Cars Coal Loaded	Increase	Per cent of increase
167,829	150,152		17,677	11.1
		Total Cars Grain Loaded		
1918	1917		Increase	Per cent of increase
52,062	35,658		16,404	46.0
		Total Cars Revenue Freight Loaded		
1918	1917		Increase	Per cent of increase
600,839	599,599		1,240	0.2
		Total Cars Revenue Freight Received from Connections		
1918	1917		Increase	Per cent of increase
311,034	292,088		18,946	6.5

There was an exceptionally heavy movement of refrigerator cars to Colorado, Utah and California and extremely hot weather made it necessary to haul ice long distances to replenish the supply at several re-icing stations. During the month there were 138 through fruit specials for California to the Missouri river and Chicago, averaging 40 cars per train. The total California movement since June 1 amounted to 446 trains, averaging 39 cars each. The Colorado fruit movement began about August 15 and there were 45 fruit specials moved, averaging 34 cars each.

The total movement from the mid-continent oil fields, via the Southwestern region, amounted to 541 trains, averaging 28 cars per train.

In August, 184 troop trains were moved on schedule and without accident. There are 14 roads reporting to the Central Western regional office, although not all included in the Central Western region, and these roads loaded 220,658 coal cars in August, as compared with 220,701 coal cars in July, 202,549 coal cars in June, 1918, and with 150,940 coal cars in August, 1917. The heavy movement in July resulted in a surplus which was disposed of by zoning coal from western Kentucky out of Illinois, Indiana and Wisconsin, furnishing a larger tonnage for the Northwest and opening the state of Michigan to Illinois coal.

There are 10 per cent more men working in the car and locomotive departments than there were in August, 1917.

Although there is a shortage of track men, there is sufficient to keep the roads in safe condition and to make some progress with improvement work.

A man has been appointed to take charge of routing work and each federal manager has been asked to appoint a traffic and an operating man to pay especial attention to this matter.

Besides the elimination of 11,572,856 train miles per year reported in June, there were further reductions in train service in July, made possible by the elimination of 328 950 train miles per year and in August another 556,109 train miles per year. Notwithstanding the increase in passenger rates, passenger travel has continued in large volume.

Consolidated ticket offices have been established at Colorado Springs, Col.; El Paso, Tex.; Fresno, Cal.; Lincoln, Neb.; Long Beach, Cal.; Oakland, Cal.; Pueblo, Colo.; Sacramento, Cal.; San Diego, Cal.; Salt Lake City, Utah; and San Jose, Cal.

George Morton, assistant general freight agent of the Chicago, Burlington & Quincy, has been appointed chairman of the committee to install sailing days, and the car saving per month so far aggregates at 13 stations 5,300 cars.

Good reports have been received in response to a circular urging a campaign to induce shippers to move winter supplies during the summer months.

Between Wells, Nev., and Winnemucca, 191 miles, there are to be 11 cross-over tracks built between the Southern Pacific and Western Pacific tracks which are here parallel, and the work will be completed by October 1, permitting operation of these two roads as double track.

Between Denver, Colo., and Pueblo, the tracks of the Denver & Rio Grande, Atchison, Topeka & Santa Fe, and Colorado & Southern, will be operated as one railroad.

Orders of Regional Directors

STEEL NOT AVAILABLE FOR TANKS.—The Southern regional director has issued a circular quoting a letter from the Priorities Committee of the War Industries Board to the Central Advisory Purchasing Committee stating that applications from contractors for priority on steel intended for the construction of water tanks have been declined and that "it is to be regretted that the railroad companies generally have not yet realized the shortage of steel." The letter adds that manufacturing concerns are being required to use wood or concrete, not only for water but for the storage of fuel oil. In view of the continued shortage of steel, the circular says, all concerned should understand that applications will not be approved by the Priorities Committee for the construction of steel, water and oil tanks, and that construction of such tanks must be confined at present to wood and concrete.

Grain Control Committee.—To control the issuance of permits for the movement of grain under the embargo established at primary markets by the Car Service Section on September 16, the following grain control committees have been appointed by their respective regional directors at the following points:

Chicago.—J. H. Brunkerhoff, terminal manager, chairman; Fred Zimmerman, railroad traffic assistant; J. H. Cherry, Food Administration, Trans. Divn.

Minneapolis.—H. C. O. Bradshaw, terminal manager, chairman; John A. Millington, railroad traffic assistant; Chas. Thompson, Food Administration, Trans. Divn.

St. Louis.—H. A. Kennedy, terminal manager, chairman; T. E. Sands, railroad traffic assistant; W. A. Prinsen, Food Administration, Trans. Divn.

Duluth, Minn., and Superior, Wis.—W. H. Strachan, terminal manager, chairman; G. A. Sherwood, railroad traffic assistant; G. M. Bowman, Food Administration, Trans. Divn.

St. Louis, Mo.—A. S. Johnson, terminal manager, chairman; W. A. Rambach, assistant freight traffic manager, Missouri Pacific; J. F. Dodge, repr., Food Administration.

Kansas City, Mo.—W. M. Corbett, terminal manager, chairman; H. E. Heller, railroad traffic representative; R. A. Peters, Food Administration representative. (This committee will also have jurisdiction over Kansas City, Kan.)

Omaha, Neb.—W. M. Jeffers, terminal manager, chairman; F. Montmorceny, railroad traffic representative; F. D. Wilson, Food Administration representative. (This committee will also have jurisdiction over South Omaha and Council Bluffs.)

Peoria, Ill.—H. D. Page, terminal manager, chairman; H. I. Battles, Food Administration representative. (This committee will also have jurisdiction over Pekin.)

St. Joseph, Mo.—S. E. Stohr, chairman; F. E. Hollingshead, Food Administration representative.

Working Relations With Relinquished Short Lines.—The Southern Regional Director has issued the following:

The government has definitely relinquished control of a number of the so-called short lines. It is the desire of the administration to protect each of them as far as may be reasonable and practicable in the routing of traffic; to accord them equitable divisions, and to give them a fair share of available equipment. Specific routing charts applying from the larger centers and the more important junctions will shortly be made operative. These will give the same recognition to the short lines as to the governmental controlled lines in matters of preferential and secondary routes, as well as the closing of unduly circuitous routes. When these charts are ready to be put into practical use, certain instructions will be given the trunk lines with regard to routing as in connection with the charts from points of origin not specified therein. In the meantime, please instruct all concerned to see that routing desired by shippers, or indicated on bills of lading or on connecting lines billing via all non-controlled lines is accepted and respected, where such routing is not unduly circuitous. If it is desirable, for efficiency reasons, to divert traffic instructed for movement over non-controlled lines, careful record of such diversions should be kept with view of such lines being afforded a reimbursement with other traffic. Non-controlled lines are authorized to call upon this office to make good diversions if the Administration lines do not promptly liquidate the indebtedness.

Changes in divisions of joint rates now in existence, made by advancing or reducing non-controlled lines' proportions, are not to be made without first securing authority from this office. New joint rates, of course, cannot be established without the necessary rate authority from the Southern Freight Traffic Committee. The committee is now engaged in a review of existing divisions, with a view of placing them on an equitable and fair basis. In anticipation of a final decision, however, should the judgment of any official of an administration line be that existing divisions are unfair to the connection, the facts, together with a statement for the reasons for this opinion, should be promptly communicated to this office.

Where the non-controlled line has only one trunk line connection, it should be treated as a shipper of freight local to the latter line, and receive its pro rata of available cars. Where it has two or more trunk line connections, the latter, after surveying the trend of freight, should agree upon each line's share of the responsibility of supplying an equitable share of the equipment required by the short line.

Conservation of Scrap Car Wheels.—The following suggestions have been offered to the regional director by H. B. Spencer, chairman, Central Advisory Purchasing Committee: "The need for both new and scrap cast iron wheels is so great that I recommend instructions be issued to all railroads in your region that immediate and effective action be taken to utilize every second hand and scrap car wheel available. We will require 687,600 chilled cast iron wheels for 87,000 cars and locomotive tenders for the U. S. Railroad Administration, in addition to what is required for the overseas' service. In order to produce these wheels, we must furnish at least 55 per cent old car wheels. With charcoal pig iron available it would have only been necessary to furnish 25 per cent old wheels in the mixture, but charcoal pig iron is unobtainable and we must make up the deficiency with old car wheels. Every railroad acquires and has on hand large quantities of trucks, wheels and axles, which are not serviceable and should

be dismantled. In nearly every case a usable wheel or axle will be procured and in all cases scrap wheels will be obtained. A vigorous campaign requiring every railroad to dismantle all unserviceable trucks and press off every wheel from the axles is the only thing which will relieve the present situation."

No Place for Slackers.—The regional director for the Pochontas region has issued the following circular to employees:

1. I. to do so perform his duty, no matter how exalted or how humble, that the soldiers "over there" may not suffer any loss of efficiency, or be deprived of any possible comfort, through the failure of the transportation facilities of the country.

2. I. to deal with the public, which is called on to pay higher rates (both passenger and freight) for a restricted service, that all may understand why these restrictions are necessary, and know that every effort is being made to give the best possible service, second only to war requirements.

All must realize that the responsibilities of railroad employees under federal control have changed only in that they have been increased, and an appreciation of this fact will be reflected not only here but also at the front.

SUCKERS HAVE NO PLACE IN THIS REGION

Inter-Regional Dining Car Committee.—An Inter-Regional Dining Car Committee has been appointed by Edward Chambers, director, Division of Traffic, especially charged with the installation and supervision of the plan to standardize meals served in dining cars. This committee is to be a permanent one and the members in each region will report to the regional director. The chairman of the committee, J. R. Smart, superintendent, Dining Service, New York Central Railroad, New York, represents the Eastern region.

Delivery of Emergency Coal to Retail Dealers.—The Northwestern regional purchasing committee states that a railroad which delivers coal to any consumer or retail dealer, at the request of the Fuel Administration, to relieve an emergency, may receive therefor the cost of the coal, including lawful transportation charges from the point of origin to the point of destination, and the additional sum of 15 cents per net ton, or more as may be agreed upon by the railroad and the retail dealer. In case of a failure to agree, the additional sum may be fixed by the bureau of prices of the United States Fuel Administration upon application by either party.

Industry Track Agreements.—The Northwestern regional director exhibits two forms covering standard track agreements which were prepared in accordance with the terms of General Order 15, one of which is to govern the construction, maintenance and operation of new industry tracks and the other the maintenance and operation of existing industry tracks not previously covered by written agreement. A supply of these forms has been printed and will be furnished to railroads upon application.

Substitution of Brass and Copper Chain.—The Northwestern regional purchasing committee suggests the substitution of steel chain in place of certain specified types of brass, copper and bronze chain, as recommended by the War Industries Board. The committee also lists a number of types of chain, certain sizes of which it suggests might be eliminated without serious inconvenience.

Concrete Water Tanks.—The Northwestern regional director asks for detailed information concerning the serviceability of concrete water tanks and the recommendations of individual lines with regard to the use of concrete as a material for the construction of water tanks.

Movement of New Locomotives from Builders.—The North western regional director instructs lines under his jurisdiction to see to it that the boilers of new locomotives are thoroughly washed after completing their first trip. This step is ordered to prevent foaming.

Blueprints of Freight Car Specifications.—Blueprints of United States standard freight equipment, together with specifications, may be secured upon application to J. M. Hansen, secretary of the committee on production of the War Indus-

tries Board, Washington, D. C., at prices ranging from five cents each to \$1, varying according to the size of the print.

Prices of Cross Ties.—The Northwestern regional purchasing committee announces that the prices for ties in various territories included in R. P. C. Circular 19, will remain in effect until July 1, 1919.

Salary Increases to Subordinate Officials.—The Northwestern regional director announces that the director general has authorized June 1, instead of August 1, as the effective date for salary increases to subordinate officials. The extent of these increases was indicated in the *Railway Age* of September 13, page 519.

Development of Coal Mines.—The Southwestern regional director adds to his previous instructions with reference to the opening of new coal mines agreed upon by the Railroad and Fuel Administrations. According to this agreement application for the opening of new mines is to be made by the coal mining company in the first instance to the Fuel Administration which investigates as to the desirability of the proposed mine, whether the particular class of coal which would be produced is needed, and whether miners are available. There have recently been some embarrassments in working out this arrangement as the result of railroad officers interfering by giving letters of recommendation to the applicants to be sent directly to the Fuel Administration. This practice is to be stopped immediately, and hereafter such information as is desired describing pending applications will be called for through the proper channel.

Grain Embargo at Primary Markets.—The Northwestern, Central Western, and Southwestern regional directors have set forth the details of the system inaugurated by the Car Service Section on September 16, for the control of the movement of grain to primary markets. Effective September 18, an embargo was placed against all shipments of grain consigned or reconsigned to Duluth, Minneapolis, St. Paul, Superior, Milwaukee, Chicago, St. Louis, East St. Louis, Peoria, Kansas City, Mo., Kansas City, Kan., St. Joseph, Omaha, South Omaha, and Council Bluffs. Hereafter shipments will move only on the permits issued in cooperation with the Food Administration, the circulars containing detailed instructions to govern the application of permits and shipments thereunder. Grain control committees have been appointed at each market, the personnel of which is shown elsewhere in this issue, to consider requests for permits and to control the movement of grain. Standard forms have been prepared to cover the application for a permit, the authorization to a freight agent by the grain control committee to accept and forward a given shipment, and the agent's advice to the committee that a shipment has been made.

Iron and Steel Products.—The Northwestern regional purchasing committee asks for the sizes and amounts of various iron and steel materials in storehouses on hand September 1, due on orders September 1, and used between July 1, 1917, and June 30, 1918. The materials include various types of wheels, ties, track bolts and spikes, tie plates, rail anchors, firebox steel, bar iron, etc.

Assignment of Ballast Cars.—The Southwestern regional director asks that a canvass be made to determine the number of ballast cars available, or which will be available, for other service during winter months. He asks that the cars be promptly assigned to the handling of cinders, stone gravel, sand (both company and commercial) or for the transportation of other commodities for which this class of equipment is suitable, thereby releasing coal cars now in such service. Owning lines are instructed to retain control of ballast cars so that they will be available in time for shopping preliminary to proper assignment next spring. Hence it would not seem proper to place them in general service where they will become badly scattered.

Purchase of Thrift Stamps and War Saving Stamps.—The Eastern regional director states that it is desirable to facilitate in every reasonable way the purchase of Thrift Stamps and War Saving Stamps by the railroad officials and employees at railroad stations, yards, shops and other places where large numbers of railroad employees are at work. The

details relative to the provision of the stamps, the accounting therefor and the proceeds of the sale thereof, should be worked out through the federal treasurers, who can obtain any additional information needed from the federal reserve banks or the War Loan Organization, Treasury Department, Washington, D. C.

Western Railway Club Opens With Keynote Meeting

Three Railroad Officers Speak on Problems and Responsibilities in the Present Situation

THE FIRST MEETING of the Western Railway Club, held at the Hotel Sherman, Chicago, on September 16, was marked by three inspiring addresses. The speakers were M. K. Barnum, assistant to the vice-president, Baltimore & Ohio; H. R. Warnock, general superintendent motive power, Chicago, Milwaukee & St. Paul, and W. E. Dunham, assistant to general superintendent motive power and car department, Chicago & North Western. All three addresses are given in part below:

M. K. Barnum's Address

We can find no more timely keynote at present than the motto, "What can we do to help win the war?" As railroad men, there are very many things that we can do. Transportation is one of the most important factors in war activities; without it the war would have to stop.

The volume of freight business during the first six months of this year for the Class I roads was slightly below the same period for last year. A few figures for the month of June may be of interest; as compared with June, 1917, there was a reduction of 3.2 per cent in revenue ton miles; a reduction of 3.6 per cent in freight train miles. The average tons per train were the same as for last year, 698 tons. The average tons per loaded car were 28.3 tons, an increase of 1.8 per cent. Those figures will serve to give you an idea of the business of the country on the whole as compared with last year. The decreases seem to have been principally in the West and South, while in the East there have been considerable increases. The greatest increase has been in New England.

The locomotive situation has not changed much from 1917. There are a few more locomotives in the total than for that year. A very few of the large orders of government locomotives have been finished and delivered but the work on the balance has been delayed due to the necessity of pushing the work on locomotives for our troops in France. The official reports for the month of June show that there were about 14 per cent in and waiting shop, which is a slight increase over the same month for last year. I mention these figures to give you an idea as to the features that the railroad men will have to concentrate their attention on. The director general has recently asked that we give special attention to the repairs of locomotives, on account of the delay in the delivery of the new locomotives.

THE MATERIAL AND LABOR SITUATIONS

The obtaining of material for locomotive and car work this year seems to be somewhat easier than last year, but the labor supply has been very short, and it has been one of the most difficult features for railroad men to contend with. There has been some improvement in the matter of labor for railroads during the past month or two, and it may still continue to improve, as there are several things that should have a favorable bearing on the situation. In the first

place, the increases in the wages for railroad men, shop men in particular, have made the jobs more attractive as compared with contract work. In the second place, there has been some reduction in the forces used for non-essential work, and furthermore the passage of the new draft law has appeared to help the situation somewhat.

The wage increases have affected especially the day workers, and to some extent the foremen and master mechanics, but up to this time no authority has been given for increase in piece work rates, so that this will tend to discourage piece work and will probably result in its abolition in many, if not all, shops. The experiences which I think we have all had lead me to believe that if piece work is abolished in the shops where it has been in force for a long time, it will eventually result in a decrease in the output of those shops. It may possibly not be felt for three or four months, but it is not human nature to work with the same industry and intelligence and to get the same results when a man works by the hour or by the day, as when he is paid so much per job and a premium is put upon his industry and his intelligence.

The reduction in the force used for non-essential industries has, I think, only begun. I believe that this movement will have to be pushed a great deal harder than it has been, because there is a limited number of men available in this country; there are very few coming from foreign countries, and the draft is going to call for a good many of the able workmen to give up railroad work and go into the government service. It is probable that there will be more women enter railroad work than heretofore. Women should not be asked or expected to do work for which they are unsuited.

One thing that should receive, if possible, more attention, is the safety first movement, as a vigorous campaign in that line will help conserve man power, which is one of the big problems today. Another thing that will need to be watched pretty closely is the tendency of men to lay off. A great many men feel that they do not need more than a certain amount of money to pay expenses, and the increase in wages has already tended to make such men take more time off. The argument, of course, for increases in wages is to enable the men to make a better living, to enable them to save something for investment in liberty loans and war savings stamps, and if they do not take advantage of the increased wages to do those things they should be checked up and their attention called to the fact that they are not showing the proper spirit.

THE CAR SUPPLY PROBLEM

The freight car situation is likely to be as serious this fall as last year, if not more so, as there are only a very few more freight cars in the country than there were last year, and about 6 per cent of the total are bad order cars. That is not extremely high, but it ought to be lower. Some roads have the bad order cars down to 3 per cent, and if some

roads can do it, probably most of them can, although other roads have as high as 10 or 11 per cent bad order cars. The figures for June show 143,343 bad order cars, as compared with 131,353 the same month last year. That is not perhaps a very large increase, but it is in the wrong direction.

The labor situation with regard to car work has been perhaps a little more difficult than for locomotive work on account of the lower rates paid, and the fact that good car men, particularly men who have been accustomed to work on steel cars, have usually been able to go out and get better jobs, as far as pay is concerned, in ship yards or in munition plants. The freight car repair work is being supervised for the country by an assistant to the director general and an organization of district inspectors, and I trust that this organization will, with the co-operation of the men on the railroads, be able to improve the conditions before winter starts in.

We all remember the hard winter that we had last year, and I presume most of us feel that a part of our troubles were due to poor facilities, or facilities that were not sufficient for the requirements. I would urge that it is important immediately to look over our facilities and see if anything can be done to improve them before snow flies, which will probably be pretty soon. I would call special attention to the necessity for seeing that roundhouse conveniences are in good order. The heating apparatus, the lighting apparatus, the air and blower lines, the ash pits, the coaling facilities and the tracks to and from the roundhouse, also the storage tracks, are all features of the utmost importance, and while the time is short, something can probably be done to improve conditions which have not already been taken care of. I realize, of course, that all roads have been giving attention to these matters during the year, but it is possible that a little more can be done.

In spending time and money on these improvements, we should always keep in mind, "Will this help win the war?" as that is the one aim and object that should be before us all. None of these problems is new to us, but they confront us with more force and urgency than ever before, and we must tackle them with increased energy and enthusiasm, always bearing in mind that our success in these matters affects very seriously the success of our boys who are on the other side and are fighting for us the battle of freedom.

Address of H. R. Warnock

The crucial test in which our country is engaged demands the utilization to the utmost of every resource which we have at our command. That one of these should be our transportation machine gives us who are railroad men a signal opportunity to play one of the most important parts in assisting in the removal of the threat against the free institutions of the world that could possibly fall to any single class or group of our civilian population.

Even though this opportunity comes to us with the disruption of the habits of a lifetime; even though it carries with it the contradiction of our political theories, or that it brings to us the threat of material loss; it should be sufficient for us to know that those to whom we have entrusted the conduct of our national affairs in this time of crisis deem these new conditions necessary to the attainment of the great issue confronting civilization. In that knowledge we should all join, as I am sure we do, in co-ordinating all our efforts toward the one great aim with a singleness of purpose and a determination that knows no defeat.

We of the Western Railway Club are men whose interests lie primarily in the mechanical department. Looking about us, after having become somewhat adjusted to the new state of affairs, do we not find after all a large measure of compensation for our disrupted prejudices in that many of our long standing ideals as for the construction and up-keep of equipment are entering the stage of actuality? To resent these innovations is to confess insincerity in the standards

and recommended practices to which, in other years, we readily subscribed, but in the execution of which we seemed to lack initiative, were over-worshipful of our own schemes and creations, or were frustrated through lack of sympathetic interest on the part of influences having a more forceful, though less intimate, connection with railway mechanical affairs than ourselves.

Our earlier freedom in the following of diverse pathways to the same general goal permitted the development and use of a wide variety of equipment, so wide in fact that, except for the good offices of the Master Car Builders' and Master Mechanics' Associations, particularly, in making this equipment conform to certain definite limitations established in the interests of interchange, this all-essential principle in the conduct of the country's transportation business would have been a near impossibility. However, out of that time and method there has also come that wealth of invention that alone makes possible the establishment of universal standards on a basis that promises to be adequate over a reasonable period. Fortunate indeed we are, that the present line of action was not instituted as recently as 20 years ago, before the time when our eyes had been opened to the vast possibilities in the way of increased power and economy that are now matters of accepted practice, to say nothing of the several improvements which, though not yet established, are on the verge of coming into their own and give us promise of still further economies in steam locomotive practice.

THE RAILROAD ADMINISTRATION'S MECHANICAL POLICIES

I have suggested that there is compensation in the existing state of affairs. It is abundantly evident that the Railroad Administration appreciates the great importance of adequate power and car equipment and of having that equipment in a good state of repair. It is not that there is anything new or original in that policy since the excellent things that *should be* are mentioned by the score in the proceedings of our railroad technical associations. It is rather that the roads in a large measure have not been financially able to embark on the betterment schemes in a wholesale way. Those that were able did what they could, but the burden of carrying along with their own repairs the modernization and repair of less capable and more indifferently lines has been simply too great to permit of attaining an average condition of equipment, the country over, that would measure up to the requirement in the present crisis. It is the putting into effect of these *should be* conditions that gives us in the mechanical department cause for satisfaction. Cases in point cover the survey that has been made looking to the more general application of superheater apparatus to engines constructed prior to the advent of that important facility. Likewise investigation has been set on foot looking to the application of stokers to those locomotives not so equipped and whose size warrants resort to mechanical firing.

In the case of freight car equipment there is to be cited the action taken by the Railroad Administration in graduating the extent and cost of repairs to cars in accordance as they are sufficiently modern as to age and construction to be deserving of the attention that will restore them to service. This will have the effect of retiring the weak and obsolete cars that have been inveterate trouble makers to trunk lines for years. At the same time this plan of freight car betterment involves the consistent reinforcement of wooden frame cars where reinforcement is warranted, and the application of better draft gears of specified types to all cars undergoing repairs and not previously so equipped. These improvements constitute a program that any aspiring equipment officer would have been only too glad to have instituted on his line years ago had the financial condition of his road and the policy of his management so permitted.

We have, however, proof of realization on the part of the powers at present in control of the tremendous value of

adequate maintenance and the willingness of those powers to have repairs made to the limit of our capacity in the way of labor and materials, and we, appreciating both the opportunity and the necessity of bringing it about, should not fail in doing our utmost in carrying on this program.

Whatever else may be said about the standardized car and locomotive equipment being offered us, it is, at least, of conservative and rational design and must offer worth-while advantages in quantity production, under which plan only, considering the stress on our industries, can we hope to secure cars and locomotives in such numbers as to approach requirements. We do not expect, during the period of the war, to realize any advantage through simplified maintenance because of the fact that such standard equipment as we may be able to get within that time represents so small a proportion of the total. However, with this initial step taken we can reasonably look forward to a time when it will have its very appreciable effect. Even though the roads be returned to private management, the influence of this innovation undoubtedly will persist with the beneficial results referred to.

RESPONSIBILITIES OF MEN IN MECHANICAL DEPARTMENT

We must not fail to realize in the satisfaction which we find in this new-found appreciation of our department that it carries with it a responsibility in which every man, from the highest to the lowest, has not done his part until he has done his best, not merely on occasion but all the time. Two very important self-admonitions I would place before you. Each individual must remind himself to be diligent. The time for merely casual attention to the duties comprising the daily routine, if ever there was such a time, is past. Our individual duties have expanded, and that, tremendously. But new appreciation of the privileges and responsibilities of citizenship in this splendid republic should give us strength to carry each day's toil on to a successful issue.

The second self-admonition which I would urge upon every one whether in the ranks or on the staff, is the uncompromising suppression of that disposition which wrongfully has been termed the essence of railroading, "passing the buck." The use of this inelegant terminology implies the sense of responsibility evaded. So far should this disposition be uprooted that not only will one's own responsibility not be evaded but there will come, in its stead, a willingness and purpose to go out of one's way if need be to co-operate in attending to whatever duty lies close at hand. In these times the railway employee cannot escape the brand of traitor until he has taken the first step, nor does he earn the designation of patriot until he has taken the second. I do not advocate the indiscriminate meddling by one employee or official in the affairs of another, but what is essential is the cultivation of that spirit that will so unify the organization that all branches and individuals are mutually helpful. To observe an improper condition and to conceive an improvement without giving those most directly concerned the benefit of criticism or suggestion is to fall short of the requirements in this strenuous day.

While the present and the purpose immediately in hand are of vastly greater consequence than the future, it is not beside the point to give heed to the probable status of our chosen industry after the present season of strife shall have been brought to a successful close. We see our government spending its resources for the upbuilding of the railways with a lavish hand. As a war measure, freight and passenger rates have been advanced as have also the wages of the rank and file of those in railway service; this latter, however, without reference to the degree of permanence which shall apply. For the most part we believe it is no more than fair that wages for the great body of railroad men should continue on the present high plane, for certainly the schedules applying to many branches of the service in times past were neither adequate nor just.

Notwithstanding increased revenues and sweeping economies, we observe operating ratios advancing from 20 to 25 per cent over what they were before the government took control, spelling a condition under which railroads, without resort to the general treasury, could not well exist. We prefer not to contemplate the operation of the railways on a basis, after the war, requiring the making up of deficits out of the public fund. Given the privilege of adequate return for the service rendered, the roads can render the service required of them, deal fairly with their security holders, and maintain a living wage for their employees as well as can the government. Whether under private or government control, the railroad industry should "stand on its own bottom" and it is our privilege and duty so to direct our efforts that the roads may be assisted in resuming this basis of operation in due course.

Address of W. E. Dunham

It is peculiarly fitting at this time that we should stop and consider what we can do more enthusiastically to help our railways and the government at this time. We have now to look at things a great deal differently than we did a few years ago. Under the conditions which existed then our horizon practically ended at the interchange point, but we have to look at things now from all the way around the earth. We have got to stop and consider what we do, what influence it will have on the big thing, and that is, of course, the winning of this war. We must face these problems with a great deal more openmindedness than we ever did before.

We are asked by one branch of the government to save all the fuel we can; we are asked by another branch of the government not to use any copper. We have got to be a little more analytical in what we do, and possibly be a little more thorough and work out these problems more carefully before we issue orders and expect somebody else to carry them out at any expense of material or time. Personal loyalty is necessary in everything we do, loyalty which does not stop and ask what the other fellow is doing, whether it is necessary for us to do this to be as good as the other fellow, but that loyalty which will answer its own question with its own inner consciousness as to whether we have done just exactly what we could do and all we could do all the time. If we do that there is not any doubt but what every one of us will feel just as much soldiers of this government as those who are over in France.

The opportunities for every one of us are so numerous that if we attempt to look around and start on everything that we see, we will practically be useless. In our work I believe that we ought to follow a little bit the military idea—have one thing to do and do that to perfection. That does not mean, of course, to be just hobbyists, but to carry the thing through until it is done and done thoroughly. Put concentration in your efforts.

We have on our railroads now, under the instructions of the regional directors those whose duty it is to look after reclaiming materials, so that we will not have to buy articles or use new stuff to the detriment of the government in furnishing good materials for the army across the water. It is surprising how much you can do along that line when you really get out and on the job.

One of our old employees who has been in France quite a while with the railway corps, wrote to Mr. Quayle and said, "If I only had that old scrap pile back of Chicago avenue, I would think I had a gold mine." Let us get a little bit more use out of that old scrap pile and let the fellow over there have the new material. If we get started on that line now, we will be ready for what is coming next year. Without a doubt we will be told that we cannot have copper, that we cannot have paints of a certain kind, and we will be told we cannot have this or that thing, and it is well to start right now utilizing anything we have on hand before we ask for anything new.

General News Department

The Canadian Northern tunnel, the entrance of that road to its terminal in Montreal, was opened for business on September 21. Two passenger trains between Montreal and Toronto will soon be put on.

The Western Railway Club, at its meeting on September 16, elected L. P. Michael, chief draftsman, Chicago & North Western, second vice-president and A. F. Stuebing, western mechanical editor, *Railway Age*, secretary and treasurer to fill out unexpired terms.

A passenger train of the Great Northern was stopped by a robber near Mukilteo, Wash., on the night of September 23, and registered mail of large value was carried off. The robber forced the engineman, by use of a gun, to stop the train, and then to uncouple the mail and baggage cars and draw them forward.

Disastrous Collision in France

A press despatch from Paris, September 20, reports a collision between Dijon and Laroche, in which 30 persons were killed and 25 injured. Most of the passengers killed were children, as was the case in the recent collision in Germany. American soldiers, from a cantonment nearby, took a prominent part in rescuing the injured passengers.

Increase in Grain Loading

Nearly 100,000 more cars of grain were loaded by the railroads under federal control during the period from July 1 to September 14 than during the corresponding period of last year, according to a statement authorized by Director General McAdoo, giving the figures by weeks for each region. The total for the period in 1918 was 335,786 cars, as compared with 233,841 in the corresponding period of 1917.

Disastrous Collision at Dresden

A press despatch of September 24 reports a collision at Dresden, Germany, between an eastbound express train and another train, in which 31 persons were killed and 50 injured. This is the second collision of the first magnitude, reported from Germany within two weeks, the former collision, reported in the *Railway Age* last week, page 563, having resulted in 33 fatalities.

Correction in List of Exhibitors at Traveling Engineers' Association Convention

Through an oversight the name of the American Steel Foundries, Chicago, was omitted from the list of exhibitors at the convention of the Traveling Engineers' Association, published in the *Railway Age* of September 13. This company had its usual space in the exhibit hall in which were shown models of the Simplex coupler, Simplex coupler pocket, Economy draft arm, Eclipse coupler yoke, Andrews side frame and Atlas safety guard and third point support. The representatives attending the convention were W. G. Wallace, H. J. Melchert, P. A. Martin, W. A. Wallace and B. C. Hooper.

M. C. B. Questionnaire on the Use of Wood in Car Construction

The Master Car Builders' Association, acting in conjunction with the American Wood Preservers' Association and the Forest Products Laboratory of the United States Forest Service, has sent to the members a circular asking

for information necessary to permit a thorough study of the proper utilization of wood in car construction and the development of methods of protecting timber against decay. The questionnaire also asks for data concerning the results obtained by using hard woods and uncommon species of wood in car building, the efforts made to save old car lumber and the comparative life of single sheathed and double sheathed box cars of similar weight and capacity.

Massachusetts Railroads

Train service and other railroad conditions in Massachusetts are the subject of a long report which has just been made by the Public Service Commission of that state to the Railroad Administration at Washington, in compliance with a request recently made. Freight service has been poor for at least three years, and passenger service has not been improved much for many years, except that steel cars have been introduced and electric lights have been put into through trains. The block system has been extended, but roadways have not been kept up to first-class condition, although they are reasonably safe. It is recognized that labor conditions have greatly hampered the roads, and the suggestion is made that perhaps trackmen ought to be classed as skilled labor so as to put them in a more favorable situation as related to the demands of the draft and of rival industries. On the whole, it is believed that the general situation has improved materially since the government took control of the roads. The people have put up with inconvenience because of the belief that economies which reduce the service have been necessary because of the war; but the limiting of local tickets to 48 hours is believed to be an unwarrantable interference with passengers' convenience.

Revisions of M. C. B. Rules for 1918-19

The changes in the Master Car Builders' Rules of Interchange for freight cars, for the coming year, proposed by the Arbitration Committee and referred to the Railroad Administration, have been passed on. The new rules as affecting bills for repairs will go into effect on October 1, 1918, although they will probably not be in the hands of all the roads until some later date.

The rules have been retained as nearly as possible in the present form, as far as they apply to roads not under federal control. To take care of interchange between roads operated by the Railroad Administration, a preface has been added. Article I of the preface covers necessary changes in the rules to conform to Circular 7 of the Division of Operation. Article II provides for the elimination of defect carding between roads under federal control, while Article III eliminates billing for certain minor items between roads under federal control. Article IV covers the proper charges for re-weighting and stenciling cars belonging to Government controlled roads.

The following list gives the items affected by the principal modifications in the rules: rule 3, section h, paragraph 2, covers the Railroad Administration's requirements with regard to standards for certain repairs; rule 7 provides for a standard original record of repairs made and the method of handling; rules 32 and 43, covering the responsibility for certain repairs, have been altered. Under rule 101 average credit prices have been provided for certain air brake parts and also for brake beams. The labor allowance for ordinary repair work has been raised to 58 cents an hour and for work on tanks of tank cars to 68 cents. Settlement prices for destroyed cars have been increased to meet present conditions. The percentage to be added to bills, as provided under rule 106, has been reduced from 35 to 30.

Revenues and Expenses for July

The effect of the large increases in freight and passenger rates which became effective in June are plainly to be seen in the statistics of revenues and expenses for the month of July just issued by the Interstate Commerce Commission. For the first time this year there is shown an increase in net operating income, from \$92,599,000 to \$137,845,000, in spite of the continuing increase in expenses, and the operating ratio was 67.64, less than it was in July, 1917, while the ratio for seven months of the year was 63.61. Freight revenues show an increase of approximately one-third

and passenger revenues an even greater increase. Mail revenues continue to decrease. Total revenues were \$468,000,000 as compared with \$348,000,000; operating expenses were \$316,000,000 as compared with \$237,000,000. For the first seven months of the year, however, the net operating income shows a reduction of \$242,000,000, operating revenues having increased by only \$304,000,000 while operating expenses were about \$540,000,000 greater. The net operating income for the seven months was \$290,001,183, as compared with \$532,574,488 in 1917. Total operating revenues were \$2,549,093,932 and total operating expenses were \$2,131,412,009.

SUMMARY OF MONTHLY REPORTS OF LARGE ROADS—FOR THE MONTH OF JULY

This summary covers only roads having operating revenues above \$1,000,000 for the year ended December 31, 1917. (Includes 178 Class I roads and 14 switching and terminal companies.)

Item	UNITED STATES				EASTERN DISTRICT			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....	33,336.92	231,241.95			59,404.60	59,021.64		
Revenues:								
2. Freight	\$37,151,575	\$241,556,482	\$1,408	\$1,045	\$154,120,951	\$109,203,943	\$2,594	\$1,859
3. Passenger	104,403,679	73,739,148	449	319	46,682,507	33,963,799	786	582
4. Mail	4,430,674	4,846,049	19	21	1,728,663	1,990,940	29	33
5. Express	8,512,912	9,059,920	37	39	4,780,728	4,434,629	80	77
6. All other transportation.....	12,091,375	9,900,839	52	43	7,214,775	5,706,508	121	97
7. Incidental	11,434,567	9,076,641	56	39	6,709,887	5,091,102	113	87
8. Joint facility—Cr.....	533,511	352,764	2	2	296,841	161,398	5	5
9. Joint facility—Dr.....	168,487	136,829	1	1	87,957	84,422	1	1
10. Railway operating revenues.....	468,379,804	348,394,394	2,016	1,507	221,446,494	160,377,897	3,728	2,717
Expenses:								
11. Maintenance of way and structures.....	\$3,004,489	40,740,529	232	176	23,180,701	17,178,645	380	289
12. Maintenance of equipment.....	82,953,281	56,068,842	357	242	41,533,083	26,410,855	699	447
13. Traffic	3,917,455	5,396,154	16	23	1,751,817	2,132,968	29	36
14. Transportation	164,127,135	125,116,519	707	541	80,738,579	62,434,590	1,349	1,068
15. Miscellaneous operations	3,393,576	2,873,008	15	13	1,593,892	1,319,486	28	23
16. General	9,092,888	8,298,248	39	36	4,055,267	3,756,284	68	64
17. Transportation for investment—Cr.....	474,949	683,922	2	2	61,888	69,616	1	1
18. Railway operating expenses.....	316,813,838	237,809,378	1,364	1,029	152,791,456	113,163,218	2,522	1,917
19. Net revenue from railway operations.....	151,565,966	110,585,016	652	478	68,655,038	47,214,679	1,156	800
20. Railway tax accruals (excluding "War Taxes").....	15,803,327	14,898,911	68	64	6,373,741	5,960,804	106	102
21. Uncollectible railway revenues.....	63,609	35,863			1,703	1,048		
22. Railway operating income.....	135,699,030	95,650,942	584	414	62,281,297	41,253,875	1,050	698
23. Equipment rents	8,578,670	11,275,444	18	48	4,133,518	43,256,002	72	884
24. Joint facility rent (Dr. Bal.).....	1,432,275	1,288,218	6	6	567,744	669,923	10	11
25. Net of items 22, 23 and 24.....	137,845,425	93,087,280	593	400	61,717,549	37,318,950	1,040	689
26. Ratio of operating expenses to operating revs. %	67.64	68.26			69.20	70.59		

Item	SOUTHERN DISTRICT				WESTERN DISTRICT			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....	42,961.17	42,763.30			129,971.15	129,457.01		
Revenues:								
2. Freight	\$50,840,839	\$35,957,629	\$1,183	\$841	\$122,189,785	96,394,910	940	744
3. Passenger	18,470,550	9,895,088	430	231	39,250,632	29,880,261	302	241
4. Mail	718,544	746,829	17	17	1,983,468	2,198,280	15	17
5. Express	857,926	1,196,208	20	28	2,874,258	3,429,083	22	26
6. All other transportation.....	816,520	669,793	19	16	4,060,680	3,524,538	31	27
7. Incidental	1,362,003	904,766	32	21	3,362,675	3,080,153	26	24
8. Joint facility—Cr.....	120,548	93,882	3	2	106,123	97,484	8	8
9. Joint facility—Dr.....	26,558	22,587	1		53,972	29,820	4	4
10. Railway operating revenues.....	73,160,372	49,441,608	1,703	1,156	185,411,111	138,416,406	1,433	1,099
Expenses:								
11. Maintenance of way and structures.....	8,457,184	6,211,558	197	145	22,266,567	17,350,326	171	135
12. Maintenance of equipment.....	13,928,922	9,491,394	324	222	27,491,276	20,458,583	211	156
13. Traffic	714,724	959,311	17	22	1,350,914	2,303,875	10	18
14. Transportation	24,906,191	17,044,988	580	399	58,482,365	45,636,935	449	352
15. Miscellaneous operations	323,456	245,297	8	6	1,476,223	1,308,225	11	10
16. General	1,351,532	1,179,103	31	28	3,686,090	3,862,861	28	30
17. Transportation for investment—Cr.....	109,150	116,002	3	3	303,911	498,304	2	4
18. Railway operating expenses.....	40,572,859	35,015,649	1,154	819	114,449,523	89,630,511	883	699
19. Net revenue from railway operations.....	32,587,513	14,425,959	549	337	70,961,588	48,785,895	550	399
20. Railway tax accruals (excluding "War Taxes").....	2,349,598	2,126,355	55	50	1,088,771	1,088,771	8	8
21. Uncollectible railway revenues.....	12,452	8,881			1,048	1,048		
22. Railway operating income.....	30,249,963	12,299,723	494	287	69,872,817	47,696,124	542	397
23. Equipment rents	1,112,889	1,436,453	26	33	1,898,888	2,311,111	14	18
24. Joint facility rent (Dr. Bal.).....	902,264	160,141	2	4	3,388,111	3,388,111	26	26
25. Net of items 22, 23 and 24.....	29,347,674	12,139,535	492	283	66,484,636	44,307,913	536	389
26. Ratio of operating expenses to operating revs. %	67.76	70.82			69.68	70.82		

*Does not include Kansas City Terminal Ry., Louisiana & Arkansas Ry., and Kansas City, Mexico & Orient Ry. of Texas. †Debit item. Note: The average railway operating income corresponding to item No. 25 above for the months of July for the years covered is: 1918, \$137,845,425; 1917, \$93,087,280; 1916, \$344 per mile of line for the United States.

September 19, 1918.

Missouri & North Arkansas Taken

Over by Government

Train service on this road, 359 miles long, was entirely suspended for four or five days last week. On September 6, the federated shops crafts on the road notified the management that unless General Order No. 27 of the Railroad Administration, and all its supplements, were made effective on that road on September 7, the shopmen would stop work. The strike took place, as threatened, on the 16th, and was only settled when the road was taken over by the government on the 20th. The receiver had found it financially impossible to pay the men according to the government wage scale. When it was announced that the road had been placed under federal control the striking employees reported for duty and trains were again run. The road had once been taken by the government and subsequently returned.

Untermeyer and Sisson Before Bankers' Association

Samuel Untermeyer, of New York, who represented the Railroad Security Holders' Committee in their negotiations about their contracts with the government, and Francis H. Sisson, vice-president of the Guaranty Trust Company, of New York, addressed a meeting of the Savings Bank section of the American Bankers' Association at Chicago on Tuesday of this week. Mr. Untermeyer said that the railroads had failed to secure modification of the contract form in two vital and fundamental particulars. Section 3, known as the acceptance clause, requires the carrier to accept an annual compensation, which will not recompense it for diversion of traffic, abandonment of operation, abrogation of traffic agreements and traffic connections, or even complete dismemberment of the property. The bare physical properties may be returned, but good-will, which has cost decades of labor and millions of expenditure to upbuild, may be destroyed, without any compensation to the railroad. The contract also requires that the road be charged with the cost of all additions and betterments, which the director general may authorize for purely war purposes, or which are incident to the process of unification; and the cost of other changes from which the government gets the entire benefit, and which the carrier may not want, and not be able to use if the property is returned to private ownership. Furthermore, the carrier will be charged with the abnormal prices of the war period, not based on a fair value to the road. As the government has reserved the right to use the entire standard return, over fixed charges, for additions and betterments not chargeable to the United States, it is not likely that there will be any increase in dividends, and probably most roads will be forced gradually to reduce and finally to discontinue their payments entirely.

Government ownership, at a fair price, will be far more advantageous for the government, and finally, it will probably be more just to the security holders than federal control under the onerous conditions of this contract.

Mr. Sisson, in considering the possible solution of the transportation problem, pointed out that government ownership of railroads has been successful in no country, with the single possible exception of Germany, where, under military rule, it has attained some degree of efficiency. The railroads of the United States, however, have served the public at the lowest capitalization and with the greatest efficiency of any railroads in the world. In its tendency to assume credit for saving the railroads, the Railroad Administration is simply priding itself upon its part in saving the transportation system from a disaster which other government agencies have forced upon it. Moreover, it is priding itself upon effecting economies through elimination of competition by pooling of operations and by the removal of all state interference, together with raising of rates, all of which steps had been strenuously advocated by the railroads themselves for years. Mr. Sisson recognized the defects of the old competitive system. He advocated the establishment of regional railroad systems under private control, with wasteful competition eliminated, and perhaps with government guarantee of investment returns. He thought that railroad stocks, when contracts were once signed, would be in the same class as railroad bonds, since, with their earnings definitely limited and guaranteed, speculative possibilities will be largely eliminated, and their prices should not greatly fluctuate.

Traffic News

The number of blast furnaces in blast in the Pittsburgh district is now 130 out of a total of 134, the greatest number in operation at any one time since last December, and in fact the greatest number in blast at any one time in this territory for many years. No furnaces in that territory are banked or out of blast for the lack of coke or other causes within the control of railroads.

The steamer J. M. Schoonmaker cleared from the Wheeling & Lake Erie dock at Cleveland this week, with a cargo of 14,767 tons of Pittsburgh coal, in addition to its own fuel, amounting to 406 tons. This is said to be the largest cargo of coal ever loaded on the Great Lakes. The Railroad Administration, Eastern region, has charge of lake shipping, and has taken special measures to secure maximum loading of vessels.

The Railroad Administration, after careful consideration of applications from shippers of sand, gravel and crushed stone, to modify the recent increases in freight rates by substituting some other basis for the uniform advance of one cent per 100 lbs., declines to adopt any other general basis. Consideration will be immediately given to all individual cases where the increases have brought about unnecessary hardships.

Railroad and Pullman tickets will be sold in a single transaction at ticket offices, according to plans worked out by the Railroad Administration to be put into effect about November 1. Under the present arrangement the passenger frequently stands in line three times; once to ascertain whether Pullman accommodations are available, before buying his ticket, again to purchase the railroad ticket, and finally to purchase the Pullman ticket.

A system of government-owned, sea-level intercoastal deep canals extending from Boston to Beaufort, N. C., was recommended in a report submitted to the Senate on September 18 by Secretary Redfield of the Department of Commerce, in response to a Senate resolution. He urged the permanent acquisition by the government of the Cape Cod and the Chesapeake and Delaware canals and their prompt improvement, as well as the construction of a sea-level canal across New Jersey.

Coal Production

Production of bituminous coal during the week ended September 14, while greater than that during the preceding week, which included Labor Day, equalled the production during the week ended August 31. Preliminary estimates place the production during the week at 12,692,000 net tons, an increase over the corresponding week of 1917 of 15.7 per cent. The shortage for the coal year to date now amounts to 13,624,000 net tons and makes necessary an average daily production during the balance of the year 2 per cent in excess of the average daily production to date if the estimated requirements established by the Fuel Administration are to be fulfilled.

The production of anthracite during the week is estimated at 2,088,000 net tons, 4 per cent above the corresponding week of 1917. Total production for the coal year to date is estimated at 47,733,000 net tons, an increase of 2½ per cent over the corresponding period of 1917.

The percentage of full time output during the week ending September 7 lost on account of car shortage is reported by the bituminous operators as 5 per cent.

The report by the Car Service Section of the Railroad Administration shows the total coal loading for the week ending September 7, as 227,603 cars, as compared with 204,791 in the corresponding week of 1917. Estimated reports for the week ended September 14, bring the increase in the total loading up to that date since January 1 to 569,302 cars.

Equipment and Supplies

Additional Locomotives for Railroad Administration

The United States Railroad Administration is expected to place orders shortly for locomotives for 1919 delivery. Reports have been received from the various railroads as to their requirements for 1919 and careful surveys have been made as to the number of engines that can be obtained for domestic roads and for military use in France, as well as for the Allied Governments. The locomotive companies still have orders which will keep their plants busy until well into next year, but the intention is to place the 1919 orders well in advance so that arrangements can be made for materials.

The German Locomotive Industry

Rudolf Dittes, general secretary of the German Locomotive Building Union, has been writing pretty freely of late in the German papers about the post-war prospects of the German locomotive industry.

He is of the opinion, says an item in the Engineer of London, that employment will be very satisfactory, but he does not think as erroneously assumed in many quarters, that the maximum productive capacity will be attained; he estimates that the production of the 19 south and north German factories will exceed by far 4,000 locomotives, with a total weight of considerably more than 200,000 tons.

He bases his belief on the following facts: Prior to the war about one-fourth of the output of large and small engines was exported; at present this is all available for filling home orders, so that more locomotives are now at the disposal of the home railways, field and military railways, than was the case in peace times; the difficulties experienced in connection with transport and traffic are due more to lack of coal than of engines, although several thousand engines have been sent to neutrals, to the Allies of the Central Powers, and to occupied territories. Most of them will return more or less uninjured from the different military fronts, etc., and will be sold to building contractors, large factories, and small branch railway line companies. There will thus be a considerable demand for small locomotives at home; the broken trade relations with the leading markets of the world, however, will only be restored after overcoming many difficulties, which will take some years to do.

The falling off of export orders, and the smaller demand for small type engines will be temporarily compensated for by an increased home demand; but this will soon dwindle, as expenses after the war will have to be curtailed to the utmost, and many firms will repair their old engines instead of buying new ones. Furthermore, supplies of raw materials will not be so easily obtained; still, there are considerable stocks available yet in various available markets, and the many workmen returning to normal life from the front will enable them to be dealt with in the old and recently established factories—among the latter being that of the A. E. G. at Henningsdorf—so that there will be no lack of locomotives in Germany.

Machinery and Tools

THE PENNSYLVANIA RAILROAD is inquiring for one 18-in. and one 20-in. heavy duty slotters; two 20-in. heavy duty back-gear crank shapers, and one 18-in. crank slotting machine.

Signaling

THE NEW YORK CENTRAL has awarded a contract to the General Railway Signal Company for the installation of an electric interlocking plant at the east end of its freight classification yard at Rochester, N. Y.

Supply Trade News

B. J. McComb, superintendent of construction on the Wheeling & Lake Erie, with headquarters at Canton, Ohio, has resigned to enter the sales department of the Reading Specialties Company, Reading, Penn. He will have charge of the middle western territory, with headquarters at Canton, Ohio.

Payne G. West, assistant sales manager of the T. L. Smith Company, concrete machinery manufacturers of Milwaukee, Wis., has severed his connection with that firm to become



P. G. West

assistant manager of fuel sales for the Lake-wood Engineering Company, Cleveland, Ohio. Mr. West received his education at Carroll College, Waukesha, Wis., and in the college of engineering of the University of Wisconsin. He graduated from Carroll College in the class of 1901. After spending a number of years in various construction projects in different manufacturing lines, he became associated with the T. L. Smith Company in 1907 and was in the continuous service of that company for a

period of 12 years, during most of which time he was assistant sales manager. This position afforded him an opportunity to gain a thorough knowledge of the machinery field as well as of factory production methods.

Oscar F. Ostby, manager of sales of the Glazier Manufacturing Company of Rochester, N. Y., has been elected vice-president of that company, with headquarters as heretofore at 2736 Grand Central Terminal, New York. He will also continue to represent the Grip Nut Company of Chicago, and the White American Locomotive Sander Company of Roanoke, Va.



O. F. Ostby

The Glazier Manufacturing Company manufactures a complete line of oil headlights as well as a complete line of electric headlight cases and interiors. Mr. Ostby, besides having represented the company for about a year, has also been much interested in the locomotive headlight field in the past in the

interest of the International Acetylene Association and through his connection with that association, strenuously combatted the passage of headlight laws in several states which demanded electrical equipment only. He was born March 5, 1883, and received his education in the public schools of Providence, R. I. From 1901 to November, 1904, he was engaged in publicity work, following which he was connected with the Commercial Acetylene Railway Light & Signal Company, and later, with the Refrigerator, Heater &

Ventilator Car Company, serving with the latter as general manager. He has been one of the leading members of the Railway Supply Manufacturers' Association and was its president in 1915-1916.

Fred G. Zimmerman, assistant to secretary of Harry Vissering & Company, and the Okadee Company, has been appointed acting secretary, succeeding **Marshall E. Keg**, granted a leave of absence.

B. H. Tripp, special representative of the Chicago Pneumatic Tool Company on the Pacific coast, has been appointed district manager of sales for the Pacific coast territory, with headquarters at San Francisco, Cal., succeeding **M. W. Prisceler**. The Los Angeles branch of the company will also come under Mr. Tripp's jurisdiction.

Charles H. Tucker has left the service of Toledo Bridge & Crane Company of Toledo, Ohio, and together with **William F. Billingsley** and others has incorporated the American Crane & Engineering Company of that city. It is reported that this company has a government contract for locomotive cranes and will build a plant for their manufacture.

Trade Publications

TIGHT RIVETS. The American Flexible Bolt Company, New York, has developed a new type of rivet, known as the American rivet, which is described in Bulletin No. 301. It upsets from both ends, and because of this is claimed to make a tight rivet. Reproductions of actual photographs of plates sectioned for the purpose, are shown to illustrate this point.

FLUE GAS ANALYZER.—The Vulcan Fuel Economy Company, Chicago, Ill., in the August issue of Vulcan's Forge, describes the Vulcan-Orsat flue gas analysis instrument, which is claimed to be a decided departure from instruments of this kind now on the market and to have the advantages of precision, ease of control, durability and quick interchangeability of parts. A copy of this paper will be sent on request.

THE LUBRICATION OF BALL BEARINGS.—The United States Ball Bearing Manufacturing Company, Chicago, has reprinted in an attractive booklet an article published in the American Machinist engineering of the company. Methods of determining the best lubricants to use are described, as well as the proper housing of ball bearings. The text is well illustrated with sketches shown of February 21, 1918, by Otto Bruenauer, director of sales and ing ways of sealing the bearings from dirt and water.

SUPERHEATER UNIT MAINTENANCE.—This is the title of an eight-page pamphlet issued by the Locomotive Superheater Company, New York, describing the principles pertaining to the care and operation of the locomotive which prevent the necessity of repairs to the superheater units. Some of the matters dealt with are the necessity for clean flues, the effects of high water, the maintenance of the damper and the ball ends, etc. The pamphlet is illustrated with a number of sketches and photographs of tools that are especially adapted to the work of repairing superheater units.

THREADING MACHINERY.—An attractive 78-page catalogue, No. 24, has been issued by the Landis Machine Company, Wayneboro, Pa., which is devoted almost entirely to a detailed description of Landis bolt threading and screw cutting machinery, but also briefly describes the Landis pipe and nipple threading machine and the Landis pipe threading and cutting machine. It contains many illustrations of the machines and sketches of the detail parts, as well as a table of U. S. standard, V, Whitworth and International threads and a table showing cutting speeds per revolution of head per minute.

ELECTRIC SOLDERING IRONS.—The Cutler-Hammer Manufacturing Company, of Milwaukee, Wis., and New York, has issued an eight-page folder describing and illustrating the C-H electric soldering irons and hand tools. Two views are shown of the soldering iron, which has a threaded heating core over which the tip is screwed, and a new automatic rack is explained in detail. A six-inch current regulating plate, which provides temperature control where different grades of work are being done, and the C-H 7050 feed-through switch for installation on the heater cord, are also illustrated.

Railway Financial News

ADDISON, TOLSON & SEXTON at the regular meeting of the directors on Tuesday, the usual quarterly dividend of 1½ per cent was declared on the common stock, payable December 2 to stock of record October 31. S. D. Beldsoe and E. D. Engel were elected directors to succeed Walker D. Hines, now assistant director general of railroads, and Homer A. Stillwell, deceased.

CANADIAN NORTHERN.—The reconstituted board of directors consists of D. B. Hanna, president C. J. Mitchell, Major Graham Bell, Robert Hobson, Frank P. Jones, E. R. Wood, A. T. Riley and C. M. Hamilton.

CHICAGO & WESTERN INDIANA.—J. P. Morgan & Co., the First National Bank, the National City Co. and Harris, Forbes & Co., have issued the following statement to the holders of the Chicago & Western Indiana one-year 6 per cent notes, due September 1, 1918: "With regard to the Chicago & Western Indiana Railroad Company one-year 6 per cent notes which matured on September 1, and were not paid, we have received advices from John Skelton Williams, director of the Division of Finance Railroad Administration, who states: 'The director general would be willing to enter into a contract with the Chicago & Western Indiana, whereby the standard rental to be paid during the period of government control shall provide a sum of money sufficient to pay all present fixed charges and taxes, including 6 per cent per annum on this issue of \$15,000,000 of notes.' In view of this assurance from the Railroad Administration to be received by the Chicago & Western Indiana under the government railroad control bill we have been requested by the company with the assent of the Railroad Administration to ask the noteholders to extend their notes for one year at 6 per cent with the present collateral remaining unchanged, upon payment for extension of the compensation of 1¼ per cent of the principal amount of notes extended. Investment yield on the extended notes would thus be slightly over 7¼ per cent. Holders of the above notes are therefore requested to present their notes at the office of J. P. Morgan & Co., receiving at the time of deposit a receipt which when a sufficient amount of notes has been deposited and the plan has been declared operative will be exchangeable for extended notes, the noteholders receiving at the time of exchange payment of the coupon due September 1, 1918, and the amount of compensation mentioned above, namely, \$12.50 per \$1,000-note." The bankers are acting in the matter without compensation and they urge the holders of the notes to accept the offer.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Charles T. Lewis has been elected a director to succeed W. H. Newman, deceased. Horace E. Andrews, C. B. Seger, and Edward S. Harkness have been elected directors to succeed A. H. Smith, R. S. Lovett, and H. A. Worcester, respectively.

This company has agreed to accept the terms of the government compensation contract. See New York Central.

NEW YORK CENTRAL.—The directors of the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis, and the Michigan Central, have authorized the officers to execute on behalf of those companies the federal compensation contract with the director general.

C. B. Seger, E. S. Harkness, and Charles T. Lewis have been elected directors of the New York Central, succeeding R. S. Lovett, Marvin Hughitt, and F. J. Jerome. The resignations of Leonard J. Hackney and Frank J. Jerome as directors of the New York Central and the Cleveland, Cincinnati, Chicago & St. Louis have been accepted by the boards of directors, the retirement of these men being made necessary by a recent court decision that no person in the employ of the Railroad Administration be allowed to take part in the consideration of the government contract.

The New York Central has declared the regular quarterly dividend of 1¼ per cent, payable November 1 to stock of record October 8.

Railway Officers

Railroad Administration

Regional

H. N. Rodenbaugh has been appointed staff officer, engineering, on the organization of the Southern regional director, with office at Atlanta, Ga. This was incorrectly reported as **W. R. Rodenbaugh** in our issue of September 6, page 463.

E. J. Cleave, superintendent of the Philadelphia Terminal division, of the Pennsylvania Railroad, with office at Philadelphia, Pa., has been appointed terminal manager, at Philadelphia on the staff of **C. H. Markham**, regional director of the Allegheny region.

T. E. Paradise, division master mechanic and trainmaster on the Chicago, Burlington & Quincy, with headquarters at Centerville, Iowa, has been appointed mechanical assistant on the regional director's staff of the Central Western region, with headquarters at Chicago, effective September 19.

Federal and General Managers

A. De Bernardi, general manager of the Kansas City, Mexico & Orient, with headquarters at Wichita, Kan., has been given jurisdiction over maintenance and operation on all the railroad terminals in that city.

H. F. Anderson has been appointed general manager of the San Antonio & Aransas Pass and the San Antonio, Uvalde & Gulf, with headquarters at Houston, Tex., succeeding **J. S. Peter**, who has resigned to go with the corporate interests, effective September 15.

A. Robertson, federal manager of the Missouri Pacific, the St. Louis Southwestern, lines north of Texas; the Louisiana & Arkansas and the Southern Illinois & Missouri Bridge, has had his jurisdiction extended to include the Memphis, Dallas & Gulf, which road has recently been placed under federal control.

E. T. Lamb, federal manager of the Atlanta, Birmingham & Atlantic, the Atlanta & West Point, the Western Railway of Alabama, the Charleston & Western Carolina, and the Atlanta Terminal Company, with headquarters at Atlanta, Ga., has had his jurisdiction extended over the Georgia Southern & Florida and the Hawkinsville & Florida Southern.

C. G. Burnham, federal manager of the Chicago, Burlington & Quincy, the Quincy, Omaha & Kansas City, the Toledo, Peoria & Western, west of Peoria, including the Peoria terminals; the Rockport, Langdon & Northern, and the Rapid City, Black Hills & Western, has had his jurisdiction extended over the Davenport, Rock Island & Northwestern, effective September 21.

LeRoy Kramer, federal manager of the Missouri, Kansas & Texas, the St. Louis-San Francisco, the Oklahoma Belt, the West Tulsa Belt, and the Kansas City, Clinton & Springfield, with office at St. Louis, has had his jurisdiction extended over the St. Louis-San Francisco, lines east of the Mississippi river; the latter lines were formerly under the jurisdiction of **E. T. Lamb**.

Operating

R. E. Southworth has been appointed trainmaster of the Los Angeles division of the Southern Pacific, with headquarters at Indio, Cal., vice **E. Entelman**, promoted.

F. A. Watkins has been appointed assistant trainmaster on the Toledo division, of the Pennsylvania Railroad, Western Lines, succeeding **C. W. Blount**, promoted, effective September 18.

C. E. Denney, assistant to the president on the New York, Chicago & St. Louis, with office at Cleveland, O., has been appointed assistant general manager, with the same headquarters.

C. G. Smith, trainmaster on the Chicago, Rock Island & Pacific, at Des Moines, Iowa, has been transferred to the West Iowa division, with headquarters at Council Bluffs, Iowa, effective September 12.

W. H. Guild, assistant superintendent on the Oregon-Washington Railroad & Navigation Company, at Portland, Oregon, has been appointed assistant to the general manager of the Union Pacific, effective September 19.

Walter Allen has been appointed chief despatcher on the Denver & Rio Grande, Salt Lake division, with headquarters at Salt Lake City, Utah, succeeding **E. Standiford**, who has resigned to enter military service, effective September 12.

J. S. Pope, assistant trainmaster on the Denver & Rio Grande, at Thistle, Utah, has been promoted to trainmaster, with headquarters at the same point. **P. Clifford**, assistant trainmaster, was also promoted to trainmaster, with headquarters at Thistle.

The Birmingham branch of the St. Louis-San Francisco, running from Memphis, Tenn., to Birmingham, Ala., has been returned to the management of the Frisco for operation, although it still remains under the jurisdiction of the Southern regional director.

E. A. Kelley, superintendent of terminals of the New Orleans Terminal Company and the Southern Railway, with office at New Orleans, La., has been appointed terminal manager, at that city, of all government operated lines. He will have jurisdiction over the terminals of all lines within the switching limits of New Orleans, Algiers, Avondale, Gretna and Westwego.

Fred Wear, superintendent of the Butte division, of the Great Northern, has been appointed terminal manager, at Butte, Mont., effective September 18. Mr. Wear will have jurisdiction over the terminal operations of the Butte, Anaconda & Pacific, the Chicago, Milwaukee & St. Paul, the Great Northern, the Northern Pacific, and the Oregon Short Line. The territory included in the district under his charge extends to and includes Mountain Junction on the North, the Butte Yard and M. U. transfer on the east and Silver Bow, Mont., and Dawson on the west.

The following appointments have been made on the Pennsylvania Railroad, eastern lines: **A. M. Parker**, superintendent at Camden, N. J., appointed superintendent of the Philadelphia Terminal division, with office at Philadelphia; **A. G. Mitchell**, superintendent of the Monongahela division, at Pittsburgh, Pa., appointed superintendent of the West Jersey & Seashore Railroad and the Camden Terminal division, with office at Camden, N. J.; **P. L. Grove**, superintendent at Wilmington, Del., appointed superintendent of the Monongahela division, with office at Pittsburgh, Pa.; **G. M. Smith**, assistant superintendent at Wilmington, Del., appointed superintendent of the Delaware division, with office at the same place; **A. W. McClellan**, division engineer at Altoona, Pa., appointed assistant superintendent of the Philadelphia division, with headquarters at Frazer, Pa.; **W. L. Burt**, trainmaster at New York, appointed assistant superintendent of the Maryland division, with headquarters at Shamokin, Pa., and **L. K. Marr**, passenger trainmaster at New York, appointed superintendent of the Philadelphia Terminal division, with office at Philadelphia.

Augustus E. Ruffer, who has been appointed general superintendent of the Erie Railroad, lines east, with headquarters at New York, as has already been announced in these columns, was born on July 23, 1873, at Port Jervis, N. Y. He began railway work on October 19, 1889, with the Erie as a messenger, and served for two years in the despatcher's and superintendent's office. He then was appointed an assistant clerk to the chief despatcher, and from 1894 to 1896 was a clerk in the superintendent's office. From 1896 to September, 1905, he served in the office of the superintendent of transportation consecutively as file clerk, accident clerk, special car tracer, manifest clerk, assistant chief clerk and chief clerk. On September 1, 1905, he left the service of the Erie to become special agent in the operating department of the Lehigh Valley, which position he held until October 1, 1906, when he returned to the Erie as special agent in the operating department. On May 1, 1911,

he was appointed chief engineer on the Susquehanna division and then, after the following year to December, 1915, he was assistant superintendent on the New York division, with headquarters at Jersey City, N. J. He was appointed superintendent of the Wyoming division, at Scranton, Pa., in December, 1915, and in May, 1917, was appointed superintendent of transportation, with headquarters at New York. He subsequently served as general superintendent of transportation until his recent appointment as general superintendent, lines east, of the same road as above noted.

J. G. Bloom, whose promotion to superintendent of the Louisiana division of the Chicago, Rock Island & Pacific was announced in the *Railway Age* of August 2, was born at Xenia, Ohio, on November 25, 1869. Mr. Bloom graduated from the civil engineering course of Ohio State University in 1889. In August of that year he entered the service of the Pennsylvania Lines in an engineering corps at Cincinnati, Ohio. For the next year and a half he was with the Norfolk & Western as assistant roadmaster at Petersburg, Va., following which he engaged in city engineering work at Xenia, Ohio. In April, 1892, he became instrument man on the Baltimore & Ohio South Western at Cincinnati, and until 1902 he was consecutively assistant engineer, division engineer and principal assistant engineer, following which he became division engineer on the Baltimore & Ohio at Newcastle, Pa. In 1903, he entered the service of the Chicago, Rock Island & Pacific as principal assistant engineer, at Topeka, Kan., and subsequently became engineer maintenance of way on the Southwestern and Choctaw districts. In January, 1910, he resigned to become president of the Southern Ballast Company at Lester, Okla. Later he became superintendent of construction with the J. F. Stevens Construction Company of New York and the Robert Grace Contracting Company of Pittsburgh, Pa. In October, 1914, he returned to the Rock Island with which road he was engaged on valuation work until July 1, 1916, when he became superintendent of the Amarillo division at Amarillo, Texas. In the spring of 1918 he was appointed division engineer, with headquarters at Herington, Kan., which position he held at the time of his promotion to superintendent of the Louisiana division at El Dorado, Ark., on August 1, as mentioned above.

B. A. Campbell, whose promotion to superintendent of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, was announced in the *Railway Age* of September 13, was born at Elgin, Ill., on May 23, 1865. Mr. Campbell began his railway career as a passenger brakeman on the Chicago, Milwaukee & St. Paul, on March 10, 1882, and subsequently became train baggage man and freight brakeman. On August 9, 1887, he entered the service of the Chicago, Burlington & Quincy as a freight conductor. Two years later he became a passenger conductor and on March 20, 1900, he was promoted to trainmaster on the Sheridan division, with headquarters at Sheridan, Wyo. On January 1, 1906, he resigned to go with the Denver & Rio Grande at Salt Lake City, Utah. In the fall of that year he was promoted to assistant superintendent, and on April 21, 1907, he entered the service of the Southern Pacific. He was promoted to assistant superintendent on January 1, 1913, and three years later he was transferred to the Salt Lake division, where he was located at the time of his promotion as mentioned above.

Financial, Legal and Accounting

A. B. Cauthen, secretary and auditor of the Durham & Southern, with office at Durham, N. C., has been appointed auditor, reporting to **H. W. MacKenzie**, general auditor, at Portsmouth, Va.

R. G. Streit, chief clerk to the auditor of the Chicago, Indianapolis & Louisville, has been promoted to general auditor, effective September 18, succeeding **H. T. Evans**, who has resigned to become auditor for the corporation.

E. F. Broomhall, secretary for the Missouri, Kansas & Texas Lines, at Parsons, Kan., has been appointed auditor of disbursements, at St. Louis, Mo. **E. N. Larson** has been appointed auditor of revenue, at St. Louis. **C. E. Spooner**, general auditor in Kansas, has been appointed auditor, in Kansas, with headquarters at Parsons, Kan., effective August 21.

General Order No. 44, issued by the Railroad Administration

on September 24, provides that the chief accounting officer in each railroad shall be designated "federal auditor." The chief accounting officer in charge of an accounting organization under the federal auditor shall be designated "auditor." The order states that federal auditors and auditors ought not to perform any services for a railroad corporation, except in special cases, after obtaining express authority.

Traffic

B. E. Morgan, freight traffic manager of the New York, Chicago & St. Louis, at Cleveland, O., has been appointed general freight agent, with the same headquarters.

Walter S. Randolph, general agent of the passenger department of the New York Central, with office at Albany, N. Y., has been appointed assistant general passenger agent, with office at Buffalo, N. Y., to succeed **Harry Parry**, promoted; **A. L. Miller**, general agent at Montreal, Que., has been transferred to Albany, succeeding Mr. Randolph.

W. J. Mullin, general traffic manager of the Delaware & Hudson, at Albany, N. Y., has been appointed general freight and passenger agent and his former position has been abolished; **W. G. Story**, general freight agent, has been appointed assistant general freight agent; **Paul Wadsworth**, assistant to general traffic manager, has been appointed assistant to general freight agent, and **Casper F. Beck**, freight representative at Albany, has been appointed district freight agent; all with offices at Albany; **J. A. Flanders, Jr.**, freight representative, at Plattsburg, N. Y., has been appointed division freight agent, and **James T. Hayden**, passenger representative at Plattsburg, has been appointed division passenger agent; both with offices at Plattsburg.

Engineering and Rolling Stock

A. D. Williams, superintendent of motive power on the Northern district of the Southern Pacific, has had his jurisdiction extended over the Western Pacific, the Tidewater Southern and the Deep Creek, with headquarters at Sacramento, Cal.

A. H. Freygang, division engineer maintenance of way of the Baltimore & Ohio, at Chillicothe, Ohio, has been appointed assistant to engineer maintenance of way of the Baltimore & Ohio, western lines, the Dayton & Union and the Dayton Union Railroad, vice **H. R. Gibson**, promoted.

Harry G. Clark, general supervisor of maintenance of way on the Chicago, Rock Island & Pacific, has been appointed chief engineer of that road, with headquarters at Chicago, succeeding **Charles A. Morse**, who is now assistant director of operation of the Railroad Administration in charge of maintenance of way.

Frederick E. Morrow, whose promotion to chief engineer of the Chicago & Western Indiana and the Belt Railway of Chicago was announced in the *Railway Age* of September 13,

was born in Howard county, Ind., in 1880. Mr. Morrow graduated from the civil engineering course at Purdue University in 1904. From June to November of that year he was employed in the engineering department of the Illinois Steel Company. From that time until April 1907, he was in the service of the Chicago & North Western, with which company he was employed as rodman, instrument man and assistant engineer. Subsequently he became field engineer in the division of track and roadway of the board of supervising engineers of the Chicago Traction Company, which position he held during the re-



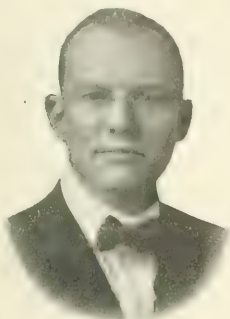
F. E. Morrow

habilitation of the Chicago surface lines. In April, 1910, he entered the service of the Chicago & Western Indiana as office engineer. In March, 1913, he was promoted to principal assistant engineer. Two years later he became assistant chief engineer of both the Chicago & Western Indiana and the Belt Railway of Chicago, which position he held at the time of his promotion to chief engineer, as mentioned above.

John P. Price, who has been engaged in special work relative to signal testing on the Kentucky division of the Illinois Central, with headquarters at Louisville, Ky., has been promoted to division supervisor of signals, with the same headquarters, succeeding **Thomas L. Davis**, who has resigned to enter military service.

G. W. Corrigan, division engineer of the San Joaquin division of the Southern Pacific, lines south of Ashland, with office at Bakersfield, Cal., has been appointed division engineer of the Los Angeles division, with headquarters at Los Angeles, vice **W. M. Jackle**, promoted; **P. T. Robinson**, assistant division engineer of the Los Angeles division, at Los Angeles, Cal., has been appointed division engineer of the San Joaquin division, with headquarters at Bakersfield, vice Mr. Corrigan, and **E. H. Miller** succeeds Mr. Robinson.

H. S. Marshall, whose promotion to valuation engineer of the Chicago, Burlington & Quincy, with headquarters at Chicago, was announced in the *Railway Age* of September 20, was born in Marshall county, Ill., on November 27, 1884. He graduated from the civil engineering school of Highland Park College, Des Moines, Iowa, in 1907 and immediately thereafter entered the service of the Atchison, Topeka & Santa Fe as camp draftsman on location at Quinlan, Okla. He was later assigned to construction work on the panhandle division, where he remained until the fall of 1908. From February, 1909, until the latter part of 1911, he was associated in general practice with **J. E. Craig**, consulting engineer at Jacksonville, Fla., and in the fall of 1911 he became identified with the Little Dolores Land & Irrigation Company, Mesa county, Colo., with which company he remained until October, 1912, at which time he entered the valuation department of the Oregon Short Line at Salt Lake City, Utah. During his service with the Oregon Short Line, he studied law and was admitted to the bar in April, 1915. In May of that year he went to Chicago as assistant to the land committee of the president's conference committee on valuation. In May, 1918, he entered the service of the Chicago, Burlington & Quincy as chief land appraiser, which position he held at the time of his promotion to valuation engineer, as mentioned above.



H. S. Marshall

Corporate

Executive, Financial, Legal and Accounting

J. S. Clarke has been appointed treasurer of the Norfolk & Western, with headquarters at Roanoke, Va., succeeding **J. B. Lacy**, who is local treasurer of that road under federal control.

James M. Fleming has been appointed assistant secretary, assistant treasurer and transfer agent of the New York, Ontario & Western, with headquarters at New York, succeeding **A. L. Parmelee**.

S. B. Dabney, attorney for the International & Great

Northern at Houston, Tex., has been appointed counsel, with the same headquarters. **R. E. Williams** has been appointed auditor, succeeding **W. J. Werner**, who is now federal auditor.

Henry Russel, vice-president of the Michigan Central, has been appointed general counsel of the Chicago, Kalamazoo & Saginaw. **E. A. Wigren**, assistant auditor of the Michigan Central, has been appointed secretary of the Chicago, Kalamazoo & Saginaw, succeeding **F. O. Waldo**.

Charles Heebner, general solicitor of the Philadelphia & Reading at Philadelphia, Pa., has been appointed general counsel, with the same headquarters. **Gordon Chambers**, assistant real estate agent at Philadelphia, has been appointed real estate agent, with the same headquarters.

C. A. Wickersham, federal general manager of the Georgia Railroad, the Atlanta & West Point and the Western Railway of Alabama, with office at Atlanta, Ga., has been appointed general manager for the lessees of the Georgia Railroad, and president of the Western Railway of Alabama, and the Atlanta & West Point, with headquarters at Atlanta.

James B. Sheean, general solicitor of the Chicago, St. Paul, Minneapolis & Omaha, at St. Paul, Minn., has been appointed general counsel for the Chicago & North Western, and the Chicago, St. Paul, Minneapolis & Omaha corporations, with headquarters at Chicago, succeeding **Edward M. Hyzer**, who remains corporate vice president of both companies, effective October 1.

W. H. Smith, assistant auditor of the Atlanta & West Point, and the Western Railway of Alabama, with office at Atlanta, Ga., has been appointed auditor of these roads and also on the Elberton & Eastern, the Washington & Lincolnton, and the Georgia Railroad. He succeeds on the last three roads **W. H. Vincent**, who has resigned to accept service with the United States Railroad Administration.

B. A. Worthington, general manager of the Cincinnati, Indianapolis & Western, under federal control and previously president of that road, has been re-elected president of the company, with headquarters at Indianapolis, Ind., succeeding **John Henry Hammond**, resigned. **F. J. Goebel**, secretary, real estate and tax commissioner, has been elected treasurer of the company, in addition to his duties as secretary, effective September 10.

C. L. Wallace, treasurer of the Trans-Mississippi Terminal, has been elected president, with headquarters at New Orleans, La., succeeding **J. L. Lancaster**, now federal manager. **J. G. Drew** has been elected vice president, with headquarters at St. Louis, Mo.; **Thomas J. Freeman** has been elected general counsel, with headquarters at New Orleans, La.; **M. D. Cloyd**, secretary, has been elected secretary and treasurer, with headquarters at New Orleans, effective September 5.

E. H. Lee, vice-president of the Chicago & Western Indiana, and chief engineer of the Belt Railway of Chicago, has been elected president of both roads; **C. G. Austin**, junior general solicitor of both roads, has been elected vice-president and general counsel of both roads; **H. T. Evans**, auditor of the Chicago, Indianapolis & Louisville, has been elected auditor and secretary of the Belt Railway of Chicago, and assistant secretary of the Chicago & Western Indiana; all with headquarters at Chicago.

Operating

H. J. Main, assistant superintendent of the Smiths Falls division of the Canadian Pacific, with office at Smiths Falls, Ont., has been appointed assistant superintendent of the Farnham division, succeeding **W. J. Pickrell**, promoted, and **J. A. Cook** has been appointed assistant superintendent of the Smiths Falls division, in place of Mr. Main.

Engineering and Rolling Stock

D. J. Kerr, office engineer of the Great Northern, with headquarters in St. Paul, Minn., has been appointed corporate engineer.

R. J. Needham has been appointed mechanical and electrical engineer of motive power and car departments of the Grand Trunk, with headquarters at Montreal, Que.

Russell C. Watkins, who has been appointed corporate maintenance of way engineer of the Southern Pacific Lines in Texas and Louisiana, with headquarters at San Antonio, Tex., was born in Lowndes county, Alabama, on September 18, 1874. In 1895, following his graduation from college, he entered the service of the Southern Pacific Lines as a track student on the Devils River section between San Antonio and El Paso, where he remained until March 1, 1896, when he was transferred to Houston, Tex., working as a track student and assistant foreman. On October 1, 1896, he was given leave to take a position as chief engineer of the Juarez Construction Company in Mexico. Mr. Watkins returned to the Southern Pacific lines as engineer in charge of grade raising through the Rio Grande Valley east of El Paso in the fall of 1897. Following the completion of this work in 1898 he worked with maintenance and locating parties on the Texas lines until transferred to Louisiana. While there he was consecutively assistant engineer of maintenance and construction, office engineer, and temporarily division engineer at San Antonio. Early in 1905 he was appointed right-of-way agent of the lines in Texas and Louisiana and on June 1, 1913, he was promoted to division superintendent on the Houston division, with headquarters at San Antonio, which position he held until his appointment as noted above.

Railway Officers in Military Service

Major F. G. Jonah, corps of engineers, who was previously chief engineer of the St. Louis-San Francisco, has been promoted to the rank of lieutenant-colonel.

Major G. M. Rice, corps of engineers, who was previously chief engineer of the Puget Sound and Willapa Harbor, has been promoted to the rank of lieutenant-colonel.

Lieutenant-Colonel Lincoln Bush, formerly chief engineer of the Delaware, Lackawanna & Western, and later consulting bridge engineer, at New York City, has been commissioned colonel in the construction division of the quartermaster corps at Washington, D. C.

Obituary

Arch Bishop Eldredge, president and general counsel of the Duluth, South Shore & Atlantic, and president of the Mineral Range, whose death at New York, on September 9, was announced in the *Railway Age* of September 13, was born at Fond du Lac, Wis., on May 12, 1853. He was educated at Princeton University and Racine College, graduating from the latter institution in 1875. He entered railway service on January 1, 1882, and subsequently was attorney in Michigan for the Chicago & North Western; from 1890 to 1910, general attorney for the Duluth, South Shore & Atlantic, at Marquette, Mich., and from 1910 to December 1, 1911, director and vice-president of the latter road, with the same headquarters. He was then elected president and general counsel, with office at Marquette, which position he held at the time of his death.

Captain W. W. Baldwin, who went overseas in the Rainbow division, was killed in action on August 1. He entered

the service of the New York, Westchester & Boston as general passenger and freight agent and industrial agent on December 1, 1915, resigning in June, 1917, to enter the officers' training camp at Plattsburg.

Edward E. Kerwin, vice-president of the Virginia Railway, with headquarters at Norfolk, Va., died on September 18, in a hotel while on a visit to New York. He was born on December



E. E. Kerwin

18, 1861, at Turner, N. Y., and began railway work on August 1, 1871, on the New York, Lake Erie & Western, now the Erie, and served as a waterboy and section laborer until March, 1883. He was then a telegraph operator and station agent on the same road and later was telegraph operator and station agent on the West Shore. From March, 1885, to April, 1886, he was with the Union Pacific as telegraph operator, and then went to the Chicago, Milwaukee & St. Paul as telegraph operator and station agent on the Council Bluffs

division. Two years later he went to the Chicago Great Western, serving as telegraph operator, station agent and train despatcher. From March, 1890, to June, 1902, he was in the service of the Iowa Central first as train despatcher for two years, and then chief despatcher two years, and later trainmaster for eight years. In June, 1902, he was appointed trainmaster on the Central of New Jersey, and the following October was promoted to superintendent of the Central and the Lehigh & Susquehanna divisions. He left the service of the Central of New Jersey in February, 1914, and went with the Minneapolis & St. Louis as general superintendent at Minneapolis, Minn. He was later made superintendent at Watertown, S. D., and since March, 1917, served as vice-president of the Virginian Railway at Norfolk, Va.

A WAR TIME COURT DECISION.—An interesting court decision was recently given in Paris. A girl, along with other refugees, was being taken to a place of safety, when the train in which she was traveling met with an accident. The court held that, as the accident took place when it was necessary for the safety of the country that a certain line should be kept busily at work, and that trains should be sent along it in quick succession, the railway employees were so greatly overworked that they could not reasonably be held responsible for any mistake they might have made. The plaintiff was accordingly non-suited.

TRANSPORTING OUR TROOPS.—The world has been astonished at the great number of American soldiers transported to Europe in the last half year. The number now approximates 1,500,000, and the loss of life in transporting them has been almost infinitesimal. The success with which we have moved our troops from the scattered camps in this country and across 3,000 miles of ocean to the battle front is great evidence of American efficiency. We have not only surprised our enemies; we have surprised our friends and ourselves. The British controller of shipping, Sir Joseph Maclay, speaks of this movement across the sea as "A transport miracle." We have been inclined to attribute this achievement solely to our Navy and our shipping, but the British controller speaks in high praise of the share the American railroads had in the work. He says: "If the American railroads had not been operated with success the whole transport movement might have failed, because it was essential to quick transportation that the troops should be ready for the ships"—*Treasury Department, Bureau of Publicity, War Loan Organization.*



A. B. Eldredge

EDITORIAL Railway Age EDITORIAL

Announcement

In the interests of the conservation of fuel, transportation and materials, the War Industries Board has limited the available paper supply. It has asked us to discontinue subscriptions upon expiration unless they are renewed and paid for; to cut down the supply of copies for the office and advertisers, and to eliminate every source of needless waste. This order becomes effective at once.

We gladly comply with the full instructions from the War Industries Board with the assurance that our subscribers and advertisers will give us every co-operation. We urge each subscriber particularly to watch the expiration date of his subscription since it will be impossible to continue the subscription after expiration, or furnish back copies in case the subscription lapses.

The best advertising for the Fourth Liberty Loan is beyond all doubt the record

On the Road to Victory

In ten days alone no less than 100,000 prisoners and nearly 800 guns were taken, Turkey lost Palestine and will soon lose Syria, the German himself suffered most severe blows in France, and Bulgaria has finally absolutely cracked under the strain in Macedonia and is already out of the war. But while we are enthusiastically piling on dollar after dollar in Liberty Bonds, we must still bear in mind that we are lending to the end that the good work may go on. The war is as yet by no means over. Berlin is still 478 miles from the Allied lines in France, Metz has not fallen, only the Allied aviators have seen the Rhine. Optimism and enthusiasm are rightly the order of the day, but the time is by no means ripe for over-optimism. The German has banked on Allied over-optimism before and has done his worst with subtle peace moves and stories of his own broken morale. We must not give him the chance again. We must keep on piling up the dollars to our utmost, keep on doing our daily tasks with 100 per cent efficiency; and Foch and the boys over there will do the rest by landing blow after blow until the final and only possible conclusion—the Hun's unconditional surrender.

Up to September 21, 127 locomotives, built to the standard designs of the Railroad Administration, had been delivered

Tonnage Rating Charts for Stand- ard Locomotives

to 10 different roads. Some difficulty may be experienced at the beginning in loading these locomotives properly because of their being built to entirely new designs. The *Railway Age* has therefore arranged to publish tonnage rating charts of the standard locomotives as they are built. The first three of these charts, namely, for the light and heavy Mikados and for the Eight-wheel switchers, are published elsewhere in this

issue. These charts show the drawbar pull and the number of tons it would be possible to haul over various grades at different speeds. The calculations are based on a resistance of four pounds per ton, and in the article accompanying the charts the method is explained for determining the tonnage of trains over the different grades and curvature of track. The methods to be followed when other than a resistance of four pounds per ton is to be used are also outlined. These charts should be of value to all operating officers on the roads on which the standard locomotives are used.

Two important railroad conventions were held during the month of September. They were dominated by a win-the-war spirit and received hearty

Getting Full Value from the Conventions

active co-operation from the Railroad Administration. They were both characterized by record-breaking attendance and by reports and addresses that were full of practical suggestions and inspiration. Are the railroads getting all that they should from these conventions? The officers who attended and took part in the meetings were largely from the firing line and final authority as to the policies of their departments is vested higher up. They are, therefore, unable to put into execution some of the more important plans which were brought to their attention without first receiving authority from their superiors. In many cases, they may be too modest or may not know just how to insist upon a fair trial of such measures as they believe to be best suited to their conditions. On the other hand, the higher officers may not fully recognize the importance of getting an expression from these men and of encouraging them to follow up the suggestions that they received at the conventions. It will be a great pity if full use is not made of the potential power which can be so easily developed. Doubtless, all of these men went to the meetings with instructions to get the very most out of them. Have they been asked to make written or verbal reports as to their recommendations and are these being followed up promptly while the inspiration from the conventions is still at a white heat? If not, it is not yet too late if those at the heads of the respective departments promptly adopt follow-up measures.

An engineman, 55 years old, who trusts himself to run a fast train over a busy railroad at four o'clock in the morning,

Cause of Sleepiness in the Cab

when he has been awake since five o'clock the preceding morning, lacks either intelligence or conscience. This reflection must occur to thoughtful railroad officers who read the Interstate Commerce Commission's report on the Ivanhoe collision of June 22, noticed in another column; for the significant clause in that report is the following, printed in small type, from Engineman Sargent's statement: "Had been up since 5 a. m., June 21, deadheading from my home in Jackson on Train No. 41, and had had little or no sleep during the day. Had had a couple of heavy meals before going out . . . [at 10:55 p. m.]" Other phases of this case are discussed elsewhere; but to superintendents and train-

masters this will be recognized as the "nub" of the statement of the cause. The training of men's intelligence is difficult enough under any circumstances, and education of the conscience often seems entirely out of the question. Moreover, the trainmaster who has taught men to stay in bed (when they ought to be there) is still liable to be thwarted by runners who will mount their engines when worried about domestic affairs or finances and will lack the courage to acknowledge their condition. Still, it is well to at least set forth causes of collisions truly. That the monitorship of the fireman is of indifferent value as an aid to the engineer has already been commented on in these columns. On this point the government report of the Ivanhoe wreck gives us no further light. The engineman's statement adds to this a touch of farce, though we are dealing with a tragedy, by forcing the reflection that this engineman was working under the new dispensation, proclaimed by Mr. Adamson and President Wilson, that society demands the eight-hour work-day. How is society going to regulate the 16-hour rest day?

End of the Berlin to Bagdad Dream

THE SURRENDER OF BULGARIA—unconditionally—is of special interest to railway students. Bulgaria was the keystone of Mittel Europa and through its center, through territory which will soon be occupied by the armies of General Franchet d'Esperey, passed the thread that held the central empires together, the Berlin to Bagdad railway. For a while Germany may be able to keep in touch with its Turkish ally through Rumania and Russia, but the fall of Turkey and the occupation of Constantinople are now only a matter of weeks or days. In fact, the first steps looking to the surrender—unconditionally—of the Turk may already have been taken before this will have appeared in print.

But in addition to that, railway men are reading with interest that by the terms to which Bulgaria has submitted, all the Bulgarian's means of transportation must pass to the allies—his railroads, his boats and his control of navigation on the Danube—and may be used to further operations against Germany and Austria on the remainder of the Macedonian front and against the Turk to the East. The railway lines through Bulgaria are thus put to an entirely different use from that for which they have been used for the past three years. This development is fully as important as it looks on paper or on the map, for these lines are the direct lines to Constantinople. The railways which the German may be able to use for a time through Rumania are less direct—they wend their way through the mountainous Carpathians and they reach, not that small part still left of Turkey in Europe, but the Danube at Galatz and the Black Sea at Constanza. The Danube, the boundary between Rumania and Bulgaria, is the important freight route to the East, but the surrender of Bulgarian control over the navigation of that great river and the probability that Rumania will soon revolt from German domination means that the Danube, like the railways, will soon be serving the allies—not aiding in the fight against them.

This is another important case in which the railways come to the fore as an important element in warfare, but that, in this instance, is not so important as the fact that at last the Berlin to Bagdad dream is ended. The evil effect on German morale will be as far-reaching as the opposite effect on the morale of the allies. The Berlin to Bagdad project was one of the big factors in the Pan-Germanic plan. But now the world is guaranteed that henceforth the Bagdad railway will not be tied by a string to Berlin, but that the exceedingly rich territory it traverses will be developed in a humane and proper manner, with commercial and educational, and not with militaristic ends in view.

Efficiency of Freight Train Operation in July

STATISTICS REGARDING the results of freight train operation in the month of July should be gratifying to the Railroad Administration, to railway officers and employees and to the public. There was a decline in the freight traffic handled in both May and June, as compared with the same months of 1917, with the result that the total traffic handled in the first six months of this year was less than in the first six months of 1917. It could not be determined whether this was due to a falling-off in the amount of available traffic or to a decline in the efficiency of operation. The July statistics seem to throw light on this question, and to indicate that it must have been due to a decline in the total traffic offered. At any rate, they show that in that month there was a marked increase both in the amount of freight traffic moved and in the efficiency with which it was handled.

The statistics for July are published in detail elsewhere in this issue. The increase over July, 1917, in the amount of revenue freight traffic handled was 5.6 per cent, and yet the number of miles which locomotives, cars and trains traveled in order to move it was reduced. This reduction of train mileage, car mileage and locomotive mileage was due to the fact that there was an increase from 684 to 723, or of 5.7 per cent, in the average number of tons per train, and of 27.3 to 30.1, or 10.3 per cent, in the number of tons per loaded car. The average number of miles traveled per day by each freight locomotive and each car declined, but the increases in the loads per car and per train were so great that the average amount of traffic handled by each locomotive and each car was increased.

One important feature of the results which should not be overlooked is that the increase in the total traffic handled has been entirely due to an increase in the amount of essential traffic handled, such as coal and foodstuffs. In fact, the railways undoubtedly are handling less non-essential business than they were a year ago, which means that they are handling a very largely increased volume of the kinds of business whose movement is essential to carrying on the war.

The extent of the augmentation of the movement of essential traffic is illustrated by the statistics regarding the movement of coal. A statement issued by Director General McAdoo shows that up to and including the week ending September 21 the number of cars loaded with coal in the year 1918 exceeded the number which had been loaded up to and including the corresponding week of 1917 by 607,070 cars, or approximately 33,000,000 tons. It is also well known that the railways within recent weeks have been moving the grain crops so rapidly that practically all the terminal elevators have been filled and it has been necessary to place embargoes on the shipment of grain from the farms. As would naturally be expected, the largest increases in business handled are shown by the railways in the territories where there is the greatest activity in the production and manufacture of strictly essential commodities. The increase in revenue ton-miles in New England, and also in the South, was 15.3 per cent, while in the Allegheny region it was 8.1 per cent and in the Central Eastern district 7.6 per cent.

Apparently, the total amount of freight traffic moved in July was greater than in any previous month in the history of American railways. The number of both revenue and non-revenue tons moved one mile by Class I roads under government control was 38,761,000,000. The best previous month's record ever made, apparently, was that of August, 1917, when the number of tons hauled one mile by practically the same roads was 37,100,000,000.

The Salaries of Railway

Divisional Officers

SOME READJUSTMENTS already have been made by the Railroad Administration in the salaries of divisional officers. Still more general and radical readjustments should be made in order to establish reasonable and satisfactory relations between the salaries of these men and the wages of employees. Even before the recent large advances in wages were made by Director General McAdoo there were numerous cases in which master mechanics, roadmasters, trainmasters, road foremen of engines and even division superintendents were being paid less than employees who were working under their supervision. This was a legacy from private management. The *Railway Age* long before government control was adopted repeatedly criticised the managements of the individual lines because they did not pay their divisional officers salaries commensurate with the wages being drawn by the higher paid employees. In many instances, however, the disparity between the wages of employees and the salaries of the officers has been increased by the advances in wages which have been made under government control.

Up to two years ago there were a few master mechanics on a certain western line who were receiving \$175 a month. They received a raise prior to the recent advance in wages which made their salary \$200 per month. The increase in the compensation of all officers and employees receiving less than \$250 a month further advanced their salaries to \$217 a month. On another railway operating in the same territory the salaries of master mechanics range from \$250 a month up, with a large number at this minimum figure. The present wages of mechanics afford material for interesting comparisons with these salaries of master mechanics. Car inspectors who now work 12 hours a day will in a 30-day month earn \$253; if they work 11 hours a day, as thousands of them do, they will draw \$227 monthly. A machinist working 10 hours for 30 days in a month will, at the present rate of wages, earn \$225. This is the amount which will be drawn monthly by a majority of machinists, blacksmiths and boilermakers, as the shops are now working 70 hours a week. In other words, a large part of the mechanical employees on the roads referred to are receiving as much or more compensation than the master mechanics, who have important official duties to perform.

Illustrations of this kind might be indefinitely multiplied. On a certain road the car repair foremen receive about \$175 a month and work the same hours as the men. Car repair men receive 58 cents an hour on the basis of an eight-hour day, with time and a half for overtime. Therefore, if a car repair man on this road works 10 hours a day for 30 days in the month he will earn \$191.40. On the same road a division superintendent receives \$225 per month salary. A night conductor, who is paid 65 cents an hour and works 12 hours a day and 30 days a month, will earn \$234.

Unfortunately, these are not extreme, but merely typical cases. Among the results are, first, that it becomes increasingly difficult to persuade capable employees to accept promotion to official positions because in many cases this involves actual reduction of their compensation; and, second, that the officers find it increasingly difficult to handle the men. Human nature among railway employees is very much the same as it is in other walks of life, and it is not human for an employee to give the same respect and obedience to a superior officer who is receiving less compensation than himself that he would yield to one who was receiving a greater compensation than himself. The salaries of divisional officers of all kinds should be so readjusted that they will exceed the wages of the employees, and exceed them as much in proportion as the importance of the duties and responsibilities

of the officers exceed the importance of those of the employees. Such advances in salaries would not cost much in the aggregate, and they undoubtedly would in the long run result in increases of efficiency which would greatly exceed their total cost.

The Liberty Loan and the Iron Mines of France

IT IS FITTING that America should be carrying on her Fourth Liberty Loan Campaign while American troops are pushing forward towards Metz and the iron fields of Briey. To leave these mines in German hands would be to leave them in the hands of those who have shown themselves unfit to use them and would in effect compel the Allies to sanction one of the greatest steals in history, the seizure of the great iron fields of Lorraine in 1871. The capture of Metz is by no means imminent as yet, but while we are raising the money here which will be used directly or indirectly to effect its capture and while we are pushing our Liberty Loan Campaign and showing what 100 per cent Americanism means it will be well to bear a few facts in mind. This may help us to subscribe more willingly and in larger amounts.

Metz is the key to the iron fields of Briey and Longwy in France, held since 1914 by Germany, and to the great fields in Lorraine held by it since 1871. The former field produced 19,000,000 tons of ore in 1914. The latter produced 21,000,000 tons while all the rest of Germany produced only 7,000,000 tons of ore and 14,000,000 tons were imported. In short the Lorraine fields taken from France in 1871 produced one-half of Germany's entire ore supply. The story goes back to 1871.

After France's defeat in the unfortunate Franco-Prussian war Germany was particularly careful to seize as part of its indemnity the iron fields of Lorraine, disregarding entirely the fact that the inhabitants of Alsace and Lorraine were French in race and sentiment. But Germany left to France the iron fields of Briey and Longwy containing ores high in phosphorus, at that time not considered of much value but later proving of greatest value after the invention of the basic Bessemer process in 1878. It has rankled in Germany's heart ever since that instead of leaving France prostrate industrially it had unwittingly left her these great resources. Immediately the Hun had goose-stepped and trampled over Belgium, he turned his attention to the territory to the east of Verdun, wresting from France iron fields that had supplied France with 65 to 70 per cent of her steel production, 80 per cent of her pig iron output and 85 per cent of her iron ore supply. Only one of her car and locomotive plants was left to France. By means of this seizure and the capture of the ore resources of Belgium, Germany nearly doubled its iron ore production despite the cutting off of imports from Spain, Russia and other nations. France, by using newly developed fields in Normandy, and with the assistance of British coal and American steel, has partly overcome the tremendous handicap and has supplied her own as well as helping supply much of her Allies' demands. For one thing, she had equipped by June, 1918, no less than 20 American divisions with field guns.

Every dollar paid for Liberty Bonds is going to help France further to overcome Germany's unfair advantage. It is going to help our own troops regain those iron mines of Briey and Longwy and of Lorraine which rightfully belong to France. Their restoration will tremendously handicap Germany's military power by cutting off the larger part of its iron ore supply and handicapping almost beyond remedy its munitions production and will be a most important step in arriving at the ultimate conclusion of the war—Germany's unconditional surrender. But what is equally important, it will guarantee that these tremendous resources will be used

by ~~the~~ ^{the} ~~same~~ ^{same} ~~ends~~ ^{ends} are clean, and not by one which has employed its industrial might in an attempt to trample under foot the rights and liberties of the rest of the world.

Bear these facts in mind when you buy your Fourth Liberty Loan Bonds and when you ask your employees or associates to subscribe. It may help you take a bond or two more than you originally planned.

Railway Men and Politics Under Government Control

DIRECTOR GENERAL McAdoo recently issued an order prohibiting railway officers and employees from actively participating in politics while the railways are under government control. The order especially applied to such things as running for public office, serving on political committees, and so on. It subsequently was modified to allow men holding office to fill out their terms and those who have been nominated to finish their campaigns. The manifest purpose and effect were, however, practically to restrict the political action of railway officers and employees to the exercise of their right of suffrage. It causes no surprise to persons familiar with the course of events in the railway field within recent years that representatives of the large brotherhoods of railway employees have protested to Mr. McAdoo against his order upon the ground that it denies to men in railway service the full exercise of their rights as American citizens.

This raises a question which was almost certain to be raised under government operation, and which is of the greatest importance both to railway employees and to the American people. Under private operation of railways the large brotherhoods of employees were active participants in politics, both locally and on a national scale. They had legislative agents at every state capital and at Washington to promote legislation which they desired for the furtherance of the special interests of their members. They promised the support of their votes to lawmakers and other public officials who would favor the measures they wanted and publicly and vigorously opposed the election of candidates that they knew, or suspected, would not help to secure the kind of legislation and administration of the laws that they desired. While the railways were under private control the purpose and effect of these activities were merely to secure by political means advantages for the employees over the railway corporations and their security owners. The public was indirectly affected through the restrictions and increased expenses which were forced upon the railway managements, but the effects upon the public were indirect, and most people saw little or no impropriety in the political activities of the employees.

The situation is radically altered under government control. Suppose that the employees now carry on organized political propaganda to secure the passage and administration of laws in their own interests. The results of their activities will not directly affect the railway companies. Any restrictive or burdensome laws which they may secure will apply directly to the Railroad Administration, and the Railroad Administration is a government bureau which directly represents the public in the same sense that the war department, the navy department and the post office department do. There is no question that to prohibit railway employees from participating in politics as actively as citizens outside of government service do is to restrict the exercise of the ordinary privileges of citizenship. On the other hand, can the government leave to its employees the same freedom to carry on political agitation against their employer, the government itself, as it must leave to the employees of private concerns to carry on political activities to secure advantages over private employers? Obviously not. In contests between railway employees, on the one side, and railway corporations, on the other side, the government could and did act as the

arbitrator and was presumed to deal justly as between them. On the other hand, if men employed directly by the government itself are allowed without restrictions to participate in politics, it is easily conceivable that they might so use their political power as to force from Congress and the Railroad Administration concessions which it would be highly inimical to the public interest to have granted. There are approximately 2,000,000 voters on the payrolls of the railways and the results which might ensue if they were allowed to exercise freely all the ordinary privileges of citizenship are too serious to contemplate.

The question of the part in politics which government employees should be allowed to play is one which has come up for consideration in every country which has engaged in government operation of industry on a large scale. The government of Queensland, Australia, found it necessary to pass a law prohibiting all government employees from taking any part in politics except that of casting their votes at the regular election. There has been much discussion in England as to whether it would not be necessary completely to disfranchise the employees of the railways in case government ownership were adopted. In Prussia the employees of the railways have been prohibited from belonging to labor organizations, the effect of which has been to prevent them from acting in concert to promote their interests by political means. The more employees a government has the more necessary it is to keep them out of politics in order to protect the rights and interests of the general public.

The Automatic Train Control

ELSEWHERE IN THIS ISSUE appears an abstract of the report of the chief of the Bureau of Safety to the Interstate Commerce Commission, regarding the accident on the Michigan Central at Ivanhoe, Ind., on June 22 last. In this report, Mr. Borland makes the following statements:

"With such a list of accidents occurring on roads where modern signaling is in use the lesson of the urgent need for some further safeguard cannot be overlooked. It is for this purpose that the automatic stop has been devised, and devices of this kind have now been sufficiently developed to warrant service trials on an extensive scale. While it is true that automatic train control devices cannot be expected to perform all their functions with 100 per cent efficiency in the early stages of their development, they cannot be perfected unless put into use on more than an experimental scale and the weak points worked out through actual operation, as has been the case with other signal devices. It is the duty of railroads to surround their passengers with every known safeguard even though some of the devices may be called upon to act very infrequently."

The *Railway Age* in the past has advocated editorially the installation of some form of automatic train control as an adjunct to the automatic block signal system on a scale large enough to determine whether such a device will actually serve the purpose for which it has been designed. This report again focuses attention upon the need of such installations; and the Railroad Administration has the authority to make installations over a sufficiently extensive territory for a proper study to be made and conclusions to be reached as to the feasibility of such devices.

The Railroad Administration should receive the earnest co-operation of all railway men in their development, and the Railway Signal Association particularly should be in a position to help materially in such a study, as the operation of any control system will naturally come under the jurisdiction of the signal engineers. There appears to exist an impression that the Railway Signal Association and signal engineers in general are opposed to any form of automatic train control, but this is not the case. The impression has probably arisen from the fact that they are called on to pass upon these devices, using American Railway Association requirements as a basis. If it is found that automatic train control is feasible and desirable, the system which comes nearest meeting both the theoretical requirements and also those of practical service conditions will doubtless be the one that will be most generally adopted.

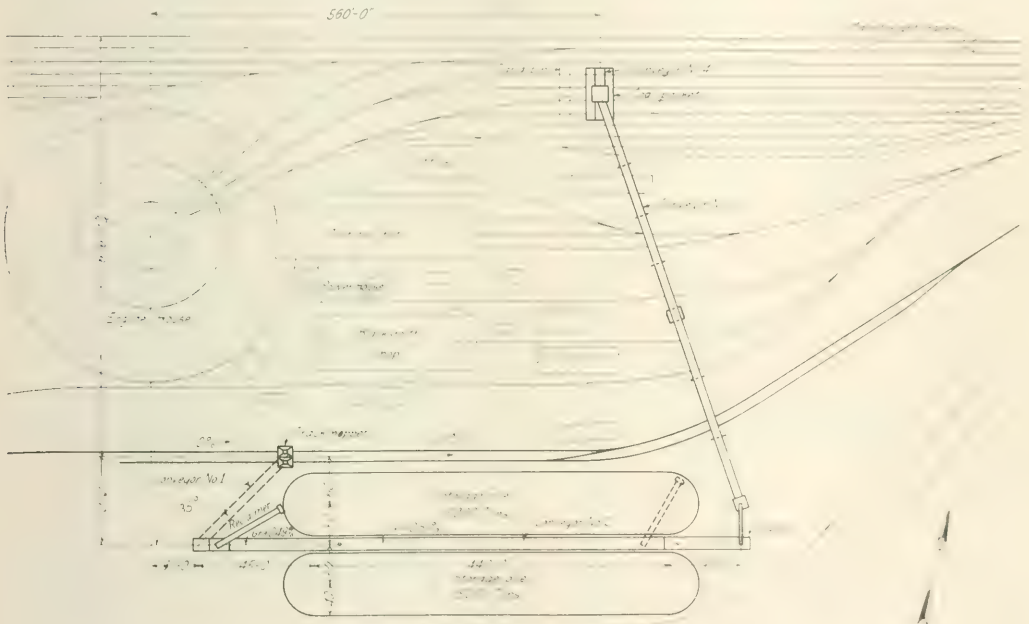
A New Design for Engine Coaling Facilities

Important Economies Effectuated in Track Capacity and Car Supply at Several Points on the Erie

THE ERIE is now engaged in an extensive program of reconstruction of engine coaling facilities at various terminals along its lines. These projects are a part of the general improvements undertaken this year to avoid the transportation difficulties experienced last winter to which inadequate facilities for coaling engines contributed to a great extent.

In accordance with the practice on most American railroads the existing facilities for coaling engines on this road were in general of the trestle type, designed to meet the daily requirements only, which at certain of the more im-

portant terminals reached 1,000 tons a day. Under the conditions obtaining last winter it was impossible. There were delays at the mines and transportation delays resulting from the severe weather as well as those due to the lack of sufficient men to get the coal out of the cars on arrival at the terminals. As a consequence the road was confronted with a serious fuel shortage which in extreme cases resulted in the necessity of running engines out of terminals light to meet the coal out on the line, leading to increased operating expenses and the loss of valuable time. At certain terminals efforts were made to relieve the situation by pro-



Layout of the East Buffalo Engine Terminal Showing the Location of the New Coaling Plant

portant terminals reached 1,000 tons a day. Approximately 25 cars are necessary to carry this amount of coal. With no storage available a sufficient number of cars must be kept under load at some point in easy reach of each terminal that the daily supply may be delivered to the locomotives. This means the tying up of cars needed for other service as well as the unnecessary occupancy of trackage and results in the necessity for embargoes until the coal is moved and the tracks made available for other shipments.

The successful operation of plants of this type is therefore entirely dependent on the maintaining of an uninterrupted flow of coal from the mines to the terminals in sufficient quantity to meet the daily requirements. Even in normal times this is a difficult matter, requiring organized

viding ground storage to supplement the trestles. This plan involved the use of a locomotive crane at the storage pile to load the coal and was unsatisfactory as cars and engines were necessary to transport the coal each day back to the engine coaling chute of only small capacity, thus affording no relief from the congestion of tracks or the shortage of cars.

Lack of Space Complicated the Plans for Improvement

On the Erie as on many of the older roads, the chief industrial and other growth of the cities and villages through which the lines pass has generally been in the territory immediately adjacent to the railways. This has resulted in the restriction of space available for expansion and has made

the improvement of terminals a difficult matter. This has been particularly true of engine coaling facilities involving storage in close proximity to the coaling pockets.

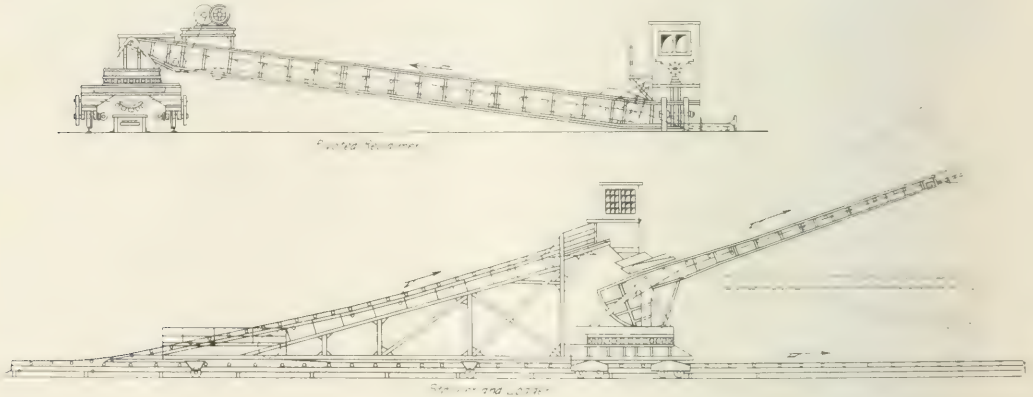
To meet this situation it seemed advisable to store the coal so that cars could be unloaded promptly at any season and to so place these storages that the coal could be loaded out into engines without further use of cars. With this in view a plan has recently been worked out by the International Conveyor Corporation of New York to utilize the Stuart system of coal storage to satisfy these requirements; it applies equally as well in congested locations as in the more open areas. In this plan the elements of storage and engine supply are co-ordinated without the necessity of storage tracks or the use of cars and motive power after the coal has once reached the terminal. The plan effects an important conservation of car supply and is of advantage as well to the trackage capacity in the terminals.

Of the several plants of this type which the Erie is placing on its lines the one at East Buffalo, N. Y., is the most important and is typical of what is being done at other points. In this terminal the congestion is particularly severe;

The plan provides for receiving the cars and placing them in the loaded yard to be dumped at the convenience of the operator. The cars are then dropped down by gravity and the coal dumped into the hoppers, after which they continue down grade into the empty yard. From the hoppers the coal is picked up by a belt conveyor and discharged through a transfer chute to the main belt which extends the entire length of the storage area. From the main conveyor the coal may be delivered to the storage or directly to the engine coaling pockets.

The delivery from the main belt is accomplished by means of a stacker which is reeved through the main conveyor. This machine has a horizontal movement the entire length of the storage and is equipped with a boom conveyor that rotates through 180 deg. for delivering the coal to storage on both sides of the main belt. For delivery to the engine coaling pockets the stacker deposits the coal on a third conveyor which passes over the yard tracks.

A self-contained pivotable reclaimer is used when it is desired to furnish coal to the pockets from storage. This machine is equipped with a movable arm which carries a conveyor and scraper plow. To reclaim the coal the plow



Outline Elevations of the Coal Handling Equipment

still it has been possible to work out a plan for storing coal and getting it to the point of consumption without any further consideration of car movement. For this reason the East Buffalo terminal is more interesting than others where more room was available.

The conditions surrounding East Buffalo are typical of those at many other terminals on the older roads. No ground space is available directly at the point of consumption and the storage has been provided adjacent to the yard at a point considerably removed from the locomotive coaling pockets with facilities that enable the continuous movement of the coal to the storage or to the pockets without any handling other than the first handling at the storage point.

As may be seen on the map of the terminal, this plant consists of two tracks placed on 13 ft. centers, providing for loaded and empty cars, a track hopper, a system of conveyors, stackers and reclaimers and storage space 80 ft. by 440 ft. on both sides of the main belt, providing room for 30,000 tons of coal. The two tracks serving the plant are laid on a 1 per cent descending grade in the direction of car movement. The track capacity ahead of the hoppers is used for loads and beyond for empties, equal capacity being provided for each.

is forced into the toe of the pile, and the conveyor, which is carried to the back of the plow, destroys the stability of the repose slope of the coal, gathering it from the base of the pile and delivering it to the main belt from which it is taken by the stacker for delivery to the overhead conveyor leading to the pockets, as above described. If desired the coal can also be reclaimed for loading into cars.

In addition to the conservation of car supply and the virtual increase of track capacity another feature provided for in this method is the prevention of fire from spontaneous combustion. When signs of overheating occur the plant may be placed in operation and the coal taken up by the reclaiming and stacking machines and delivered to another point in the pile. It has been found that turning the coal over and exposing it to the air is the best fire preventative. With this method coals which are more highly combustible than it has been possible to utilize in the past because of the likelihood of spontaneous combustion can be stored for engine supply.

The plant is electrically operated and the stacking in and reclaiming of coal requires but two men. The capacity of the stacking in operation is from 300 tons to 400 tons per hour and the reclaiming from 250 tons to 300 tons

Doings of the United States Railroad Administration

Uniform Rules for Coal Car Distribution; Advances to Railroad Companies; Traffic Conditions

THE RAILROAD ADMINISTRATION and the committee representing the American Short Line Association are expected soon to reach an agreement on a form of contract by which a majority of the short lines will come under a modified form of federal control, in spite of the fact that they disagreed last week. The form of contract offered by the Railroad Administration on September 23 was declined by the short line committee, but at a further conference held with Director General McAdoo on Saturday, at the request of the committee, an agreement was reached on several points in controversy and others were left to be taken up with John Barton Payne, general counsel, and Edward Chambers, director of traffic. After the conference the short line representatives expressed the opinion that an agreement would be reached.

One of the points which has given concern to the short line officers has been the fact that railroads under federal control have been given priority as to materials and supplies over the railroad companies outside the federal system. Another point has been the question as to the extent to which they shall receive free transportation over federal lines.

\$295,000,000 Advanced to Railroad Companies

Since April 1, according to a statement issued by the Railroad Administration, the director general has advanced to railroad companies the sum of \$294,845,170, exclusive of the current earnings of the roads applied directly by the individual roads to their current expenses and corporate needs. This amount went to 85 different roads or systems. The disbursements for the month of September aggregated \$52,993,750.

Of the total sum disbursed to October 1 \$209,347,910 was taken from the \$500,000,000 revolving fund, and \$85,497,260 came from the surplus earnings of various roads which were turned over to the director general by the limited number of roads whose receipts for the period exceeded their requirements.

The total amount of money turned over to the director general for the common fund from April 1, to October 1, by railroads reporting surplus earnings, was \$113,000,000. To this should be added \$10,419,944 received from the new American Railway Express Company, making the total receipts from railroads and express companies for the period \$123,419,944. Of the \$113,000,000 turned over by the roads \$64,507,660 went back to roads which had temporarily made the deposits with the director general, these same roads having subsequently called upon the Railroad Administration for advances considerably in excess of the deposits which they had thus made.

The only railroads which have made deposits for the common fund during this period which have not asked for the return of any portion of the funds thus deposited by them were the following:

Atlantic Coast Line and Knoxville & Nashville	\$1,450,000
Duluth, Missabe & Northern	9,000,000
Atchison, Topeka & Santa Fe	4,000,000
Duluth & Iron Range	200,000
Northern Pacific	2,500,000
Egan, Joliet & Eastern	200,000
Bessemer & Lake Erie	200,000
Delaware, Lackawanna & Western	2,000,000
Central of N. J.	1,500,000
Pere Marquette	1,500,000
Pullman Car Lines	2,000,000
Fort Worth & Denver City	900,000
Spokane, Portland & Seattle	600,000
Lehigh & New England	150,000

El Paso & N. O.	100,000
Indiana Harbor & Chicago	100,000
Grand Rapids & Chicago	100,000
Staten Island Rapid Transit	100,000
Texarkana & Fort Smith	100,000

The railroads to which advances were made during September were:

Atlantic Coast	1,450,000
Staten Island Rapid Transit	100,000
Southern Pacific	3,700,000
Pennsylvania R. R. Lines	1,500,000
Baltimore & N. W. Western	1,325,000
Chicago, Burlington & Quincy	3,000,000
New York Central Lines	2,700,000
Erie	2,500,000
Norfolk & Western	2,000,000
Chicago, Rock Island & Pacific	1,500,000
New York, New Haven & Hartford	1,500,000
Illinois Central	1,300,000
Chesapeake & Ohio	1,300,000
Seaboard Air Line	1,100,000
Chicago, Milwaukee & St. Paul	1,000,000
Western Maryland	800,000
Chicago & Alton	700,000
Missouri Pacific	650,000
Pullman & Mpls.	500,000
Western Pacific	430,000
Minneapolis, St. Paul & S. Marie	350,000
Kansas City Southern	350,000
Georgia	309,000
Terminal R. R. Assn. of St. L.	300,000
Monongahela	300,000
Denver & Rio Grande	300,000
Chicago Terminal	250,000
Lehigh & Atsontook	200,000
Midland Valley	150,000
Chicago & Eastern Illinois	250,000
Gulf, Mobile & Northern	200,000
Chicago, Peoria & St. Louis	150,000
Ann Arbor	150,000
Chicago, St. Paul, Minneapolis & Omaha	150,000
Portland Terminal	150,000
Belt R. R. of Chicago	135,000
St. Louis Southwestern	100,000
Railroad	100,000
B. & O. Chicago Terminal	100,000
Chicago & Western Indiana	100,000
Maine Central	100,000
Florida East Coast	100,000
Richmond, Fredericksburg & Potomac	60,000
Alabama & Vicksburg	53,000
Chicago, Terre Haute & Southeastern	50,250
Western of Alabama	35,000
Norfolk Southern	30,000
Elster & Delaware	15,000
Louisville, Henderson & St. Louis	15,000
Tennessee Central	15,000

The amounts advanced to all railroad companies April 1 to October 1 were:

New York, New Haven & Hartford	\$48,464,000
Pennsylvania R. R. Lines	43,600,000
New York Central Lines	37,700,000
Chicago, Milwaukee & St. Paul	16,725,000
Baltimore & N. W. Western	13,775,000
Illinois Central	10,900,000
Chicago, R. I. & P.	7,700,000
Southern Pacific Lines	7,500,000
Southern Ry.	5,940,000
Chicago, Burlington & Quincy	5,800,000
St. Louis-San Francisco Lines	5,605,000
Seaboard Air Line	5,450,000
Chesapeake & Ohio	5,050,000
Union P.	4,000,000
Norfolk & Western	3,550,000
Missouri Pacific	3,550,000
Lehigh Valley	3,500,000
Delaware & Hudson	3,500,000
St. Louis & N. W. Western	3,225,000
Wabash	2,645,000
Missouri, Kansas & Texas	2,600,000
Buffalo, Rochester & Pittsburgh	2,600,000
Norfolk & Western	2,000,000
Philadelphia & Reading	1,400,000
Chicago & Alton	1,400,000
Minneapolis & St. Louis	1,350,000
Chicago, St. P. M. & O.	1,350,000
Union P.	1,000,000
Western Maryland	850,000
Hudson & Manhattan	1,000,000
Kansas City Southern	850,000

Atlantic R. & N. E. S. L.	750,000
Atlantic Coast Line	750,000
Atlantic High. & B. B.	750,000
Atlantic & N. E. S. L.	750,000
St. Louis & N. E. S. L.	621,000
Grand Trunk Western R. L.	600,000
Florida East Coast	600,000
Norfolk Southern	550,000
Boston & Maine	507,600
Chicago Great Western	507,600
Packing Valley	507,600
Chicago Junction	507,600
Western Maryland	507,600
Van Arden	507,600
Western Pacific	507,600
New York, Ontario & Western	400,000
Gulf, Mobile & Northern	400,000
Minneapolis, St. P. & S. S. M.	350,000
Georgia	339,000
Gangor & Aronson	300,000
Central New England	300,000
Kansas City, Mexico & Orient	300,000
Belt Ry. of Chicago	285,000
Central Vermont	285,000
Chicago, Terre Haute & Southeastern	279,451
Midland Valley	270,000
Chicago & Eastern Illinois	250,000
Detroit, Toledo & Ironton	238,775
Chicago & Western Indiana	15,000
San Antonio & Arkansas Pass.	15,000
Chicago, Peoria & St. Louis	200,000
Atlanta, Birmingham & Atlantic Ry.	139,000
Illinois Southern	160,000
Duluth, S. S. & Atlantic	150,000
Portland Terminal	150,000
Vicksburg, Shreveport & Pacific	136,000
New York, Chicago & St. Louis	132,275
New Orleans Great Northern	120,000
Rutland	116,000
Pittsburgh & Shawmut	116,000
St. Louis Central	100,000
B. & O. Chicago Terminal	100,000
Old Dominion S. S. Co.	95,000
Alabama & Vicksburg	63,000
Richmond, Fredericksburg & Potomac	60,000
Washington, Brdway & Ft. L.	50,000
San Antonio, Uvalde & Gulf	45,000
Colorado & Southern	41,000
Franklin & Pittsylvania	35,000
Western Ry. of Alabama	35,000
Utter & Delaware	20,000
Louisville, Henderson & St. Louis	17,500
Tennessee Central	15,000
Total	\$294,845,170

In addition to the above sums advanced to the railroad companies directly, the director general has advanced on account of orders placed by him for locomotives and cars now under construction, the further sum of \$30,660,255.

The payments shown in the above tables, the statement says, are exclusive of very large amounts which were taken from the earnings of the roads between January 1 and July 1, by the various railroad companies to meet their interest and dividend requirements and for other corporate purposes. The total funds therefore which the railroad corporations have received since January 1 from the director general and from the operations of the properties and current balances will reach approximately \$1,000,000,000. The current operating expenditures and taxes of the railroad lines which the director general has also paid during the same period is estimated at between \$3,000,000,000 and \$3,500,000,000.

Weekly Report of Traffic Conditions

Director General McAdoo has made public the following summary of the traffic conditions in the various regions for the week ending October 1, compiled by the Division of Traffic:

Eastern Region.—General movement of freight traffic is heavy except New England, where the eastbound flow at present is rather light.

Steps are being taken in various directions to arrange for stocks of fuel and other traffic to avoid acute shortages during the coming winter.

Passenger travel generally heavy. It is noticeable that a large part of the through travel is composed of a class of mechanics whose higher wages seem to encourage them to take vacations and travel long distances.

Complaints of service are few to a gratifying degree, the ticket office service being now generally satisfactory. The scrip books are steadily gaining popularity.

Allegheny Region.—Arrangements are being put into effect to move freight by coastwise lines for the relief of rail lines.

Short peach crop in New York state, but apple crop estimated to be five times as great as last year. Grape crop light.

Regular passenger travel is much lighter on account ending of vacation season, lessening shore travel and interference with country travel because of influenza. Seashore service to be reduced October 13 to winter schedules. Three local trains eliminated on Cumberland Valley. Service in consolidated ticket offices satisfactory. Continued inspection of passenger train service resulting in many small improvements as to cleanliness, comforts, etc.

Chandise via Cincinnati. Coal movement heavy and satisfactory.

Passenger: Service in consolidated ticket offices satisfactory.

Seashore Region.—Regular passenger travel very heavy, and there is some difficulty at occasional places in supplying equipment particularly where state fairs make additional demands. Service at ticket offices improving and no complaints received for the week.

Northeastern Region.—Handling grain under permit system proceeding in a generally satisfactory way. Conditions as to car supply satisfactory except temporary shortage of box cars for grain loading. It is predicted that all terminal elevators in this region will be filled before the end of October.

The labor situation is better and the l. c. l. freight service accordingly improved.

Passenger train schedules being well maintained and passenger travel heavy. Consolidated ticket office conditions generally favorable except for Minneapolis, where steps have been taken to remedy the limited space.

Central Western Region.—Handling of grain under the embargo and permit system working quite satisfactorily and not as many complaints as were expected.

Livestock movement has been very heavy, taxing to the limit the facilities of Kansas City and Omaha.

Sailing day plan established at additional cities; further saving of 270 cars per week. Reports for the week show saving of 444,721 car-miles by re-routing.

Denver consolidated ticket office opened September 23.

Southwestern Region.—Oil loaded week ending September 25, Mid-Continent field, 7,768 cars; Louisiana and Texas, 1,881 cars.

General conditions good. Substantial increase in passenger revenues.

War Department.—Frozen beef movement satisfactory and transportation conditions generally satisfactory.

Quartermaster corps putting forth special efforts to increase movement of supplies to reserve storage houses during October and November.

Navy Department.—Transportation situation generally satisfactory; less than carload traffic seems to show improvement.

Coal supply better than had been stated and indications are that the department is starting winter months with better protection in regard to supplies on hand than last year.

Food Administration.—Improvement shown in handling of fresh meat and packing house products. Difficulty in moving sheep from Utah and Idaho territory, which matter is having active attention of the Railroad Administration.

Grain situation working satisfactorily. Permit system for grain will be extended to the following Eastern markets: Buffalo, Cleveland, Toledo, Cincinnati, Detroit and Indianapolis. Situation at Seaboard grain elevators improved by better vessel supply, and grain will be kept moving to Seaboard in sufficient quantity to take care of all overseas demands.

Fuel Administration.—Eastern Region: Coal shortage in Ohio due to scarcity of power, which is being corrected. The regular car supply at some other points now having the attention of the Car Service Section.

Some coal congestion New England both water and all-rail, due to lack of unloading facilities.

Tidewater: Vessel supply more than ample; transportation conditions good. Lake situation: Vessel supply interfered with by storms and ample coal at docks.

Coke: Car supply good. Shortage of labor limiting production, especially in the South.

Fuel Administration, Oil Division.—Average number of cars oil per day from mid-continent field for September, 1,020 cars as compared with average of 944 for August.

Some complaints of slow service in the Southeastern jurisdiction now being looked after for improvement.

U. S. Shipping Board.—Few small congestions of cars at some of the yards, all of which are being actively handled and no complaints as to lack of transportation.

Traffic Department of Transportation.—Supplies and movement conditions in handling billets from Pittsburgh to Baltimore, which will be taken up for correction.

General.—Efforts are being made in many directions to be prepared for slowing down of transportation service in winter, particularly in arranging for the control of traffic so that the flow may be regular instead of spasmodic; preparation of schedules for the movement of winter perishable traffic; increased penalty for the detention of refrigerator cars loaded with perishable freight on track; relief of intra-city rail movements, and consequent saving of terminal shifting and cars.

Progress is beginning to show in the direction of standardizing packages for the proper transportation of freight, and the first tariff covering the standard packages for Southern perishable freight will soon be issued.

Reports coming to this division from the consolidated ticket offices show that the service is now generally satisfactory, the only complaint recently being from Rostock, where improvement has been made to relieve the difficulty.—H. F. L., R. R. Adm.

Proposed Increase in Express Rates

The proposed increase in express rates, which is to be the subject of a hearing before the Interstate Commerce Commission on October 8, is to be applied both to state and interstate rates at the same time, according to a letter written by C. A. Prouty, director of public service and accounting, in reply to one written by the special war committee of the National Association of Railway and Utilities Commissioners to Director General McAdoo, which asked that the proposed increase be referred to the Interstate Commerce Commission. Mr. Prouty says that the American Railway Express Company has not applied to the director general for leave to advance its rates, but that that company is the

agent of the director general, and is responsible to him and he is responsible for it. The letter discusses in detail the reasons why it is considered necessary to increase the express rates in order to give the express company approximately \$12,000,000 of additional revenue, saying that the recent increase granted by the Interstate Commerce Commission yielding the express company about \$10,000,000 was only sufficient to meet the sum distributed by the express company among its employees in increased wages and that it is the opinion of the officers of the company that these wages must be further increased. He also explained that as approximately 50.25 per cent of the express company's services go to the railroads, the rates should be increased by sufficient amount to yield from \$20,000,000 to \$24,000,000 in gross. Mr. Prouty says he entirely agrees with the director general in that conclusion and does not believe he could with justice neglect to make substantially that advance unless he is prepared to say that the express service should be supported at the expense of the freight service. Starting out with the proposition that the additional revenue must be raised, he has secured from the express company a suggestion as to how the advance should be met and has submitted to the commission questions as to whether the method proposed is a proper and adequate one.

"So long as the government is operating these roads," he said, "there seems to be no reason why a lower level of express rates should be charged in one state than in another, nor upon state than upon interstate traffic. If there are local conditions which necessitate a departure from the general schedule, they should be called to his attention at once by the state commission and its suggestion will be investigated and accepted, if possible."

Director Prouty expressed the hope that the state commissions may do whatever they can to facilitate rather than to impede the proposal, and that they will present their views, preferably to the Interstate Commerce Commission, or in the first instance to the director general. He calls attention to the fact that when the proposed increase has been made express rates will have only been advanced about 20 per cent, while freight and passenger rates have been increased by a greater per cent and that the industries are few where both the cost of conducting the business and the price of things sold have not increased several times 20 per cent. He also requests the commissioners to bear in mind that if the rates are too high, the government obtains the greater part of the overplus and gives assurance that the rates will be at once reduced when it becomes evident that such reduction can be made.

Freight Rate Authorities Issued

The Railroad Administration on September 25 began the practice of making available for the press a summary of the freight rate authorities issued by the Division of Traffic, giving authority to the various railroads and tariff-issuing bureaus to promulgate increases or other changes in rates without the necessity of applying to the Interstate Commerce Commission. The summaries in most cases give the reason for the change. These rate authorities are numbered and 1412 had been issued before the publicity plan was adopted. The rate at which they are issued is indicated by the fact that 34 were made public on September 25, 31 on September 26, 4 on September 27, 3 on September 28 and 8 on September 30. Some of the more important changes authorized during the past week are as follows:

No. 1,420. Authorizes readjustment of class and commodity rates from points in Eastern Trunk Line territory to points in Central territory; also to St. Paul, Minneapolis and points taking the same rates, restoring established differentials and rate relationships as suggested in Section 7 of director general's Order No. 28. Will be published on statutory notice, but as a large number of tariffs are involved it will take some time to correct them all.

No. 1,443. Authorizes publication on 30 days' notice of restriction against the use of box cars for the loading of coal moving to the eastern seaboard

for that purpose. The restriction is to be in effect from October 1 to December 31, 1918, and provides for the elimination in the tariff of reference to minimum weights in box car tariffs.

No. 1,446. Authorizes cancellation of special rates on road-making materials between points on the Kanawha & Michigan Railway in West Virginia when consigned to the state commissioner of highways, cancellation to be made on 30 days' notice, but not to be effective until November 30 or after this season's contracts have been completed. The rate which it is proposed to cancel is for the transportation of road-making materials, and includes brick, gravel, sand and slag when consigned to the state commissioner of highways. These rates are preferential in that they provide for a lower charge for shipments consigned to the state commissioner than to others. Further, such rates are not compensatory and do not afford the carriers proper revenue for the service performed.

No. 1,480. Authorizes coastwise steamship lines under federal control to amend terminal tariffs or circulars effective on one day's notice to provide that the steamship lines will assume the marine risk on all traffic while in their possession. The amount of any loss or damage to be computed upon basis of value of the property at time and place of shipment. Most of the rates via sea and rail routes already include marine insurance, but there are a number of such rates which require this liability to be assumed by owners of the property, and the purpose is without a change in the rates themselves to make all sea and rail rates include marine insurance.

No. 1,484. Authorizes readjustment to be published on one day's notice, effective October 5, on bituminous coal and coke shipped from the mines of the United States to the coast, partly because of the zoning of coal supply by the Fuel Administration; also to give the mines located on one line of railroad access to the coast by the same rates as the mines on other lines of railroads. It has the effect of making the rates from all mines in any district the same to each point of destination via all railroads, whether the haul is over one or more lines.

The effect of the adjustment will be very generally to decrease the rates now in effect because of the application via two or more lines, and of the publication of new rates from mines to shipping points which have been carried before. There are minor advances in some of the rates to put them on a proper relationship with other rates from the same district, and relation of rates from the several producing districts has been maintained.

Railroad Men in Army to Be Utilized for Railroad Work

The need for skilled railroad employees has become so great that the Railroad Administration is taking steps to have returned to railroad service those who have enlisted or have been drafted into the military service, but not yet sent abroad, who are not being employed in such a way as to secure the full utilization of their special skill and experience. The purpose is not to interfere with the placing of railroad men in military railway service, but rather to make it possible to spare the men needed for that service without undue depletion of the working forces of the railroads.

While there is a shortage of skilled men for domestic railway service there is still need for large numbers of additional men for military railway service abroad. Yet it has been found that thousands of men of long experience and special skill in railway work, including many who expected to be inducted into military railway service, are in training camps in this country receiving the ordinary training of a soldier and frequently engaged in such work as peeling potatoes or digging ditches when they could contribute in much greater degree to the work of winning the war if engaged in the kind of work for which they are fitted, either here or abroad. Many more, while employed in technical, mechanical or engineering branches of the military work, have not been assigned to the particular kinds of work for which they are most fitted and the purpose is to see that skilled railroad men are given railroad work to do, either here or abroad.

With this object in view, a conference was held last week attended by representatives of the Railroad Administration, the War Department, the department of military railways, and the heads of the various railroad labor organizations. The latter brought to the meeting some lists which they had compiled at the request of the Railroad Administration, showing the names of large numbers of their members who are in the army but are not engaged in railway service. The organizations keep track of their men through their insurance organizations and some 40,000 members of the four brotherhoods of train service employees alone were shown to be in the military service. While the records of what the men are doing are incomplete, they were sufficient to show the

state of affairs and an effort will be made to secure more complete lists.

Meanwhile, the War Department has promised to co-operate in placing railroad men where they can be made most useful and the Railroad Administration has been furnishing it for some time, on blanks prepared for the purpose, with the information regarding enlisted men who should be returned to the necessary work of railroading. It is not the intention to return men from abroad; where railroad men are located there they can be transferred to the railroad regiments. Something over 50,000 men have been enlisted in the railroad regiments but the military railways need an even greater number of additional men of experience, as well as still more unskilled men as stevedores. Mr. Felton's department sent officers to the various training camps to transfer the railroad men to the railroad regiments, but it appears that a great many of the men were missed or they were enrolled in various other technical services.

The Division of Operation has established an office in charge of George M. Busby to render assistance to the various roads in securing deferred classification under the draft and the return of essential men to railroad work. The office will take up such matters with the office of the provost marshal general and other branches of the war department.

Locomotive Deliveries

A total of 1879 new locomotives had been delivered to the railroads under federal control up to September 21, of which 127 were of the U. S. R. A. standard types, 200 were locomotives ordered for the Russian government and 114 were the U. S. A. consolidation engines built for service on military lines in France and since returned by the domestic roads for that service. The 127 standard types are distributed as follows:

Baltimore & Ohio.....	37	Light Mikados
Central of New Jersey.....	10	Heavy Mikados
Chesapeake & Ohio.....	10	Heavy Mikados
Chicago & Eastern Illinois.....	15	Light Mikados
Chicago, Milwaukee & St. Paul.....	25	Heavy Mikados
Lake Erie & Western.....	7	Light Mikados
Lehigh & Hudson River.....	4	Light Mikados
Pittsburgh & West Virginia.....	3	Light Mikados
Union Pacific.....	6	Light Mikados
Wheeling & Lake Erie.....	10	Heavy Mikados

The weekly statement of locomotives shipped to domestic railroads shows that during the week ended September 21, 78 new locomotives were delivered to 17 different roads, including 38 of the U. S. R. A. standard types. Of these, 52 were delivered by the American Locomotive Company, 4 by the Lima Locomotive Corporation, and 22 by the Baldwin Locomotive Works. This represents a considerable increase as compared with the preceding week. In addition, the locomotive companies have been turning out a large number of locomotives for shipment to the American Expeditionary forces abroad.

Interest on Railroad Deposits

Circular No. 59 issued by the director general announces that all banks and trust companies in which funds of the U. S. Railroad Administration or of the various federal treasurers are deposited will be notified that in future they will be required to pay interest at the following rates:

On deposits payable by check on demand: 2 per cent per annum.

On time deposits payable after thirty days from date or after 30 days' notice: 3 per cent per annum.

These rates will apply to all railroad deposits in all banks except in special cases where, because of the smallness of the account or the particularly fluctuating character of the balance, it may be considered proper not to require the payment of interest.

An investigation recently made shows, the circular says,

that the rates of interest allowed by banks which pay interest on railroad deposits has ranged all the way from 2 per cent to 5 per cent per annum, and the higher rates paid have been used by some banks as an excuse for excessive rates charged to customers.

The director general expects banks designated as railroad depositaries to observe faithfully the interest laws of their respective states and not to charge rates of interest in excess of those permitted by law.

It is of great importance to the public welfare, to the financing of the war, and to the commerce of the Nation, he says, that interest rates throughout the country shall be kept at a moderate level or within a reasonable range.

Cars Saved by Careful Loading

The beneficial effects of careful loading of cars is shown in a comparative statement of traffic handled during the month of August for the 25 principal terminals of the United States issued by the Railroad Administration.

For instance, during the week ended August 31, 338,198 cars were handled through these terminals in 1917, as compared with 337,309 cars handled during the same period of 1918, a decrease of 889 cars. For the same period in 1917 11,391,216 tons were handled through the same terminals, while in 1918 there were 11,846,867 tons, an increase of 405,651 tons.

For the week ended August 21, 1917, 240,758 cars were handled as compared with 242,361 cars in 1918, an increase of 1,603 cars. In the same period, 7,921,004 tons were handled as compared with 8,431,400 tons in 1918, an increase of 510,396 tons.

For the week ended August 14, 1917, 239,253 cars were handled as compared with 238,144 cars during the same period in 1918, a decrease of 1,089 cars. In the same period, there was an increase in tonnage handled of 515,256. In this period, 7,713,702 tons were handled as compared with 8,223,958 tons in 1918.

For the week ended August 7, 230,415 cars were handled in 1917 as compared with 238,519 cars in 1918, an increase of 8,104 cars. In this period 7,382,812 tons were handled as compared with 8,262,436 tons in 1918, an increase of 879,624 tons.

At a number of the terminals there has been a decrease in the number of cars handled during the month of August, 1918 as compared with the same month in 1917, although at the same time there was an increased tonnage handled in practically every instance.

The terminal cities included in the report are: Atlanta, Birmingham, Boston, Buffalo, Chicago, Charleston, Cleveland, Duluth, Superior, Galveston, Hampton Roads, Kansas City, Los Angeles, New York, New Orleans, Omaha, Portland, Philadelphia, Pittsburgh, Seattle, St. Louis, San Francisco, Savannah, Tacoma, Minneapolis, St. Paul, Toledo.

Execution of Contracts a Slow Process

The negotiation of the detailed compensation contracts with the individual railroad companies, is likely to take even more time than the negotiations between the committee representing the railroads and the representatives of the Railroad Administration over the standard clauses of the contract which will be used in the ordinary case. While the contract with the Chicago & North Western has been agreed upon and the directors of several other roads have approved the execution of their contracts, which are still to be approved at stockholders' meetings, there are many roads on which the details will require considerable time, particularly as it has been considered necessary to refer a great many of them to the regional directors for investigation.

Brotherhoods Object to Order to Abstain from Politics

The general order issued by Director General McAdoo on September 1 requiring railroad officers and employees to refrain from all political activity while connected with the United States railroad service has aroused the opposition of the brotherhoods of train service employees, which in a letter addressed to the director general some time ago and in a conference with him on September 26 protested against the order as an unwarranted interference with their rights as citizens. Apparently when the order was issued, opposition to it from this source was not anticipated, because, while the order was made applicable to both officers and employees, the explanation which accompanied it referred particularly to "common report" of the political activities of railroad corporations and the "skillful and effective coercion of employees" without reference to any political activity on the part of the employees themselves. The order prohibited membership in political organizations that solicit funds for political purposes, acting as delegate to, or officer of, political conventions, solicitation of funds for political purposes, conduct of political campaigns, or becoming a candidate for political office, except such offices as membership on local school or park boards.

The order had no sooner been issued when numerous letters and telegrams were received from railroad men who were holding minor political positions or were candidates for office, and on September 14 it was modified by a provision that no objection would be raised to the completion of terms of office and that nominees for political offices might continue in railroad employment until the election. A written protest sent to Mr. McAdoo was published in circular form over the signatures of Warren S. Stone, W. G. Lee, Timothy Shea and A. B. Garretson. The letter asked for a conference with the director general, which was held at Washington on Thursday of last week. The letter also protested against an order said to have been issued by operating officials prohibiting employees from having any interest either directly or indirectly in any business in competition with commercial people along the line of road. No such order has been issued by the Railroad Administration, but such orders have been issued by individual railroads in the past.

The protest of the brotherhoods was voiced in Congress on September 25 by Representative Wood of Indiana, who declared that in many railway centers railroad men are in the majority among the voters and that they should be a prescribed class as regards participation in their own local governmental affairs is unthinkable in a republic. Regarding the order against engaging in business, he said that in many localities railway men have formed co-operative organizations for the purpose of lessening the cost of living and that many have invested their savings in coal yards, garages and many other local establishments.

Director General McAdoo explained that since railway men are now government employees it is essential that they abstain from political activities.

New Uniform Rules for Coal Car Distribution

The Car Service Section in Circular C. S. 31, has promulgated a system of rules to govern uniformly the rating of coal mines (other than anthracite), and car distribution to such mines, which are to be made effective on all roads loading coal, other than anthracite, as soon as possible, but in any event in season to permit car distribution to be made in accordance therewith beginning October 10. At the present time the rules under which coal mines are rated and the cars distributed vary considerably on different railroads with the result that it has been almost impossible to gage accurately the car supply for coal loading throughout the country without being fully conversant with the details of the individual railroad's rules. Under the new rules, mines will be

supplied each month with cars on the basis of shipping ability as demonstrated by their performance for the previous month. Each road will work on the same rules so that if the percentage rate of distribution varies it will be known whether or not a road is short of cars, because its figures will be compiled on the same basis as those of every other road.

There has always been more or less dispute as to the accuracy of the various statistics used to demonstrate the extent of car shortage or surplus and this has been particularly the case in connection with coal car supply. The United States Geological Survey publishes weekly figures compiled from the reports of nine operators, giving a figure representing the percentage of loss of full time capacity because of car shortage. These figures have frequently shown car shortages at times when railroad men have declared that a full supply was being furnished and it is said that at times the discrepancy has been caused by the fact that reports were made as of 7:00 a. m., whereas a sufficient supply of cars was furnished during the day to accommodate all of the coal available for loading. It is expected that new uniform rules will not only eliminate many sources of controversy as to the proper rating of a mine, but will also make possible more accurate statistics as to the adequacy or inadequacy of the car supply. These rules have been in the course of preparation for the past two months, during which time the Railroad Administration has obtained the views of representative transportation men, of important bituminous coal loading roads, as well as of the Fuel Administration, the National Coal Association and individual operators.

RULES FOR RATING OF COAL MINES AND DISTRIBUTION OF CARS TO SUCH MINES

The following rules shall govern the rating of coal mines (other than anthracite) as the basis for the distribution of empty cars to such mines during periods of car shortage:

a. The daily capacity of each mine (other than mines covered by paragraphs b and c) shall be determined by taking the total coal tonnage shipped by the mine during the preceding month, dividing it by the number of hours worked in producing it (see paragraph e), and multiplying the quotient by the number of hours in the recognized work day (not more than 10 hours) of the individual mine. The result shall be termed the "daily rating" of such mine, and shall be the basis on which cars shall be distributed to it during periods of car shortage.

b. The daily capacity of a mine which is a part of a larger mine or more carriers (steam, electric or water) shall be determined by taking the total tonnage shipped by the mine via all such carriers during the preceding month, dividing it by the number of hours worked in producing it (see paragraph c), and multiplying the quotient by the number of hours in the recognized work day (not more than 10 hours) of the individual mine. The result shall be termed the "daily rating" of such mine, and shall be the basis on which cars shall be distributed to it during periods of car shortage; provided, that if track or other limiting conditions further restrict its ability to ship via (note a).....railroad, such conditions shall be the limiting factor for the (note a).....railroad's daily rating of such mine.

c. The daily capacity of a mine delivering part of its output to a coking plant, to locomotives at the tipline, or to local trade shall be determined by taking the total coal tonnage shipped in railroad cars during the preceding month, dividing it by the number of hours worked (see paragraph e) and multiplying the quotient by the number of hours in the recognized work day (not more than 10 hours) of the individual mine. The result shall be termed the "daily rating" of such mine and shall be the basis on which cars shall be distributed to it during periods of car shortage.

d. When the fires are withdrawn from part (or all) of the ovens at an operation coking part of its output, for the purpose of shipping coal production formerly used in charging ovens, the daily rating of the mine shall be increased to include the average tonnage per day so diverted in the previous month, until the beginning of the next rating period, at which time the daily rating of the mine shall be determined in accordance with paragraph a or c, due allowance being made for such average tonnage, so diverted in computing the new daily rating. A corresponding decrease of the mine's rating will be made when the ovens are again placed in blast.

e. When a mine that has been coking its entire output desires to ship coal and the fires are withdrawn from part (or all) of its ovens, it shall be given a daily rating for coal shipments corresponding to the average tonnage of coal formerly coked until the beginning of the next rating period, at which time the daily rating of the mines shall be determined in accordance with paragraph a or c.

f. In determining the number of hours worked in each day at a mine, time will be counted from the established time for beginning work (or the actual time if earlier than the established time) on the tipline until the dumping of coal finally ceases for the day, making deductions for the noon intermission when it is taken, and for the time lost by reason of being blocked with loads, waiting for additional empty cars, or other railroad disability; provided, that if a greater number of hours is worked in the mine than on the tipline the mine hours must be reported also. Time may be deducted for railroad disability only when such railroad disability actually

2. The tipples of coal dumped that day. Time may be deducted when tippie is used for dumping coal into locomotives only when the tippie cannot be simultaneously operated for loading cars.

3. Daily ratings determined in accordance herewith will be revised monthly and made effective on the 10th of the month following the month's performance.

4. If a mine be idle for a period of one full calendar month or more, the last rating determined will be the rating when work is resumed, provided the mine conditions be substantially the same as when the mine closed.

5. A rating for development purposes based on current performance will be assigned to a new operation in previously undeveloped coal. A new mine will be furnished with a supply of cars sufficient to enable it to work freely in the course of development for a period not exceeding 3 months after shipments are begun; provided, that if theretofore its ability to load 150 tons per day is established, it shall then be rated. A new operation of any other character shall be entitled to a development rating for a period of one month after shipments are begun.

6. Each mine shall report on a prescribed form to the..... (note b) promptly at the close of each day:

1. The number of hours in the recognized work day;
2. The established time for beginning the day's work;
3. Actual time work was begun this day on the tippie;
4. If noon hour intermission taken, how long;
5. If time lost account blocked with loads, waiting for railroad cars, or other railroad disability, how much on each account;
6. Time work on tippie ceased for the day;
7. Number of hours worked today on the tippie.....; and in the mine..... (see paragraph e);
8. Number of net tons of coal loaded for shipment via..... (note a)..... railroad;
9. Total number of net tons of coal produced and shipped via each other outlet.

Joint mines shall furnish this daily report to each carrier serving them. At the close of each month the mine manager or superintendent in charge of actual operation shall report under oath on a prescribed form to the..... (note b)..... having jurisdiction, separately for each mine for each month, as follows:

1. Number of hours in the recognized work day;
2. Total number of net tons of coal produced;
3. Total number of net tons of coal shipped via the..... (note a)..... railroad;
4. Total number of net tons of coal shipped via each other outlet;
5. Total number of hours worked during the month (see paragraph e).

This report must be forwarded not later than the 3rd of the month following that for which the statement is furnished. Joint mines shall furnish this monthly report to each carrier serving them. If an operator declines or persistently fails to make reports or to make accurate reports to the carrier as required herein, it will be assumed that the mine worked full hours in producing and loading into railroad cars the tonnage shipped, and the daily rating will be computed accordingly.

Notes: Designate name of issuing railroad.
Note b: Designate title of proper official of issuing railroad.

RULES GOVERNING THE DISTRIBUTION OF CARS TO COAL MINE TIPPES (OTHER THAN ANTHRACITE)

Whenever the available car supply in any region (or district) is such that all orders for cars can be filled, cars shall be placed at each mine in accordance with its daily order. Whenever the available car supply is such that all orders for cars can not be filled, each mine shall be given its pro rata share of cars (grouping of mines or pooling of cars not being permitted) in accordance with the following rules:

1. The daily rating, or the daily order for cars if less than the rating, shall be the basis for car distribution.
2. Each mine operator shall report to the car distributor at..... (note 1)..... p. m. daily:

- a. Number of unassigned loads on hand at 7 a. m.
- b. Number of empty and partly loaded cars on hand at 7 a. m.
- c. Additional number of empty cars received prior to 10 o'clock a. m.
- d. Aggregate number of empty cars received during the day.
- e. Number of cars loaded during the day.
- f. Number of empty cars standing over at close of day.
- g. Number of empty cars standing over at close of day which were received prior to 7 a. m.,..... cars; and prior to 10 a. m.,..... cars.
- h. Number of partly loaded cars under tippie at close of day.
- i. Number of unassigned loads on hand at close of day.
- j. Additional number of empty cars required for loading following day.

3. Note 2. Copies of orders for cars for a mine that is joint with any other carrier (steam, electric, or water) shall be filed with a designated representative of each such carrier. Such combined requisitions must not exceed the gross daily rating of the mine.

3. The recognized standard car for coal car distribution is 50 tons. Others are compared thereto by tenths of a car, i. e., 80,000 pounds capacity equals eight-tenths (.8) of a car; 140,000 pounds capacity, one and four-tenths (1.4) cars, etc., and charged accordingly against the mine.

4. a. All cars placed at a mine during each period of 24 hours ending at 10 o'clock a. m. (or when Sundays or holidays intervene, the longer period ending at 10 o'clock a. m. of the day immediately succeeding the Sunday or holiday) shall be charged against the mine on the day when such period ends; provided, that if the cars placed at 7 o'clock a. m. do not equal or exceed in number 40 per cent of the daily rating (or order if less than rating) than the cars placed subsequent to 7 o'clock a. m. will not be charged against the mine for that day unless they are loaded or partly loaded on the day placed.

b. Cars placed between 10 o'clock a. m. and the time the mine ceases work for the day, if loaded or partly loaded on the day placed, will be charged against the mine on that day.

c. All cars of other than railroad ownership (commonly called "private cars") placed for owner's loading will be considered as ordered.

5. The pro rata share of cars to which each mine is entitled, except as provided in Rule 7, shall be based on its rating (or order when less than its rating). When a mine has empty or partly loaded cars which were placed prior to 7 a. m., or unassigned loads, standing over at the close of the day's business, such cars shall be charged against it each service day thereafter while they are detained.

If on any day a mine be furnished with cars totaling less than 100 per cent of its rating (or order if less than its rating) and for any cause whatever other than railroad responsibility fails to load the entire number, the mine shall be considered as having been furnished one hundred per cent of its requirements and its order shall be arbitrarily reduced to the number of cars furnished.

6. Private cars and such cars as are assigned to mines by the Car Service Section, United States Railroad Administration, will be designated as "assigned" cars. All other cars will be designated as "unassigned" cars.

7. If the number of assigned cars placed at a mine during any period, as provided in Rule 4, equals or exceeds the mine's pro rata share of the available car supply, it shall not be entitled to any unassigned cars. The assigned cars, together with the mine's requirements, will be eliminated, and the remainder of the available car supply prorated to the other mines, based on a revised percentage by reason of such elimination.

8. If the number of assigned cars placed at a mine during any period, as provided in Rule 4, is less than its pro rata share, based on a revised percentage, it shall be entitled to receive unassigned cars in addition thereto to make up its pro rata share.

9. If a mine receives more or less cars than it is entitled to during any period, as provided in Rule 4 (and after eliminating assigned cars as provided in Rule 7) it will be charged with a surplus or credited with a shortage accordingly and the discrepancy adjusted as promptly as practicable.

10. A record showing the distribution will be maintained in the office of each interested Superintendent, or his representative, and shall be open for inspection by one representative from each mining company in the district to which the record applies. Such record will show for that district the mine rating and percentage of cars supplied to each mine, and the totals for each railroad division, for the preceding rating period.

Note 1. If no name be named to the issuing railroad.

Note 2. Issuing railroad may ask additional necessary information pertaining to car supply.

Committee on Health and Medical Relief

A Committee on Health and Medical Relief has been appointed by the Railroad Administration, consisting of the following: Dr. D. Z. Dunott, chief surgeon, Western Maryland, chairman; Dr. G. W. Cale, Jr., chief surgeon, Frisco Lines; Dr. Victor G. Heiser, surgeon United States Public Health Service; Dr. T. R. Crowder, chief surgeon and sanitarian, Pullman Company, and Dr. H. M. Bracken, state health officer for Minnesota.

The committee will establish an office in Washington and will conduct a survey of, and submit recommendations in connection with, the proper protection of the health of employees and patrons of the railroads under federal control.

Increased Car and Train Loading in Allegheny Region

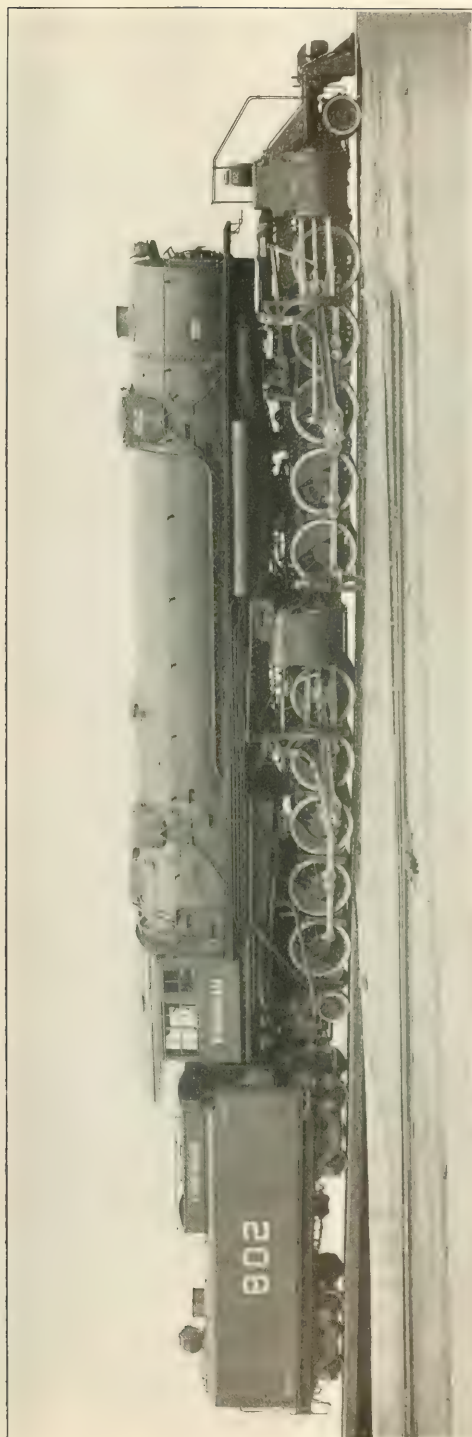
Director General McAdoo has received a report from C. H. Markham, regional director of the Allegheny region, showing that in that region tons carried per train during July, 1918, averaged 972, as compared with 902 for July, 1917, an increase of 70 tons or nearly 8 per cent. The increase in July, as compared with June this year, was 50 tons. Tons per loaded car average 36.8 for July, 1918, as compared with 34.3 for July, 1917, an increase of 2.5 tons, or about 7 per cent. The increase in July as compared with June, was 2.6 tons.

District Managers Appointed for Procurement Section

Announcement is made of the appointment of the following district managers of the Procurement Section of the Central Advisory Purchasing Committee: J. G. Stuart, general storekeeper, Chicago, Burlington & Quincy, Chicago district, headquarters, Chicago, Ill.; W. A. Hopkins, supply agent, Missouri Pacific, St. Louis district, headquarters, St. Louis, Mo.; Oscar V. Daniels, Pittsburgh district, headquarters, Pittsburgh, Pa.; W. F. Jones, general storekeeper, New York Central, Eastern district, headquarters, West Albany, N. Y.

Mechanical Department Headquarters

The officers of the mechanical department of the Division of Operation have been removed from the Interstate Commerce building to larger quarters on the northwest corner of Seventeenth street and Pennsylvania avenue.



The Heaviest Locomotive in Existence—Built for the Virginian by the American Locomotive Company

The Virginian Mallet Locomotives

THE AMERICAN LOCOMOTIVE COMPANY has recently delivered to the Virginian Railway 10 Mallet locomotives which are the heaviest locomotives ever built and, when working simple, the most powerful. These engines weigh 684,000 lb., of which 617,000 lb. is carried on the drivers. The total weight of engine and tender is 898,300 lb. They have a tractive power of 147,200 lb. working compound, and 176,600 lb. working simple. The weight including the tender is greater than that of the Triplex locomotives and the tractive effort, working simple, is some 10,000 lb. greater. These engines will operate over a grade of 2.07 per cent and have been built to increase the traffic density over an important single track section on the Virginian Railway. They are to be operated in pairs in pusher service with a 2-8-8-2 Mallet engine at the head of the train, the three locomotives being able to handle a train of 5,850 tons. A more complete description of these locomotives will be published in a later issue.

I. C. C. Report on Ivanhoe Collision

THE REPORT of W. P. Borland, chief of the Bureau of Safety of the Interstate Commerce Commission, covering the investigation of the rear collision of westbound trains which occurred on the Michigan Central at Ivanhoe, Ind., on June 22, 1918, at 3:55 a. m., has been made public. This collision, reported in the *Railway Age*, June 28, page 1570, resulted in the death of 67 passengers and 1 employee, and the injury of 127 passengers. The investigation was made in conjunction with the Indiana Public Service Commission. The line is double track and this division is completely equipped with automatic block signals, normal clear. The line is straight for about 3,480 ft. approaching the point of accident, which was 990 ft. east of the westbound home signal at Ivanhoe interlocking. The grade is level, or very slightly descending for about half a mile.

The trains involved were westbound extra 7826, with a part of the Hagenbeck-Wallace circus, and westbound extra 8485, a train of empty passenger cars, No. 8485 running into No. 7826. The circus train consisted of 7 stock cars, 14 flat cars, 4 sleeping cars and a caboose, all except the caboose being the property of the circus company. The killed were nearly all in the sleeping cars, which took fire at once.

The testimony, as summarized in the report, shows the facts substantially as already reported. The signal system was working properly and the marker lights were burning properly on the circus train. Extra trains are permitted to run ahead of superior trains without orders until instructed by signal or message to take siding. On double track extra trains do not carry classification signals, nor is it necessary for them to clear the time of regular trains; they are governed by the automatic signals. If delayed the conductor must communicate with the dispatcher, and in the absence of instructions must protect his train and clear the main track as soon as possible.

Statement of Engineman Sargent

At the time of the investigation engineman Sargent of Extra 8485, being under arrest, and on advice of his counsel, refused to testify, but in his report to the officers of the railroad company he made the following statement: "I was called shortly after 8 p. m. June 21, for duty at 10:15 p. m., on deadhead equipment west, engine 8485, and left Kalamazoo at 10:55 p. m. Had been up since 5 a. m. June 21 deadheading from my home in Jackson, on train No. 41, and had had little or no sleep during the day. Before going out

I had eaten a couple of heavy meals, realizing that I would not get anything more to eat until some time the next morning. Leaving Kalamazoo, I followed a freight train to the M. C. yards and stopped at a signal near Center St. I got a proceed signal from someone on the ground, pulled up to Michigan City, and stopped at the stand pipe to take water. While following this freight train we stopped first between Dowagiac and Pokagon, because of the signal in the danger position. I stopped again at Pokagon and Niles for the same reason, as this freight train was ahead. Leaving Michigan City I had a clear track to East Gary and there caught the block of the train ahead, and reduced speed, but did not have to stop as the block cleared before I reached it. I reduced speed going through Gary, to comply with the rules, and saw no more signals at caution or danger until approaching the curve east of Ivanhoe, where I found the second signal east of where the wreck occurred at caution. I was going about 25 miles an hour at this point, but did not reduce speed as I expected that the next signal would probably clear before I got to it, or that I would see it, if at danger, in time to stop. The wind was blowing very hard into the cab on my side and I closed the window, which made the inside of the cab more comfortable. Before reaching the next signal I dozed, because of the heat of the cab, and missed it. Not realizing what had happened to me until within 75 to 90 ft., I awoke suddenly and saw the tail lights showing red on a train directly ahead of me. Not realizing that the rear end of this train was so close, I started to make a service application, but before completing it I placed the brake valve handle into the emergency position. We struck almost instantly after making the brake application. * * * I looked to see where the fireman was, and saw he was running towards the gangway. * * * I have been in the service of the Michigan Central for approximately 28 or 29 years, the last 16 of which I have been continuously employed as an engineman. I am in perfect physical condition as well as mental condition and have had no illness within 25 or 30 years requiring the service of a doctor. The accident was due solely to the fact that I accidentally fell asleep and I had no intent to injure any person, nor was same done with malice, but solely through an accident, as aforesaid."

Fireman Klaus of Extra 8485 was also under arrest and refused to testify or make a statement.

Findings of the Inspector

In its conclusion the report says: "This accident was caused by engineman Sargent being asleep, and, from this cause, failing to observe the stop indication of automatic signal 2,581 and the warnings of the flagman of the circus train, and to be governed by them. In the absence of any statement from Fireman Klaus, or of any testimony as to his actions immediately preceding the accident, it is impossible to form any conclusion as to whether or not he contributed in any way to the cause of the accident. The interval between the time when the circus train stopped and the time of the collision was very short. It appears from the investigation that the flagman started back immediately and made a diligent effort to get back far enough to properly protect his train.

"This collision is another example of that class of accidents which a modern system of signaling is powerless to prevent. It has been repeatedly pointed out in reports of other accidents investigated by this Bureau that the only known way to guard against such accidents is the use of some form of automatic device which will assume control of the train whenever the engineman fails to obey the stop indication of a signal. * * * Everything was favorable for the second train to stop except the one failure that no signal system can guard against, namely, the failure of the man.

"Since July, 1911, when this Bureau began the investigation of accidents it has reported on 50 accidents, or approximately 10 per cent of the total number of accidents investigated, resulting in the death of 270 persons and injuries to 1,405 others, in which the primary cause was the disregard of signal indications. In a number of these investigations it has been shown that the best signal systems, installed according to the latest engineering knowledge on the subject and maintained to a very high standard, will not prevent accidents. Employees of the highest class with long records for faithful performance of their every duty have failed at a critical time. * * * With such a list of accidents, to refer only to the more recent ones, as Tyrone, Milford, Amherst, Bradford, Mount Union and North Vernon, all occurring on roads where modern signaling is in use, the lesson of the urgent need of some further safeguard cannot be overlooked. It is for this purpose that the automatic stop has been devised and devices of this kind have now been sufficiently developed to warrant service trials on an extensive scale. In this connection it is noted that ordinary locations of automatic signals will permit a much closer spacing of trains than will give a flagman time to get back a sufficient distance to protect his train; and under such conditions, protection by flag cannot be relied upon if for any reason an engineman disregards a stop signal indication. * * * The conditions which contributed to this accident frequently exist, and * * * they demonstrate that under such circumstances the flagging rule can be relied upon to furnish but little if any additional protection. While it is true that automatic train control devices cannot be expected to perform all their functions with 100 per cent efficiency in the early stages of their development, they cannot be perfected unless put into use on more than an experimental scale and the weak points worked out through actual operation, as has been the case with other signal devices. It is the duty of railroads to surround their passengers with every known safeguard, even though some of the devices may be called upon to act very infrequently.

"The cars on the circus train (of wood), were lighted by oil lanterns hung in the center of the car and no other lights were permitted. * * * Had the cars been of steel construction they would not have burned and the number of lives lost would have been far less. Even reinforced sills would have resisted to a considerable extent the crushing force of the collision and would have enabled many of the injured to have been removed after the fire started. * * * The exact cause of the fire could not be ascertained, but it probably originated from the lanterns in the cars and the oil headlight. The head end of the engine was not broken open nor was the ashpan or firebox damaged in such a way as to spill live coals.

"Engineman Sargent was first employed as a switch fireman in 1890, and had a good record up to 1910, when he was discharged for running past a block signal in the stop position and colliding with the rear of the preceding train. After about two years he was reinstated on December 30, 1911, and has had a clear record since that time. Fireman Klaus, of train 8485, was employed in October, 1917, and was making his tenth trip on the main line. None of the employees had been on duty for excessive periods."

The school for ticket sellers, established by the Railroad Administration in Chicago, was opened on October 1. It is in the Edison building, and instruction is given to fit pupils for positions as accountants and attendants at information bureaus as well as for ticket selling proper. The school is designed particularly for the instruction of women, and the course extends through eight weeks. During this time students will be paid at the rate of \$35 a month. The manager is W. H. Abel, assistant general passenger agent of the Chicago & Alton.

What the Future Holds in Store for the Railroads

Two Views on Effect of Federal Control on Securities and Fate of Carriers After War

IN ADDRESSES before the American Bankers' Association at Chicago on September 24, Samuel Untermyer, representative of railroad security holders in their contract negotiations with the government, and Francis H. Sisson, vice-president of the Guaranty Trust Company, New York, presented divergent views on the effect of federal control on railroad securities and the probable final solution of the transportation problem in this country. Brief abstracts of portions of their speeches were published in the *Railway Age* of September 27.

With reference to the future of securities, Mr. Untermyer took a rather pessimistic view and expressed the opinion that, under the present form of contract, dividends would probably be materially diminished or entirely discontinued, and predicted that if the railroads are returned to their owners at the conclusion of the war, they will be burdened with onerous charges for additions and betterments authorized by the government, and bereft of much business which it took years of private operation to create. He believed that the only remaining alternative for security holders was government ownership at a fair price. Mr. Sisson, on the other hand, took a more optimistic view of the future of securities and went on record as unalterably opposed to government ownership. He believed that a more satisfactory solution of the railway problem would be one which would retain all of the advantages of co-ordination and also of individual ownership.

Mr. Untermyer's remarks were in part as follows:

Railroad Credit Doomed Under Private Ownership

The probable operating and financial conditions of the roads at the end of federal control are, of course, the chief concerns of those interested in them, vastly more important to them than the amount of compensation payable during the uncertain tenure of federal control * * *. That the roads that are continued in operation will be in at least as good physical condition as when taken over, to the extent to which they are not dismembered, except as to the business that is diverted from them, may, I think, be reasonably assumed. The danger is rather that many of them will be in better condition and with more equipment, better roadbed and heavier rails than they can afford and better than their normal requirements demand.

These improved conditions will be largely represented by charges against their properties that they may be unable to meet. Added to these burdens will be the expenditures that may be made for their account for additions, extensions, equipment, etc., for war and other purposes for which it may eventually be determined that they are not liable. But meantime the obligations have been fastened upon them whilst it may take years of litigation for them judicially to establish the negative proposition that they are not liable for them, the burden of establishing which is placed upon them. If they fail successfully to carry that burden they must take and pay for these additions and extensions on the basis of their cost to the government at inflated prices.

It would seem as though in most cases this would destroy their credit and render them unable to finance these onerous requirements. If the systems of transportation are unified and co-ordinated, parallel and competing lines discontinued or diverted into other channels, new connections and other changes made that will unquestionably result in greater efficiency and economy in the operation of all the systems taken as an entirety, some roads will benefit whilst others will

be virtually destroyed. Even of those that are benefited the burdens may be too great to carry. I can see little hope for most of them except through federal ownership on almost any terms that the government may impose. * * *

Basis of Compensation to Owners

How are the security holders of the railroads likely to fare under government ownership in the light of this contract? * * * Here again the entire field of conjecture is open but there are signposts along the road. * * * Not only will the government be able to return the properties bereft of their chief element of value and be furnished the basis for valuing them for the purpose of acquisition on that quasi-confiscatory basis, but far more serious in its results may be the valuation placed upon the tangible assets in the light of these provisions.

It may well be doubted that the courts would hold that as to properties the operations of which have been abandoned, the rails, yards, shops, stations, roundhouses, elevators, warehouses, etc., would be valued at their scrap value, and yet this is not beyond the range of possibility having regard to the fact that the carriers that have signed the contract have thereby agreed to such abandonment and have given express permission for their return in that condition. It was largely in order to avoid that construction that a persistent effort was made to safeguard against such a contingency, the result of which is embodied in the document but in a somewhat equivocal form that is far from satisfactory.

Assuming that the peril from this source has been overcome and that the properties will be justly valued, the next question that occurs to the present and future investor is as to the basis and method of compensation that will in that event be adopted. Here we have something of a premonition as to the attitude of the Interstate Commerce Commission if, as is probable, the valuation is placed under its jurisdiction. * * * Certain principles have been tentatively announced by the commission which, if adhered to and upheld by the courts, will seriously impair property values as at present understood, but I do not believe that they will be sustained. * * * Suffice it to say that if the views of the commission as to values and elements of value as there announced are adopted in the acquisition of the roads the recovery may be limited mainly to replacement cost, which does not begin to represent the present cost of acquisition.

Proposed Plan for Purchase of Roads

Having ascertained the basis of compensation, in what way is the government likely to offer to pay for the properties? To pay outright in cash would seem impracticable in view of our financial condition at the end of the war, nor would it be necessary or profitable to either party. The most logical and probable method would seem to be to guarantee interest and dividends on outstanding securities to an amount that would yield a reasonable rate of return on the values of the properties, or for the government to issue in exchange its own long term securities at rates of interest that would give to them a par value having regard to their greater market and intrinsic value as government obligations.

If, for instance, a high class four per cent railroad bond normally sells at 90, a long term government bond or guarantee at 2½ per cent should under peace conditions have an equal value. If a stock paying 6 per cent and earning an average of twice that amount over a long series of years

has commanded an average price of par, shareholders would doubtless be willing to accept a 4 per cent or even a 3 per cent government obligation as an equivalent in market value. There should be no difficulty in carrying out such a plan as to the prosperous road. It would be fair to the security holders and highly profitable to the government. If a road has been paying, say, 4 per cent on \$50,000,000 bonds and earning and paying 6 per cent on an equal amount of stock, or \$5,000,000 in all, and the government would guarantee $2\frac{1}{2}$ per cent on the bonds and 4 per cent on the stock, the annual charge to the government would be \$3,500,000, leaving it an annual profit of \$1,500,000 or equal to a profit of 30 per cent, and the securities would have at least as great a market value as those of the company paying the higher rates. I am assuming that the value of the properties is fairly represented by the outstanding securities inasmuch as rates are supposed to be based upon a fair return on capital investment.

The difficulties will be encountered when it comes to fixing values on properties representing capital investment that are out of proportion to their net operating revenues. Will their compensation be regulated by the investment or the returns? Probably by a combination of both elements. Whatever the result, they could also be compensated by government guarantees equivalent to a return on whatever is found to be the selling or condemnation value.

In any event even if the government pays generously for the properties its net revenues will be greatly augmented by reason of the greater value of the low interest bearing securities it may issue by way of payment or guarantee on acquiring the properties. If ten billion dollars par value of securities of privately owned roads now yielding an average return of \$400,000,000 per year have a market value of, say, five billion dollars, would not six billions of these securities with a government guarantee of $3\frac{1}{2}$ per cent have an equal or greater aggregate value? Assuming a continuation of the same net operating revenues this would leave to the government a net profit of \$190,000,000 per year.

There is no occasion for driving an oppressive bargain with the security holders. Assuming that a fair price is paid, sufficient to maintain at least the present market values of the securities, the savings in interest and dividends by reason of the lower rate required to command the same market price would alone constitute a sinking fund sufficient to pay for the roads in from 30 to 40 years without a dollar of actual cost or outlay to the government, and this without taking into account the vast economies from operations made possible through unification of the systems. * * *

Government ownership at a fair price will be far more advantageous for the government and infinitely better and vastly more just to the security holders than federal control under the conditions of this contract. * * *

Mr. Sisson said in part:

Proposed Solution of Railroad Problem

A regional railroad system based on natural traffic divisions would meet the tests of economic operation and of economic utilization of railway capital. In the development of such a system we should be able to retain all the advantages that come from individual ownership and operation, to retain the advantages that would come from co-ordination of railway facilities under government ownership and operation, and at the same time avoid the evils that would undoubtedly develop from either government ownership, or a continuation of the old competitive system. It would lay a sound basis for the development of a wholesome territorial competition in industry, supervised by regional commissions acting as regulating bodies under one central commission.

It should be planned to have the ownership of these com-

panies under federal incorporation rest in the hands of individual holders who at the time of transfer would represent the owners of the existing railway system. In taking over existing securities of the railways, and in consolidating them with the regional system, a broad viewpoint of value based on fair, average market prices should be taken. In any plan of reconstructing our railways it must be assumed that the rights and equities of the present holder of railway securities will be recognized. In effecting the exchange of securities a government commission should take cognizance of these claims and make proper adjustments. Some plan providing for guaranteed dividends and a profit-sharing arrangement with the government above the guarantee, together with government representation on directorates would cement public and private interests in this consolidated enterprise.

Insofar as the regional road would lead to an economic use of capital and thereby eliminate the wastes under the competitive system, the equity back of the various railroad securities should increase over a period of time. The development of a rate structure for each regional railroad on the basis that rates should be high enough to assure the proper standard of service, should improve the earning position of the road. * * *

Factors Which Will Affect Railway Credit

If it proves impossible to reduce labor costs on the return of peace, particularly when the time is reached, as it must be reached, for an efficient economic readjustment and the consequent reductions in operating revenues, the position of the railway security holder would not be satisfactory if the roads are returned to their competitive conditions. Their future would be dependent entirely upon the breadth and courage shown by the Interstate Commerce Commission and the state commissions in so adjusting rates from time to time as to show a fair return and adequate protection to the security holder. * * *

Economic factors entirely outside the field of transportation, of course, will also affect railroad security values in the future and must be reckoned with. The higher cost of living, the depreciated purchasing power of the dollar, the level of interest rates, and the increasing burdens of taxation will all tend to emphasize the desirability and perhaps the necessity for higher yields. This situation would seem to indicate a greater demand for junior securities and second-rate bonds, and a consequently lesser demand for the higher grade issues. Higher values for the former, and lower values for the latter would then follow, because with the government's guarantee to assure interest payments, the quality of the security behind the obligation will temporarily not seem so important as before. * * *

Under the government's contract dividends are left subject to some uncertainty in the right of the director general to order the roads to expend money from their compensation, if they cannot get it from other sources, to pay for improvements or maintenance in excess of what they have spent. * * * The government's attitude towards the security holders as evidenced in its administration of their properties will affect the public attitude toward railroad security values. If there is an evident desire to protect these values and to safeguard the properties upon which they are based, so that public confidence is inspired, sustained and possibly appreciated values may be anticipated.

Railway financing has been practically at a standstill this year and pressing obligations have been met with advances by the government, which from April 1 to September 1 amounted to \$241,000,000, together with various short term note issues.

If the practice of financing by the issue of short term or demand notes is continued, instability of the railroad financial structure must result even though payment of the notes is

not demanded during federal control. The situation resulting from the accumulation of a vast floating, or short term, debt maturing at the end of federal control, thereafter, would be dangerous. Even if long term mortgage bonds are ultimately accepted by the director general for these expenditures, that would only serve to perpetuate and exaggerate the already excessive proportion of debt in the railroad financial structure.

A further feature in the situation is the fact that these expenditures represent capitalization by debt of heavy expenditures at war prices. The standard contract expressly forbids the carriers to make any claim for loss at the end of federal control on account of these high prices. This would be relieved if the director general would authorize very liberal depreciation charges to operating expenses during federal control so as to amortize the excess cost or at least the greater part of it before the roads are turned back to their owners. The propriety of such charges is recognized by the government in computing costs under munition and other contracts and in figuring war taxes.

Still other important factors will enter into the future of the railroads. The shippers of the country must determine whether they will continue to be "penny wise and pound foolish." Their long continued fight against fair rates was largely instrumental in bringing the railroads to the situation they faced last winter. * * *

Will labor be satisfied with its fair share of the railroad dollar, or will labor, by organized power, make private ownership impossible, and compel the government to keep open these arteries of commerce?

It seems very certain that there must be either a radical change in the public attitude toward the railroads, a change which will invite the confidence of investors and make possible the efficient and proper operation under private ownership and direction, or there must be continued government interference. * * *

Basis of Value In the Event of Federal Ownership

If government ownership is inevitable, then the basis of value upon which this ownership is effected becomes of major importance. There are many ways in which this might be effected. Instead of absorbing the entire 17 billions of dollars of railroad securities the government might be satisfied to leave the bonds outstanding in private hands, and merely absorb the stock. If the government should be disposed to allow the owners of the railroads a compensation based on a fair capitalization of their estimated rental value of approximately \$950,000,000 a year, security owners would receive a fair return for their holdings. * * *

If the government buy the roads, the fact must be faced that decisions of the Interstate Commerce Commission indicate that its estimates would deprive the companies of many elements of value which they believe rightfully belong to them in any exchange. The contention has been made before the commission that no allowance should be made for the important element of good-will, for appreciation in real estate values, or even for investments made out of earnings. The importance of this last mentioned item may be realized, when the fact is borne in mind that the Pennsylvania Railroad alone has put back into its properties more than \$200,000,000 out of earnings, representing actual invested value. * * *

In facing these contingencies the fact should ever be borne in mind that in no country has government ownership of railroads been successful, with the single, possible, exception of Germany, where under military rule it has achieved some degree of efficiency; yet not even there has it produced any marked improvement in initiative or progress in methods such as have marked private ownership. The railroads of the United States have served their public at the lowest cost, the lowest capitalization, and with the greatest efficiency of

any railroads in the world. There has been nothing whatever in our experience with public ownership in this country to justify the assumption that it can be profitably assumed under normal conditions in the field of transportation.

Tonnage Rating of the Standard Locomotives

By H. S. Vincent

THE VERY COMPLETE REPORT on Train Resistance and Tonnage Rating presented to the Master Mechanics' convention in 1914 summarizes the many conditions which influence the hauling capacity of a locomotive as well as the variety of methods in vogue among the railroads for determining the proper rating. It is evident that there are many factors such as track maintenance, operating conditions, loading ratio, etc., which preclude the adoption of a standard method of rating applicable to all roads. There is, however, one important factor in rating locomotives in which present practice varies through wide limits and which would appear to be easily capable of standardization: this is the frictional resistance of cars.

The construction of freight cars and trucks is so standardized, that assuming the same degree of maintenance and lubrication there should be no difference in the frictional resistance for any given capacity. Yet, we find in Table I. of the report above mentioned, a variation in car resistance of over 40 per cent between the eastern and western divisions of the same road. It would seem, therefore, very desirable at this time when the railroads are being furnished with a large number of cars of identical design, that some concerted effort be made toward the adoption of a standard car resistance which would vary only with the capacity of the car and the operating speed.

As a basis for determining the tonnage rating of the standardized locomotives now being delivered by the Government to the railroads, the writer has prepared a series of charts for each of the three types of locomotives so far built from which the maximum hauling capacity in tons of 2,000 lbs. can be read directly for any combination of speed and grade within the given limits.

The tractive effort formula used in the calculations is:

$$T = \frac{W \cdot S \cdot F}{100}$$

Where: T = Tractive effort in tons
 W = Weight of locomotive and tender in tons
 S = Speed in miles per hour
 F = Frictional resistance in pounds per ton of weight

The drawbar pull which varies with the resistance is shown on the charts by the inclined parallel lines. On straight level track this equals the tractive effort less the frictional resistance of engine and tender. In determining the latter resistance, the writer has adopted the method proposed by F. J. Cole, in which the engine and tender resistance is made up of the following:

(a) Engine friction or energy required to overcome the friction of the driving wheels, pistons, valves, crossheads, etc., equal to weight on drivers in tons x 22.2 lb.

(b) Resistance of engine and trailing trucks and two-thirds of loaded weight of tender assumed to be the same as the cars in the train.

(c) Head air resistance of engine, assumed to be 120 sq. ft. x .002 V^2 , in which V = velocity of train in miles per hour.

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Special permission is granted to reprint this article for the purpose of describing locomotives and their rating, provided the source is acknowledged and a description of them—Editor.

Unless You Buy Bonds to Your Utmost

The tonnage curves are based on a frictional car resistance of four pounds per ton, which is a good average for the usual mixed freight trains with varying weights of cars

and loading, when the rolling stock and roadbed are well maintained. However, the tonnage can be read from the charts for any other car resistance factor or any combination

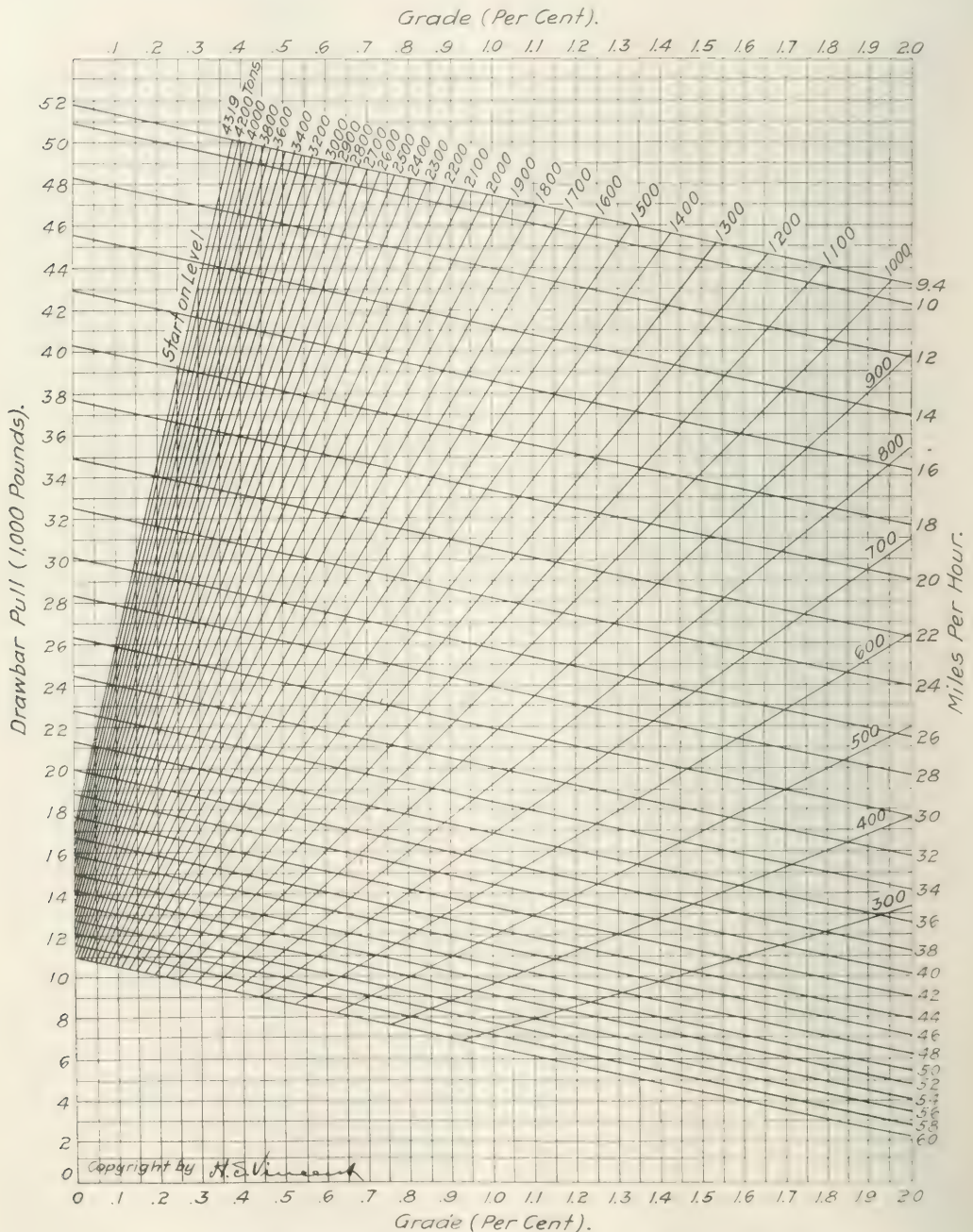


Fig. 1—Tonnage Rating Chart for the U. S. Standard Light Mikado Locomotive

Grade (Per Cent).

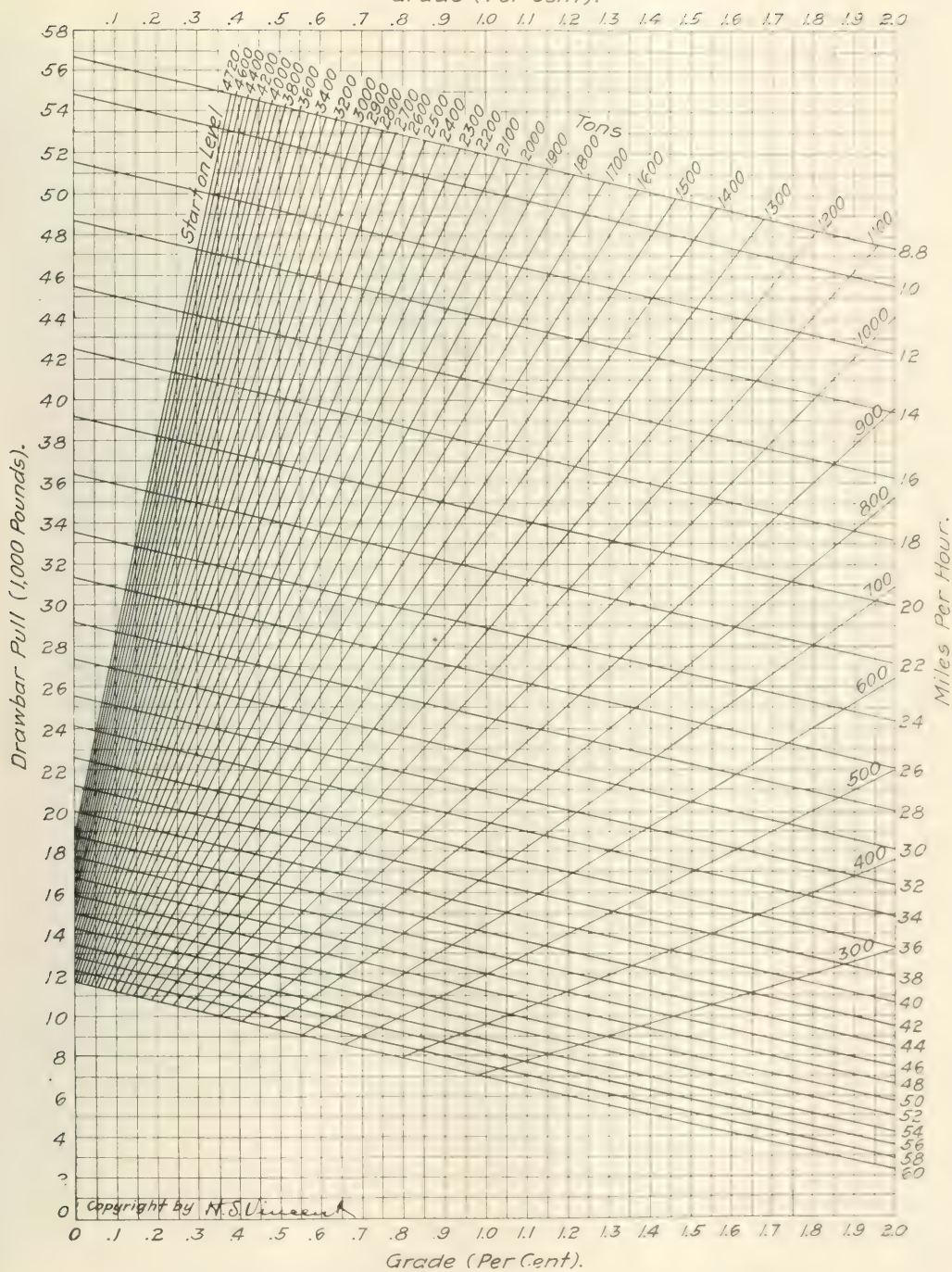


Fig. 2—Tonnage Rating Chart for the U. S. Standard Heavy Mikado Locomotive.

And in 100 Per Cent Amounts?

of resistances simply by converting them into terms of grade, using the following multipliers:

One pound car resistance = .03 per cent grade.

One degree curve uncompensated = .04 per cent grade.

For example: Find the tonnage of the light Mikado

locomotive on a one per cent grade at a speed of 18 m.p.h., with a mixed train having a frictional car resistance of four pounds per ton; also with a train of 50 tons loaded coal cars, having a resistance of three pounds per ton.

From Fig. 1 at the intersection of the ordinate for one

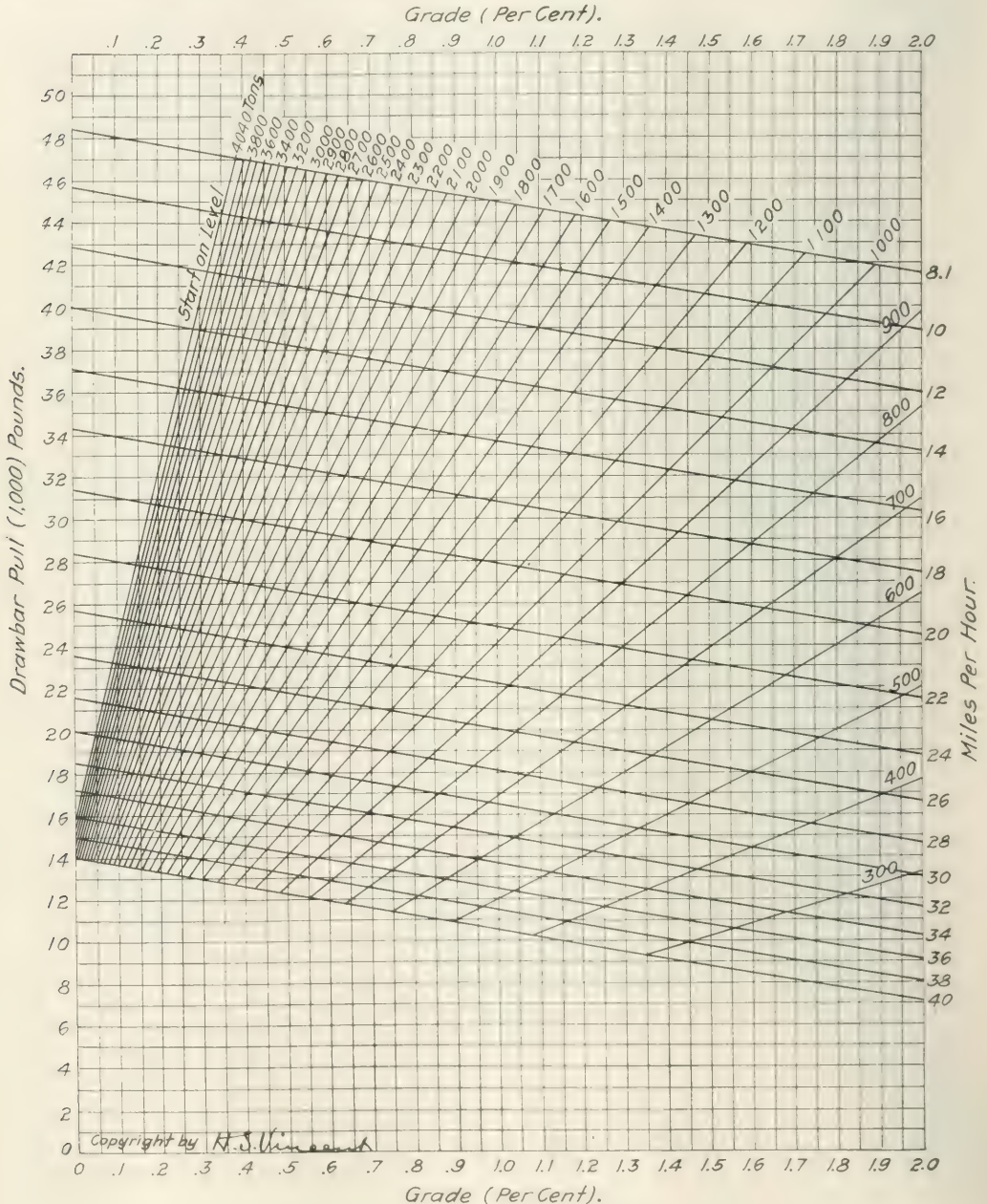


Fig. 3—Tonnage Rating Chart for the U. S. Standard Eight-Wheel Switching Locomotive

per cent grade with the drawbar pull curve marked 18 m.p.h., we find the radial curve reading 1,500 tons.

For the train having 50 ton cars with three pound resistance, we select the ordinate equal to $1 - [(4 - 3) \times .05] = .95$ per cent grade, which at its intersection with curve for 18 m.p.h., reads 1,575 tons approximately.

Taking the same example and combining the grade with an eight degree uncompensated curve, we have for the mixed train, an equivalent grade of $1 + (8 \times .04) = 1.32$ per cent, which at 18 m.p.h. gives a rating of about 1,130 tons, and for the train with uniform loads we have an equivalent grade of $1 + (8 \times .04) - (1 \times .05) = 1.27$ per cent, which at 18 m.p.h. gives a rating of approximately 1,180 tons.

For Passenger and Express Service.—To avoid confusion, the charts have been based on a frictional resistance of four pounds per ton, although in every case adjustment must be made for a greater resistance due to increased frictional resistance of passenger cars. For example: Find the ton-

TABLE I
FRICTIONAL RESISTANCE OF FLOW-EXPOSED CANNES
Speeds 5 to 30 M. P. H.

Weight in tons		Resistance (Lb. per ton)	
Loaded	Empty	Loaded	Empty
15	6	6.46	10.30
20	7.8	5.91	9.60
25	9.5	5.44	9.05
30	11.1	5.07	8.45
35	12.7	4.74	8.05
40	14.0	4.40	7.65
45	15.3	4.18	7.26
50	16.5	3.90	6.85
55	17.6	3.65	6.50
60	18.6	3.43	6.26
65	19.5	3.24	6.00
70	20.3	3.07	5.82
75	21.0	2.90	5.63

nage which can be hauled by the heavy Mikado in passenger service on 0.5 per cent grade combined with six degree curve at 40 m.p.h.

From Table III we find the resistance for passenger coaches at 40 m.p.h. is 6.65 lb. per ton. The equivalent grade is then:

$$.5 + (6 \times .04) + (2.65 \times .05) = .8725 \text{ per cent.}$$

From Fig. 2 at the intersection of the ordinate for .8725

TABLE II.—FRICTIONAL RESISTANCE OF FREIGHT CARS

From Bulletin No. 43—University of Illinois—Edward C. Schmidt

Train resistance—Pounds per ton

milch per hour	15	20	25	30	35	40	45	50	55	60	65	70	75
6	7.7	6.9	6.1	5.5	4.9	4.4	4.1	3.8	3.5	3.3	3.2	3.1	3.0
8	8.0	7.1	6.3	5.6	5.0	4.6	4.2	3.9	3.6	3.4	3.3	3.2	3.1
10	8.2	7.3	6.5	5.8	5.2	4.7	4.3	4.0	3.7	3.5	3.3	3.2	3.2
12	8.4	7.5	6.6	6.0	5.4	4.8	4.4	4.0	3.7	3.5	3.3	3.3	3.3
14	8.7	7.8	6.9	6.2	5.6	5.0	4.5	4.2	3.9	3.6	3.5	3.4	3.4
16	9.0	8.0	7.1	6.4	5.7	5.1	4.7	4.3	4.0	3.8	3.6	3.5	3.5
18	9.3	8.3	7.4	6.6	5.9	5.3	4.8	4.5	4.1	3.9	3.7	3.7	3.6
20	9.6	8.5	7.6	6.8	6.1	5.5	5.0	4.6	4.3	4.0	3.9	3.8	3.7
22	9.9	8.8	7.9	7.0	6.3	5.7	5.2	4.8	4.4	4.2	4.0	3.9	3.8
24	10.2	9.1	8.2	7.3	6.6	5.9	5.4	5.0	4.6	4.4	4.2	4.1	4.1
26	10.5	9.4	8.4	7.5	6.8	6.1	5.6	5.1	4.8	4.5	4.3	4.2	4.1
28	10.9	9.7	8.7	7.8	7.0	6.3	5.8	5.3	4.9	4.7	4.5	4.4	4.3
30	11.3	10.0	9.0	8.0	7.3	6.6	6.0	5.5	5.1	4.9	4.7	4.5	4.5
32	11.6	10.4	9.3	8.3	7.5	6.8	6.2	5.8	5.3	5.0	4.9	4.7	4.6
34	12.0	10.7	9.6	8.6	7.8	7.1	6.5	6.0	5.5	5.3	5.1	4.9	4.8
36	12.5	11.1	10.0	9.0	8.2	7.4	6.7	6.2	5.7	5.4	5.2	5.0	4.9
38	12.9	11.4	10.2	9.2	8.3	7.6	7.0	6.5	6.0	5.7	5.5	5.3	5.2
40	13.4	11.8	10.6	9.5	8.6	7.9	7.3	6.8	6.3	6.0	5.7	5.6	5.5

per cent grade with the drawbar pull curve for 40 m.p.h. we find a rating of approximately 730 tons.

The maximum tonnage as given on the charts is that which the engine can start on a level straight track, assuming a starting resistance of 12 lb. per ton for freight trains.

The minimum speed shown on the charts is that equivalent to 250 ft. piston speed per minute, the highest speed at which the locomotive will develop its maximum drawbar pull.

Table I gives the resistance in pounds per ton for varying weights of freight cars; this covers speeds from 5 to 30

m.p.h. and is based on the assumption that the resistance is constant between these limits.

Table II is taken from Bulletin No. 43 of the University of Illinois, and represents tests by Prof. Edward C. Schmidt under actual service conditions. It will be observed that in this table the resistance per ton increases with the speed, and inversely, as the weight of the cars.

Table III gives the resistance for passenger cars at vary-

TABLE III—FRICTIONAL RESISTANCE OF PASSENGER CARS

Speed, M. P. H.	Resistance, lb. per ton	Speed, M. P. H.	Resistance, lb. per ton
5	5.89	42.5	6.90
7.5	5.60	45	7.20
10	5.51	47.5	7.5
12.5	5.42	50	7.85
15	5.32	52.5	8.30
17.5	5.42	55	8.65
20	5.48	57.5	9.03
22.5	5.48	60	9.45
25	5.60	62.5	9.95
27.5	5.70	65	10.42
30	5.85	67.5	10.95
32.5	5.95	70	11.45
35	6.20	72.5	12.00
37.5	6.40	75	12.60
40	6.65	77.5	13.20
		80	13.85

ing speeds. The data for this table, as well as Table I, is taken from Bulletin No. 1001, issued by the American Locomotive Company.

No allowance has been made for weather or temperature conditions or for drop in boiler pressure. In rating the locomotive a fixed percentage should be deducted from the maximum hauling capacity as given in these charts to suit local conditions.

The Bridge and Building Convention

THE TWENTY-EIGHTH ANNUAL CONVENTION of the American Railway Bridge and Building Association will be held at the Hotel Sherman, Chicago, on October 15-17, inclusive. The convention will be largely in the nature of a war council to discuss the problems now confronting the bridge and building departments.

The program is as follows:

THURSDAY MORNING

10:00—Convention called to order.
Opening Business and Reports of Officers and Standing Committees.
11:00—Report of Committee on Water Supply, and Water Tables, and
Sources of supply.

TUESDAY AFTERNOON

2:00—Report of Committee on Repairing and Strengthening Old Masonry.
3:00—Paper, Carrying Pipes Over, by C. F. Lynch, chief engineer.
Chicago, Milwaukee & St. Paul.
4:00—Report of Committee on Use of Concrete.
4:45—Report of Committee on Shipping Company Material Economically.

Moving Pictures of Recent Bridge Erection Work.

9:30—Roundtable Discussion of Labor Conditions.

10:00—Hearings by the Panel on "The Minimum Wage." Moderated by R. H. Ashton, Regional Director, Northwestern Region.

10:45—Report of the Committee on Social Insurance Plans Given for Maintenance Work.

11:30—Report of Committee on Labor Saving Equipment.

[illegible]

2:00—Address by W. H. Finley, President, Chicago & North Western.
3:00—Report of Committee on Bridge Floors.

THURSDAY MORNING

9. 30—Election of Officers and Selection of Location for next Convention.

THURSDAY AFTERNOON

Trip to plant of Universal Portland Cement Company, at Buffington,

Orders of Regional Directors

PUBLICATION OF CHANGES IN PASSENGER TRAIN SCHEDULES.—The Southwestern regional director outlines methods to be followed for giving the public advance information concerning timetable changes. Printed notices of the effective date of all changes will be posted at stations on railroads or branches where changes will occur ten days before they became effective. In addition, all important changes of train schedules, giving the time at terminals, intermediate principal cities and junction points, and at the principal cities on connecting lines, will be announced in paid advertisements in newspapers on the lines affected. In daily newspapers, the first insertion will be made for ten days, the second for five days, and the third one day before the scheduled change becomes effective. Notices in weekly or semi-weekly papers will be inserted in issues published within a period of ten days prior to the date the schedule becomes effective. Standard forms to be followed in making these announcements are attached to the orders.

Salary Increases to Subordinate Officials.—The Northwestern regional director answers questions raised in connection with the pay of supervisory officials. There was some doubt in the minds of railroad officers whether assistant yard masters were to be paid for time in excess of eight hours per day at pro rata rates, or whether eight hours' compensation was to cover the total wages establishing a fixed basis per day or per month. On this point the regional director announces that they will be paid on an hourly basis for the actual hours worked, including the meal period, with a minimum compensation of eight hours per day. There was also some doubt as to the basis of compensating yardmasters at outside points. Where no assistant yardmasters are employed, day and night yardmasters at outside points will be paid monthly salaries based on day foremen's rates, plus five cents per hour, 10 hours per day, 30 days per month, with no overtime.

Industry Tracks.—The Southwestern regional director interprets General Order No. 15 as follows: The track or portion of a track on a railroad right-of-way used wholly or partly for the purpose of loading freight from and to cars, to and from an industry, and not in use as a public delivery track is to be regarded as an industry track and the cost of maintaining it will be borne by the industry. If, however, the track is used also for passing cars to and from other industries or other tracks of the carrier, the expense will be apportioned between the railroad and the industry or industries affected. A percentage division of the expense may be adopted by agreement if it will produce substantially the same results as the division of the expense in proportion to the amount of use of the track. With regard to the building of the new industry tracks, if traffic is not sufficient to warrant the railroad paying the expense of its construction, it is felt that the track should not be built at all.

Re-routing Freight in Transit.—The Northwestern regional director has issued instructions to govern the diversion enroute of carload freight to direct routes, or because of the embargoes or congestion. A notation is to be made either in ink or by rubber stamp on all waybills stating that the routing has been changed by the direction of the regional director, signed by the agent, and indicating the point at which the routing was changed. In addition a postal card, a standard form of which is included in the circular, will be sent by the agent to the consignee advising him of the diversion and the new route which his car will take. On the arrival at destination of shipments, the agent of the line by which the shipment was originally routed, as indicated on the waybill, will also be notified of the diversion.

Ticket Forms.—The Northwestern and Southwestern regional directors order the use of the following form of head-

ing in printing new forms of local and interline tickets, conductors' cash fare receipts and baggage checks.

This heading will appear on the contract part of all tickets, but shall not be inserted on the agents' stub nor in the going portion of round trip local tickets, nor on agents' stub and coupons of interline tickets. On baggage checks the heading will be placed on strap or string check, and passengers' duplicate. The heading is to be used only until the Inter-Regional Committee for the Simplification of Ticket Forms issues its report.

Supply of Cars for Government Hay.—The Northwestern regional director announces that effective September 25, the Chicago office of the Inland Traffic Service of the War Department will handle all orders for cars to be loaded with hay and straw for government accounts. Orders for cars required in this service will be placed by that office direct with the railroad. A copy of the form of car order to be used is attached to the circular. Shipments of government hay and straw have been falling below the daily requirements of the various army camps, and to correct this situation the car supply available for such shipments will be given preference over non-government orders for cars.

Free Transportation to Express Company Officers and Employees.—The Southwestern regional director announces that officers and employees of the American Railway Express Company will be granted free transportation only when traveling in the interest of or upon the business of the express company. The principal officers of the express company, however, will have railroad passes in order to enable them to travel at their discretion upon business of the company.

Applications for Grain Permits.—The Central Western and Northwestern regional directors announce that considerable confusion has resulted from authorizing the application for permits to move grain to primary markets by either the shipper at the point of origin or the consignee at destination. Hereafter all applications will be made by the shipper only.

Women as Section Laborers.—The Eastern regional director advises that the director general is opposed to the use of women as section laborers and as truckers in freight depots and warehouses. He feels that this is not at all proper work for women, and that it will not only be viewed with disfavor by the public, but that in view of the wages now paid for this work it should be possible to secure men, and the women should be transferred into some class of service suitable to their strength and with proper regard to their health.

Requisition for Cross Ties.—The Northwestern regional purchasing committee directs that Form P. C. 4, Requisition for Cross Ties, and Form P. C. 5, Cross-Tie Situation, copies of which are attached to the circular, be used in placing all future orders for cross ties with the committee and for reporting the present supply of ties and future requirements.

Stabilization of Live Stock Receipts.—The Northwestern regional director announces that effective October 12, live stock shipments to stations in Minnesota will be received at the South St. Paul stock yards on any day except during the period from noon Saturday to 3 p. m. Monday of each week. This step has been taken to stabilize live stock receipts.

Furloughing Men to Railroad Service.—The director of the Northwestern region announces that an arrangement has been made with the adjutant general's office of the war department to grant indefinite furloughs, without pay or allow-

ances, to certain skilled, necessary railroad employees who are at present in military service in the United States. When such furloughs are granted by the war department, enlisted men will be directed to report to the employer who requested his services. The employer will be required to report to the

regional director at the end of each month the status of the furloughed man. Standard forms to be filled out in making application for the return of an enlisted man and for making monthly reports on the character of his work are attached to the circular.

Unification of Terminal Facilities in the West

Extensive Changes in Operation Introduced to Prevent Recurrence of Congestion in Rail Centers

THE RAILROADS have suffered from a serious epidemic of freight congestion during the past two winters, a malady generally originating in the great transportation centers from which it radiated rapidly, blocking the further movement of traffic until the tracks of the terminals could be freed of their accumulations of cars. The fact that transportation paralysis results largely from the overcrowding of terminals has made the terminal problem a subject of intensive study by officers of the Railroad Administration. In the West this problem has gotten beyond the investigation stage and many changes in terminal operation have already been inaugurated. The guiding principle in all these reforms has been the unification of the facilities of all the railroads and the elimination of all unnecessary duplications of service.

The main end sought, of course, has been to keep the tracks clear and thereby facilitate the uninterrupted circulation of traffic. Efforts in this direction have not been unimpeded; on the contrary, grain receipts at western primary markets during the past two months have been unprecedented in volume. In the two weeks beginning August 5, over 23,000 carloads of grain were received in Chicago and 19,500,000 bu. were shipped out, the greatest volume of grain ever handled in a similar period in any primary market in the world. While the first consideration in terminal unification has been to prevent congestion, incidental, but nevertheless important, purposes have been to conserve man power and effect operating economies. Savings achieved in railroad operation in the Chicago switching district during 1918 up to September 4, are estimated at \$1,084,739 per annum. The unification of the Minneapolis-St. Paul terminals has resulted in economies equivalent to \$472,954 a year; at Omaha an estimated saving of \$212,970 a year has been effected; in the St. Louis-East St. Louis switching district \$437,466; and in Duluth and Superior, \$126,376.

Eliminating Duplications in Switching Service

A brief outline of what has been done in the Chicago switching district, which is under the jurisdiction of the Northwestern regional director, will indicate the character of the work which has been done in all the western terminals. In general, such direct interchanges between roads as were not previously eliminated under private operation, have been abolished when the volume of such business has been light and this traffic has been taken over by the connecting belt lines. For instance, the Pittsburgh, Cincinnati, Chicago & St. Louis now delivers cars to the Belt Railway of Chicago at Clearing yard for delivery by the Belt to the Chicago, Milwaukee & St. Paul at Galewood yard. This traffic is merged with other business destined to Galewood yard with the result that the movement is larger than when the Pan Handle made direct deliveries to the St. Paul. Under this plan two eight-hour locomotives have been saved by the Pan Handle for other service while the Belt has increased its use of power to the extent of five engine hours a day.

The net saving effected by the new arrangement has been, therefore, 11 engine hours per day.

This arrangement has the additional advantage of reducing the number of engines on the main line tracks and in the receiving line's yards.

While direct interchange is still maintained when there is sufficient business to give locomotives proper tonnage, the performance of this service has been divided between the roads involved in such a manner as to eliminate light engine mileage. In other words, the delivering engine is given a return load by the receiving line. An example of one-line switching service is the present arrangement for the handling of interchange between the Michigan Central and the Atchison, Topeka & Santa Fe at Joliet. Under this plan switching is performed exclusively by the Michigan Central, with a net saving of eight engine hours per day.

Another important reform inaugurated in Chicago was the establishment of one-line switching service at industrial plants. For instance, the industries in the East Chicago-Hammond-Calumet district are served exclusively by the Baltimore & Ohio Chicago Terminal and the Indiana Harbor Belt, with a resultant saving of 22 engine hours per day. This plan gives the line performing the switching a larger number of cars to handle, thereby insuring tonnage to the locomotives utilized for the service. It reduces interference between switch engines from their operating bases to industries, prevents loss of time by one engine crew waiting until another crew has finished its work, and eliminates the necessity of separate demurrage checks by the respective roads performing switching service when such work is done on a tariff basis. While in some cases the plan results in increased car haul, the reduction in yard classification expenses on the lines which discontinue performing the switching service, exceeds the added expenses incurred through increased switch-haul.

The handling of l. c. l. merchandise cars and trap cars is also being unified. For instance, traffic of this nature to and from industries located on the Chicago Junction is now handled exclusively by that road, which makes interchanges with other lines at Leavitt street yard. No longer does each road go direct to the various industries for this traffic and there is a net saving estimated at 56 engine hours per day and 453 car miles per day.

Conserving Man Power

In addition to inaugurating joint switching as extensively as practicable, the Railroad Administration has consolidated other facilities and has unified operating organizations whenever this could be done advantageously. Although one of the ends sought thereby was a reduction in operating expenses, a no less important purpose was the conservation of man power. Labor is scarce and by eliminating duplications of service, employees are made available for other railroad work.

In many instances station forces have been united without injury to railroad service. The station forces of the New

York, Chicago & St. Louis and the Elgin, Joliet & Eastern at Hobart, Ind., for example, were consolidated with a resultant net saving of \$1,021 per month. The agencies of the Grand Trunk and the Elgin, Joliet & Eastern at Griffith, Ind., have been likewise consolidated with a net saving of \$450 per month. Car checking, car inspection and demurrage forces have also been unified. The consolidation of car checkers at Forest Park was made possible through the inauguration of one-line switching service between the Baltimore & Ohio Chicago Terminal, and the Minneapolis, St. Paul & Sault Ste. Marie. The services of one car checker on the latter road were dispensed with. Demurrage forces at the Crane Company's plant at Forty-third street and Kedzie avenue, and also in the territory along Forty-ninth street between Western avenue and Central Park avenue at industries on the Chicago River & Indiana and the Indiana Harbor Belt, were consolidated with a reduction in forces resulting in a net saving of \$80 per month. Through the unification of car inspection forces of the Chicago & North Western and the Belt Railway at Cragin, seven car inspectors were released with a net estimated saving of \$800 per month.

A number of freight houses which owed their existence purely to competitive conditions were also closed and their business taken over by houses of other lines. The Kinzie street freight house of the Baltimore & Ohio was closed and its team track facilities abolished with a net estimated saving of about \$1,100 a month. The Erie street and Webster avenue freight stations of the Erie which were maintained in connection with barge service on the Chicago river were also closed with a resultant saving estimated at \$3,041 per month.

Railroad mechanical facilities have also been unified in some instances. The roundhouse facilities of the Indiana Harbor Belt and the Grand Trunk at Blue Island have been consolidated under an arrangement whereby the Grand Trunk switch engines working at Blue Island are housed in the Indiana Harbor Belt roundhouse instead of returning to Hayford. The net saving achieved through this change is estimated at seven engine hours per day. Car repair forces at the Union Stock yards have also been consolidated. Under the plan introduced the Chicago Junction forces make light repairs to cars going out over the various lines, relieving other lines of the necessity of maintaining their own forces. The change has resulted in the release of five car repairs and a net estimated saving of \$525 per month.

Keeping Traffic Out of the Chicago Terminals

A very important change in railroad operation in its effect on terminal operation in the Chicago switching district is the rerouting of through traffic via the outer belt line, thus relieving the tracks of the terminals of a large stream of traffic. The Chicago, Milwaukee & St. Paul catches east-bound traffic at Milwaukee, Wis., consolidates it in train lots, and changes the routing there to the extent of specifying delivery to the Elgin, Joliet & Eastern and by that road to one eastern connection. The Chicago, Burlington & Quincy does the same thing at Galesburg, Ill., and Savanna, and the Chicago & North Western at Clinton, Iowa. The staff of the Eastern regional director is considering the introduction of the same practice with reference to through west-bound traffic. This plan will undoubtedly greatly assist in keeping the tracks of the Chicago terminal district clear and at the same time will relieve the belt line of the necessity of putting the cars through its classification yard for distribution to separate eastern connections.

Another means which is being used effectively to minimize cross-town switching in Chicago is the control of coal deliveries in the terminal district. Through the efforts of the supervisor of coal traffic of the Railroad Administration at

Chicago, mine operators served by both the Chicago, Burlington & Quincy and the Illinois Central are sending shipments over the road upon which the consignee is located.

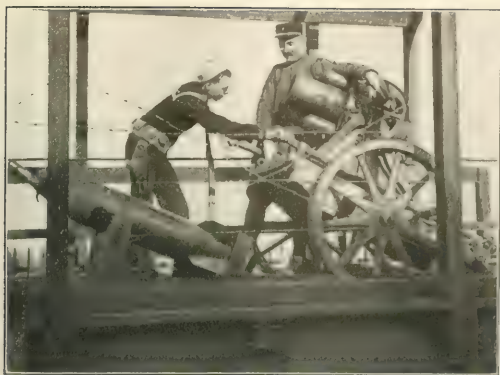
The success of this plan is, of course, limited to some extent by variations in the respective car supplies of the two lines, but when it is possible mine operators are shipping over the road that goes direct to the point of final delivery. In the first half of September only 34 cars from joint mines were delivered by the Burlington to the Illinois Central in Chicago, as compared with 100 cars so delivered during 10 days in June. This comparison, which is typical, indicates that the mines are actively co-operating with the railroads in working for a reduction in intra-terminal switching.

Similar steps have been taken by the terminal manager to reduce cross-town switching of grain. As far as possible grain is delivered to elevators located on the tracks of the road-haul carrier. Such a route is termed "first preference." Other routes are given second, third, fourth, fifth and sixth preference according to the amount of terminal switching which they involve. For the guidance of railroads, shippers and consignees the terminal manager has prepared a chart showing the names of all grain elevators in Chicago with the capacity and railroad location of each. In addition, the road haul carriers are graded from a standing as a first preference route to a sixth preference route, with respect to each elevator listed.

Handling the Greatest Grain Movement on Record

The plan of regulating deliveries to elevators, as above outlined, was recently worked out as a means of assisting the railroads in Chicago in handling the greatest grain receipts in history. This unprecedented influx of grain commenced early in August. The existence of a maximum price on grain this year removed all incentive on the part of the farmer to hold his products, with the result that grain has been shipped direct from the thresher to the primary market. On July 29, 1918, there were 8,199,000 bu. of grain in Chicago elevators as compared with 383,000 bu. on July 30, a year ago. Grain was being shipped into Chicago so rapidly that it threatened to swamp the terminals. This result was only prevented through the closest co-operation between the railroads, represented by the terminal manager's staff, the Grain Corporation of the Food Administration, the "To Arrive" committee of the Chicago Board of Trade and the State Grain Inspection Department. Members of these organizations constituted themselves a committee meeting daily in the office of the grain corporation. Every operation that had to do with the prompt handling of grain was speeded up and in consequence the abnormal receipts were disposed of successfully.

As was previously stated, the greatest volume of grain ever received in a primary market during a similar period of time arrived in Chicago in the two weeks beginning August 5. Likewise the greatest quantity of grain ever shipped from a primary market in the world left Chicago in that fortnight. On one single day there were as many as 10,500 carloads of grain on Chicago tracks, an equivalent of 80 miles of railroad cars. When it is recalled that Chicago in those two weeks experienced some of the hottest days in its history, it becomes apparent that the movement of this traffic without congestion and without placing a single embargo was indeed an unusual feat. It was only on September 16, when the amount of grain in Chicago elevators had exceeded 29,000,000 bu. as compared with 3,400,000 bu. in 1917, and there was no prospect of any let-up in receipts, that the Car Service Section of the Railroad Administration inaugurated a permit system for controlling the movement of grain to primary markets, as was noted in the *Railway Age* of September 20.



The Liberty Loan Special Now Touring New York State. Photo from Liberty Loan Campaign, N. Y.

Railroads Well Started on Liberty Loan Campaign

Indications That All Former Records Will Be Broken;

Liberty Loan Specials a Big Feature

THE LIBERTY LOAN CAMPAIGN had hardly started last Saturday when Director General McAdoo received the following telegram from General Manager Wardlaw of the Central Vermont:

"995 out of a total of 1,249 Central Vermont employees at St. Albans have subscribed \$99,600 to the Fourth Liberty Loan. By their response the city of St. Albans has gone over the top with 100 per cent of its quota within two minutes after one o'clock this morning."

Mr. McAdoo also received the following telegram from B. L. Winchell, regional director of the Southern Region:

"Thinking you would not mind if we started on our Liberty Loan work a day ahead of the official schedule, I am glad to be able to report that I have word that the regional director's office in Atlanta has received subscriptions from every one of its employees before closing the office this after-

noon so that we have one hundred per cent on the lists on September 27. Will advise you amount later, but am sure you will be more interested in the unanimous response. I am communicating this information to all our federal managers in the hope that they can duplicate this on every line in the region under federal control."

Liberty Loan Specials

One of the features of the Liberty Loan drive this time consists of the Liberty Loan Specials. Twenty-four of these trains are now moving throughout the country to spread the Liberty Loan message to almost every town that is reached by a railroad. Each train has an exhibit of American and Allied equipment as well as a collection of trophies captured from the Germans. The trains are making only a short visit in each town, but their coming is being so well adver-

THE Government must borrow from the people six billion dollars for which it gives its obligation in the form of Liberty Bonds bearing interest at $4\frac{1}{4}$ per cent. per annum.

The Government needs this money to enable our brave army and the brave armies of our Allies to keep up the push against the Germans now so auspiciously begun.

We cannot lick the Kaiser without this money and the sooner we

get this money and the sooner we convert it into the necessary munitions and supplies for our heroic boys, who already have the Huns on the run, the sooner will they finish the dangerous job we have entrusted to them.

I earnestly urge every railroad officer and employee who loves his country to go the limit of his means to lend to the Government by purchasing Liberty Bonds.

Director General W. G. McAdoo

tised that great throngs are greeting them. The work of the speakers, returned soldiers, and others on the trains, is proving most effective both from the standpoint of enthusiasm and subscriptions. In the state of New York no less than \$2,000,000 in bonds was sold by two trains last Tuesday alone.

The train which is now touring New York state is typical of several trains throughout the various reserve districts, not only from the point of view of the makeup of the trains, but of the successful work they are doing. This train is scheduled to visit 82 small towns in 22 days. It is being greeted with the utmost enthusiasm and each town it visits is usually prepared to meet it with bands, home guards, and citizen committees. Even in smaller places where the train does not stop crowds line the sides of the road to cheer the train as it goes by.

The train is made up of a sleeping car, a dining car, a baggage car which has been turned into a museum and two flat cars upon which are mounted the large trophies. In the museum are German machine guns, bomb throwers, bomb rifles, flame throwers, bayonets, grenades, trench knives, trench periscopes, wearing apparel and lesser odds and ends. On the flat cars are cannon captured from the Germans by our boys in France. The most conspicuous trophy is a long barrelled 122 mm. field piece captured by the Americans at Chateau-Thierry. Before the Germans abandoned this gun they stuffed the end of the barrel and then fired a shell which exploded and mushroomed the end of the piece. There are also a 150 mm. field gun, a 140 mm. trench mortar and a 240 mm. mortar, as well as some enemy airplane bombs which were seized before they had been dropped by the German airplanes. In addition to the speakers, the train has with it two men from Pershing's army, two

representatives of the Foreign Legion, as well as two Canadians, all six of these soldiers showing the effects of their work in the trenches and all with thrilling stories to tell of their doings.

At one town visited Saturday the train's audience subscribed \$140,000, over one-half of the town's quota. The

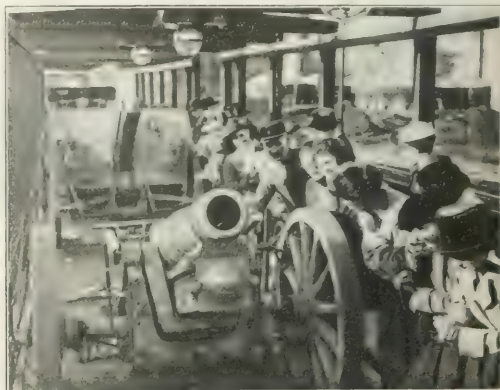


Photo from *Underwood & Underwood*, N. Y.

An Interested Audience

next town subscribed \$157,000, almost the entire quota, and the third town, with \$125,000, made up one-third of its quota.



A Bibliography on Winter Railroading

WITH THE MEMORY of last Winter's experience still fresh in mind and with a knowledge of the absolute necessity for the continuity of railway communication under existing circumstances, few subjects are of greater importance at the present time than the operation and maintenance of railroads under winter conditions. For this reason, the list of references to articles on winter service on railroads, recently issued by the library of the Bureau of Railway Economics, Washington, D. C., will be of material interest and unquestioned value to railway men. The scope and classification of the matter covered in this bibliography is indicated by the following list of subjects:

- Maintenance of way in winter
 - General discussion of problems and methods
 - Track protection methods in detail
 - Snow fences
 - Snow hedges
 - Snow sheds
 - Miscellaneous methods
 - Care of water stations
 - Switches
 - Yards, terminals, etc.
- Operation of railroads in winter
 - General discussions
 - "Keeping the line open" during blizzards, floods, etc.
 - Locomotive performance under winter conditions
 - Thawing frozen cars, etc.
 - Snow plows, spreaders, etc.
 - Snow fighting on electric roads
 - Winter service conditions, Alaska and Canada
 - Winter service conditions, European railroads

The treatment under each subject is chronological so that the reader obtains a summarized history of the subject in which he is interested. The list covers 53 mimeographed sheets and each item is not a mere index of the article, but includes a brief synopsis of the matter covered. For instance, the reference to an article in the *Railway Age* of February 15, 1918, entitled "Pulling the Chicago Terminals

Out of the Snow," occupies nearly an entire sheet. The record goes back as far as 1871, and aside from its value in giving the busy railroad man a reference to the most valuable articles in current publications, this bibliography possesses not a little historic interest. For instance, the eight pages devoted to snow plows give a vivid idea of the controversies occurring in the early days of the development of modern snow moving equipment, while an article published in 1871 in Big Railroading, describing a blockade of the Union Pacific in the same locality where the blockade occurred in the winter of 1916 and 1917, is of especial interest because of the rare occasions upon which serious snow troubles have occurred in that locality.

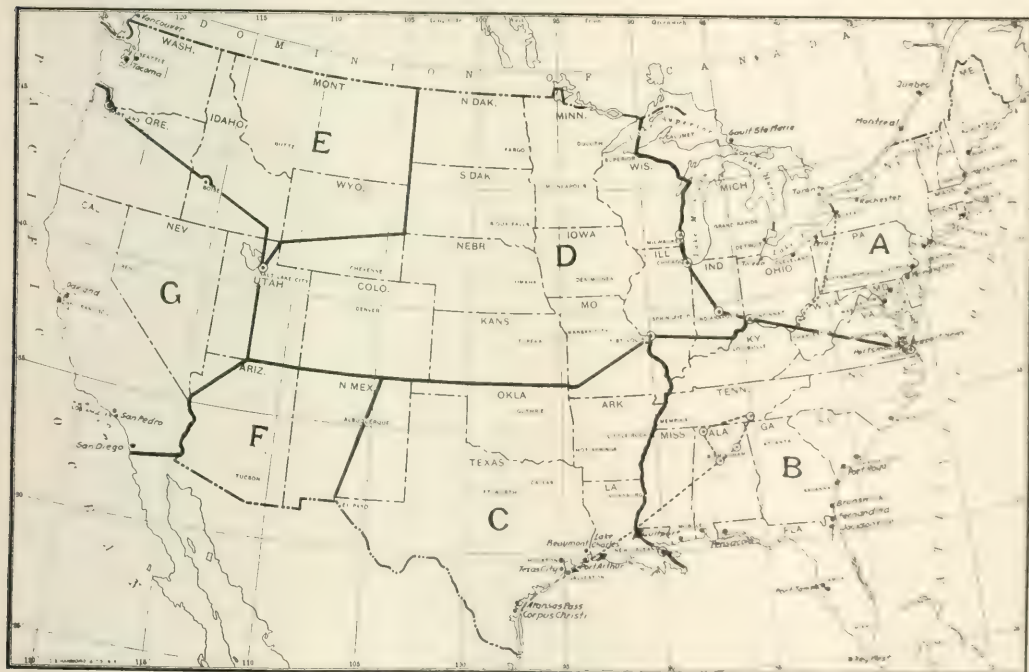
Distribution of Overseas Traffic

THE EXPORTS CONTROL COMMITTEE, appointed June by order of the secretary of war, the secretary of the navy and the director general of railroads, has issued a zone routing chart to govern the distribution of overseas traffic through the various available ports with consideration to efficiency and economy in transportation service, both inland and ocean, based upon the war traffic burden of the

necessary to fill tonnage.
 A—Via Gulf, South Atlantic or Pacific ranges.
 B—Via Gulf, South Atlantic or Pacific ranges.
 C—Via Gulf, South Atlantic or Pacific ranges.
 D—Via Gulf, South Atlantic or Pacific ranges.
 E—Via Gulf, South Atlantic or Pacific ranges.
 F—Via Gulf, South Atlantic or Pacific ranges.
 G—Via Gulf, South Atlantic or Pacific ranges.
 H—Via Gulf, South Atlantic or Pacific ranges.
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 Q—Via Gulf, South Atlantic or Pacific ranges.
 R—Via Gulf, South Atlantic or Pacific ranges.
 S—Via Gulf, South Atlantic or Pacific ranges.
 T—Via Gulf, South Atlantic or Pacific ranges.
 U—Via Gulf, South Atlantic or Pacific ranges.
 V—Via Gulf, South Atlantic or Pacific ranges.
 W—Via Gulf, South Atlantic or Pacific ranges.
 X—Via Gulf, South Atlantic or Pacific ranges.
 Y—Via Gulf, South Atlantic or Pacific ranges.
 Z—Via Gulf, South Atlantic or Pacific ranges.

The ranges of ports referred to are:

Portland, Me.	Wilmington, N. C.
Boston	Charleston
New York	Port Royal
Philadelphia	Savannah
Baltimore	Brunswick
Wilmington, Del.	Fernandina
Hampton Roads	Jacksonville
Norfolk	New Orleans
Newport News	Gulfport
Portsmouth	Mobile
Parkers Point	Pensacola
Lambert Point	Port Tampa
Sewells Point	



Zone Routing Chart Governing Distribution of Overseas Traffic Through the Several Ports

rail carriers, port facilities and emergency requirements. The zone boundaries are indicated by the lines on the map and the instructions as to the routing from each zone are shown below the map, lettered to correspond with the zone lettering, as follows:

- A—Via North Atlantic range, or Montreal.
 Exception: From territory on and west of the Buffalo-Pittsburgh line freight may be routed via South Atlantic and Gulf ranges, when necessary to fill tonnage.
 B—Via North Atlantic range (Gulf range east of Mississippi river) or Hampton Roads.

Gulf Range—West of Mississippi—
 Lake Charles,
 Beaumont,
 Port Arthur,
 Orange,
 Sabine Pass,
 Galveston,
 Texas City,
 Houston,
 Aransas Pass.
 Pacific Coast Range—
 Vancouver,
 Seattle,
 Tacoma,
 Portland, Ore.,
 San Francisco,
 Los Angeles (San Pedro),
 San Diego.
 Texas Ports—
 Lake Charles, La.,
 Beaumont,
 Port Arthur,
 Orange,
 Sabine Pass,
 Galveston,
 Texas City,
 Houston,
 Aransas Pass.

George D. Ogden, chairman of the committee, recently issued some general instructions regarding the handling of export freight in part as follows:

1. The distribution of the combined amount of all exports, the coasting traffic control instrumentalities will be used as far as practicable, including the committee of freight traffic control in charge of the Virginia gateways, Washington, D. C., and the committee of freight traffic control in charge of the Ohio river gateways, Cincinnati, Ohio.

Freight consigned to or for account of the war department will be subject to transportation orders issued by the chief of Inland Traffic Service.

Freight consigned to or for account of the war department will be exempt from embargoes unless otherwise ordered by the United States Railroad Administration.

Freight consigned to or for account of the navy department and marine corps will be exempt from embargoes, unless otherwise ordered by the United States Railroad Administration.

Export freight consigned to or for account of the British, French and Italian governments, together with commercial export freight, will be subject to railroad shipping permits of the freight traffic committee, North Atlantic ports, New York, which committee now exercises supervision over all ports, Boston, Mass., to Norfolk, Va., and Newport News, Va., inclusive.

Export freight consigned to or for account of the British, French and Italian governments, together with commercial export freight, via all ports, Wilmington, N. C., to Galveston, Tex., inclusive, is subject to supervision of the Southern export committee, Atlanta, Ga.

Permit system of control used by the freight traffic committee, North Atlantic ports, having jurisdiction over all ports, Boston, Mass., to Norfolk, Va., and Newport News, Va., inclusive, as now exercised, will continue. The supervision of the Southern export committee over all ports, Wilmington, N. C., to Galveston, Tex., inclusive, as now exercised, will also continue.

It is contemplated similar system of supervision will be established for all export freight via Pacific coast ports when occasion requires, announcement of which will be made in due course.

Removing Mud from Locomotive Feed Water

By C. P. Van Gundy

Chief Chemist, Baltimore & Ohio, Baltimore, Md.

IN THE VARIOUS articles which have been published on the subject of water supply and water treatment, there is one phase of the subject that is not given the prominence it deserves. We see frequent figures on the soluble scale-forming solids, the effects of scale, its cost and the methods of preventing and removing it, but little mention is made of suspended matter or in plain words, mud. Fine silt of course is often deposited and held on the tubes and sheets as part of the scale, as is readily determined by examination and analysis, but where mud is present in large quantities in the water supplied to the boiler, besides increasing the tendency to foam, it is thrown down as sludge, and, together with the loosened scale, settles to the portions of the boiler where circulation is least active. If it is not then removed speedily, mud burns follow, resulting in leaks, buckling of the sheets and the letting down of staybolts.

A curve showing the frequency of mud burns would have its high points in the freshest season. The rivers of the Middle West carry five or six pounds of suspended matter per thousand gallons during high water periods, which means that a locomotive may take into its boiler 100 to 120 lb. of mud on one trip. As an extreme case an analysis of a small stream supply at a dispatching point showed 10 lb. of suspended matter per 1,000 gal. of water, indicating that each locomotive sent out was given 70 to 90 lb. of mud in its tank.

To counteract the addition of mud frequent washing of the boilers is necessary and even then mud burns occur with greater or less frequency. I recall an instance of 16 failures in one month in one district because of mud, with the consequent loss of time and damage to the boilers. If we assume two days out of service as the average result of a mud burn and \$50 per day as the net earning value of a locomotive, we have \$1,600 loss for the month for lost time only in the above case, without including the cost of labor and material for repairs.

The following aggravated case came under my notice last

winter. A Mikado locomotive just out of the shop was put in service on a division where the water was of fair quality and was run one month. Because of a thaw the streams became muddy and on the third day of the month, the boiler was burned and the engine sent to the shop. She was in the shop three days; 28 staybolts were renewed and the boiler washed. On the seventh of the month it reached the other end of the division, where it was again shopped for two days, the boiler washed and 23 bolts renewed. We have, then, as a result of one mud burn, 51 staybolts renewed and five days out of service. Taking the net earning value of a locomotive as before and including the cost of material and labor, extra boiler washing and extra firing up, we have very close to \$400 as the cost of this one mud burn. If we take the gross income from the use of the locomotive as a basis, the loss would be about \$900 at the time of the occurrence, and, for a like occurrence now, more than \$1,000.

In another case, a locomotive was dispatched after being given water from the small stream above mentioned. Water was taken at two or three points from a muddy river, and a mud burn resulted before the engine had reached the end of its run. Something over one hundred staybolts had to be renewed and the locomotive was out of service four days.

Instances could be multiplied. It can be said that mud burns occur frequently enough to be a serious hindrance to economical operation, and any means that can be taken to prevent them are worth consideration and adoption. Some of our operating friends will tell us that the cure is to wash our boilers more often, but that is not always feasible; it costs money for labor, water and fuel, puts more or less strain on the boiler, and keeps the locomotive out of service. Boiler compounds do not cure, in fact they often aggravate the trouble, so that the only thing left is the rational one of removing the mud before feeding the water to the boiler. When the mud is very heavy, most of it can be removed by allowing sufficient time for it to settle in the tanks and using a float pipe for drawing off the partially cleared water from the top, but obviously the better way is to take it all out by filtration or by filtration and treatment in specially constructed plants.

It might be observed that there are few instances where it would be advisable simply to filter the water. Most turbid waters carry, in addition to the suspended matter, certain removable quantities of scale-forming solids in solution, and a plant to remove these along with the mud would cost very little more to install than one for the removal of the suspended matter alone.

Taking as an example again the rivers of the Middle West, we find that they average 1 to 1½ lb. of suspended matter per 1,000 gal. throughout the year, with the above mentioned 5 or 6 lb. maximum, while the incrusting solids average 2 lb. per 1,000 gal., with a maximum of 3½ to 4 lb. It is evident in this case that the incrusting solids can be reduced to ¾ lb. or less per 1,000 gal., at the same time that all of the suspended matter is removed.

This method has the further advantage that in treating to reduce hardness or scale-forming solids, a more or less flocculent precipitate is formed, which tends to collect the suspended matter, the whole settling readily. This method also generally renders unnecessary the addition of alum or other coagulant; which must be used when filtration alone is employed and which tends to cause the formation of a harder scale in the boiler.

Enough has been said to call attention to the damage that may result from the use of turbid waters. It is highly desirable to eliminate any condition that calls for the expenditure of labor, the use of material, and lessens in any way the service or mileage we get out of our locomotives, when we need every pound of power we can get for the transportation of our soldiers and war material.

Increased Traffic Shown by Report

BOTH FOR THE MONTH of July and for the seven months ending July 31, the railroads handled this year a greater ton mileage of revenue freight than in the corresponding periods of 1917, according to the monthly report of freight train operation compiled by the Operating Statistics Section of the Railroad Administration. The report for July shows a considerable improvement in efficiency as compared with the preceding months of this year. An increase of 1,897,376,211, or 5.6 per cent, in the revenue ton-miles is reported, with a decrease of 1.2 per cent in freight train miles and of 1 per cent in total car miles. The average tonnage per train was increased 5.7 per cent and the average carload 10.3 per cent.

For the seven months ending July 31 the report also shows a slight gain, one-tenth of one per cent in the number of revenue ton-miles as compared with the record made during the corresponding period of 1917, but the average ton mileage per freight locomotive and per freight car per month was less than in 1917. While the average trainload and the average carload were greater both in July and in the seven months' period than in the corresponding periods of 1917, the average mileage per car and per locomotive per day fell below the marks set last year. There was an increase in the percentage of empty car miles and the increased business was handled with a greater number of cars and locomotives in service than in 1917. For July the ton mileage per freight locomotive and per freight car increased 2.9 per cent and 0.3 per cent, respectively. The ton mileage per freight locomotive increased from 1,206,144 to 1,240,520 and per freight car from 15,974 to 16,025.

The press notice issued by the Railroad Administration, in commenting on the July figures, says: "The figures furnish abundant proof that the policy of the United States Railroad Administration in shortening routes and insisting upon the heavier loading and more intensive employment of the rolling stock and motive power is having the effect that had been expected in increasing the capacity of the railroads and reducing the cost of operation." But for the seven months' period since the Railroad Administration assumed control of the roads, the ton mileage per freight locomotive per month has been 1,118,000 as compared with 1,134,000 in seven months of 1917, and the ton mileage per freight car per month has been 14,463 as compared with 15,078.

Analysis of the figures would seem to indicate that while the Railroad Administration has succeeded in handling more traffic than was handled last year, which means more than was ever handled before in a similar period, the result was accomplished by the use of a greater amount of equipment than was available in 1917 and that while there was an increase in the efficiency of each unit of equipment in July as

compared with July, 1917, the result for the seven months does not equal the record for 1917 in this respect.

The July figures reflect the beginning of the grain movement, which during the past three months has shown such a large increase and which has caused a large movement of empty cars westward. The increase in ton mileage was accomplished with an increase of 1.5 per cent in the average number of freight locomotives in service and of 4.3 per cent in the average number of freight cars in service. There were larger increases, however, in the number and percentage of cars and locomotives in shop or awaiting shop. The average tons per train increased from 684 in July, 1917, to 723 in July, 1918, and the tons per loaded car increased from 27.3 to 30.1. On the other hand the mileage per locomotive per day fell from 65.6 to 64.2 and the average mileage per car per day from 27.9 to 26.5. The percentage of empty car miles increased from 32.4 to 35.3.

The combined seven months' figures show a total increase of 304,142,000 in revenue ton miles of freight, or 0.1 per cent, accomplished with an increase of 1.3 per cent in the average number of freight locomotives in service and of 4.2 per cent in the average number of freight cars in service. Total train miles decreased 2.8 per cent, total car miles 4.9 per cent, and freight locomotive miles 2 per cent. The average trainload was increased from 644 tons to 661 tons, or 2.6 per cent, and the average car load from 26.5 tons to 28.6 tons, or 7.9 per cent, but the average mileage per locomotive per day declined from 67.1 to 64.9, or 3.3 per cent and the average mileage per car per day from 26.9 to 24.5, or 8.9 per cent.

The statistics made public give the July figures of freight train operation for the individual roads in one table, by regions and districts in another, and the grand totals in another. The seven months' figures are given only for all roads combined.

The largest increase in revenue ton-miles for July is shown by the New England district and the Southern region, 15.3 per cent in each case. All of the regions show increases except the Southwestern, which shows a decrease of 5.4 per cent. The greatest increase in ton mileage per locomotive is shown in the Southern region, 10.8 per cent, although the New England district shows an increase of 10.7 per cent. Only the Southwestern shows a decrease. In ton mileage per freight car the New England district shows the largest increase, 14.7 per cent. The Pocahontas, Southern Central Western and Southwestern regions show decreases in this item. The Central Eastern and Ohio-Indiana districts show the largest increase in train loading, 8.5 per cent in each case, while the New England district shows the largest increase in carloading, 14.5 per cent.

The combined figures for all regions, for July and the seven months ending July 31, are as follows:

Item	Month of July		Increase or Decrease		Seven Months	
	1918	1917	Amount	Cent	1918	1917
Average miles operated—single track.....	2,000,413	220,178.91	518,123	1.2	2,266,336.15	226,355.70
Freight train miles.....	53,619,701	54,803,341	607,139	1.2	370,211,308	380,597,036
Loaded freight car miles.....	1,387,886,801	1,358,205,206	71,118,405	5.2	8,573,094,133	9,259,037,495
Empty freight car miles.....	700,721,826	649,491,450	51,230,376	7.9	4,005,970,291	3,967,924,862
Total freight car miles—loaded and empty.....	1,987,808,627	2,007,696,656	19,888,029	1.0	12,579,064,424	13,226,962,357
Freight locomotive miles.....	62,210,369	62,638,521	427,152	0.7	430,513,246	439,513,246
Revenue ton miles.....	34,081,914,750	1,897,376,211	5.6	224,830,996,874	234,526,854,093	
Non-revenue ton miles.....	2,781,999,789	3,055,247,959	273,248,170	8.9	20,045,711,892	20,565,576,170
Total ton miles.....	36,863,914,539	37,137,162,709	1,624,128,041	4.4	244,876,708,766	255,092,430,263
Average number of freight locomotives in service.....	31,246	30,790	456	1.5	31,287	30,883
Average number of freight locomotives in or awaiting shop.....	4,434	4,234	200	4.7	4,651	4,184
Average number of freight cars in service.....	2,418,729	2,324,859	93,870	4.0	2,418,801	2,322,150
Average number of freight cars in or awaiting shop.....	167,153	139,835	27,318	19.5	131,816	130,283
Hour.....	2,418,729	2,324,859	93,870	4.0	2,418,801	2,322,150
Foreign.....	310	34,876	47,443	36.0	31,833	31,833
Tons per train.....	723	684	39	5.7	723	684
Tons per loaded car.....	30.1	27.3	2.8	10.3	28.6	26.5
Average miles per locomotive per day.....	64.2	65.6	-1.4	-2.1	64.9	67.1
Average miles per car per day.....	26.5	27.9	-1.4	-5.0	24.5	26.9
Per cent of empty car miles.....	35.3	32.4	2.9	8.9	31.8	30.0
Per cent of freight locomotives in or awaiting shop.....	14.1	13.8	0.3	2.2	14.9	14.7
Per cent of freight cars in or awaiting shop.....	6.9	6.9	0	0	7.4	7.4
Total ton miles.....	36,863,914,539	37,137,162,709	1,624,128,041	4.4	244,876,708,766	255,092,430,263
Per freight locomotive per month.....	1,240,520	1,206,144	34,376	2.9	1,133,737	1,118,000
Per freight car per month.....	16,025	15,974	51	0.3	15,974	15,078

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of July, 1918:

Date	Band	Place	Kind of accident	Kind of traffic	Highway	Total
1950	Nashville	Nashville	1	P & P	1	1
1951	Chattanooga	Chattanooga	1	P & P	1	1
1952	Chattanooga	Chattanooga	1	P & P	1	1

Date	Road	Place	Cause of derailment	Kind of train	Kill'd	Inj'd
1	St. Louis - St. Louis	Neppan, Tenn.	unx	P.	1	0
2	Elm. - Elm. & Col. - Elm.	St. Louis	unx	P.	1	0
11	Vicksburg, S. & P.	Haughton	unx	P.	0	6
13	Atelash, T. S. & F.	Elmer, N. M.	unx	P.	0	1
17	Wabash	Adrian, Mich.	unx	P.	3	0
18	Pennsylvania	El C. C. N. Y.	unx	P.	0	0
17	Long Island	Central Park	unx	P.	0	7
18	St. Louis - San Fran.	Rocking	unx	P.	4	49

The train derailed near Newport, Tenn., on the ninth, was a through freight. The locomotive was derailed at a curve by striking a pile of bolts, and was ditched. The engineman was fatally injured.

Electric Car Accidents—Of six accidents to electric cars reported in the United States in the month of July, three were reported as fatal; a butting collision near Alliance, Ohio, on the fourth, in which one person was killed and 11 were injured; a derailment at a curve in San Francisco on the thirteenth, seven persons killed and 41 injured; and a butting collision near Chelsea, Mich., on the evening of the twentieth, in which 18 persons were killed. In this case a westbound freight car and an eastbound limited passenger car collided at full speed and 17 passengers and one employee were killed and about 40 passengers were injured. Both cars were wrecked and many of the injured persons were extricated with difficulty.

Has Your Force Subscribed 100 Per Cent?

4. Abbreviations and marks used on Accident List:
 a. Rear collision; b. Battling collision; c. Other collisions; d. Broken; e. Detective; f. Unforeseen obstruction; g. Unex-
 planned; h. derail; i. other derailing switch; m. Misplaced switch; n. ob-
 st. Accidental obstruction; malice. Malicious obstruction of tracks; o.
 -boder. Explosive on locomotive on road; p. fire. Cars burned while on
 mine; q. "Pass." Passenger; r. Freight train; s. "eng'd
 empty" empty cars, work trains, etc.; t. Asterisk. Wreck wholly or partly
 destroyed; u. Dugger. One or more passengers killed.

General News Department

Goggles for workmen and prevention of accidents in the use of freight elevators are the subjects of the latest "Safe Practices" pamphlets issued by the National Safety Council, 208 South LaSalle street, Chicago; No. 14, of eight pages, dealing with goggles, and No. 15, of 12 pages, with elevators.

Dining car employees—stewards, cooks and waiters—to the number of 32, were arrested on Saturday night, September 28, by inspectors of the New York, New Haven & Hartford, and taken before court on charges of fraud in issuing meal checks on which the money was not turned over to the company. Thirteen men were taken at Boston, 14 at New Haven, and five at New York.

Prices of steel rails, the fixing of which by the government has been the subject of conferences for several weeks, were again discussed on Tuesday of this week by Director General McAdoo with R. S. Lovett, director of the division of capital expenditures, and W. B. Colver, chairman of the Federal Trade Commission. It is understood that a general agreement has been reached between the representatives of the steel companies and the War Industries Board, but that the Railroad Administration has not yet been satisfied.

Car Conservation on Southern Pacific

As the result of efficient loading during the seven months ended July 31, a reduction of 50,055 was made in the number of cars which would otherwise have been required to accommodate freight loaded at the various stations on the Southern Pacific—Pacific System (excluding narrow gage lines). During July the total number of tons loaded was 1,609,477, and the average tons per car for all cars loaded was 24.3 compared with 23.9 last year. The greatest increase in car loading was made on the Salt Lake division, 17 per cent. The Coast division showed 12 per cent. The San Francisco freight station increased its average loading of 1 c. l. merchandise from 10 tons per car in July, 1917, to 15.9 tons in July, 1918, or an increase of over 50 per cent.

No Fault with Transportation

J. L. Replogle, United States Steel Administrator, says that at the recent conference which he held with pig-iron, pipe, shell steel and plate manufacturers, to discuss factors that were reducing output, not one complaint was heard of lack of railroad facilities. "There were at least 600 men altogether at the different conferences, and not one had any fault to find with transportation. They all agreed that it is adequate to all needs. When you consider that supplying the needs of the steel industry, including movement of ore, coal and coke and the other factors entering into production, as well as the movement of the product from the mills, means transportation at the rate of well up towards a billion tons a year, the record established by the Railroad Administration in providing all facilities demanded is nothing short of phenomenal. I do not believe that a similar situation has existed within the past ten years."—*Hill Street Journal*.

The New Safety Organization on Southern Pacific-Western Pacific

Safety committees on the Southern Pacific, the Western Pacific, the Tidewater Southern and the Deep Creek have been reorganized by J. H. Dyer, general manager, in accordance with instructions from the director general. The plan of organization calls for 33 safety committees: One general committee composed of general officers at San Francisco, Cal., 12 divisional, four general shop, three local shop, six terminal, five local and

one marine committee. Nine of the 12 divisional committees will be on the nine operating divisions of the Southern Pacific, two on the Western Pacific and one on the Tidewater Southern.

R. J. Clancy, assistant to the general manager, has been placed in general charge of all committees. In commenting on the safety record of the Southern Pacific during the past 10 years, Mr. Clancy stated that 425,000,000 revenue passengers have been carried 18,000,000,000 passenger miles with a degree of safety equivalent to carrying a passenger a distance equal to 640,000 times around the world without danger of loss of life in train accidents. This, he believes, is the greatest record ever made by any railroad and it is the purpose of the new organization to maintain it.

New York to San Francisco, 3175 Miles

The people of Keokuk, Iowa, have a plan for a short transcontinental railway route, to pass through their city, and they have petitioned the director general of railroads to order it established. The proposed line is by way of Pittsburgh, Pa.; Logansport, Ind.; Effner, Ind.; Hamilton, Ill.; Keokuk, Iowa; Shenandoah, Iowa; Nebraska City, Lincoln, Neb.; Ogden and Sacramento. Some of the lines between Logansport and Lincoln now carry but very little traffic, but the promoters of the new route say that the tracks are in fairly good condition. The agitation for this route originated in a meeting held in Keokuk on July 29, attended by manufacturers, stockmen and farmers, at the conclusion of which Judge Felix T. Hughes was delegated to present the matter to the director general. The distance from New York to San Francisco by the route indicated is about 3,175 miles as follows:

	Miles
New York to Pittsburgh.....	190
Pittsburgh to Logansport.....	190
Columbus to Logansport.....	198
Logansport to Effner, Ind.....	190
Effner to Hamilton, Ill.....	190
Hamilton to Keokuk, Iowa.....	190
Keokuk to Shenandoah.....	190
Shenandoah to Nebraska City.....	190
Nebraska City to Lincoln, Neb.....	58
Lincoln to Grand Island.....	190
Grand Island to San Francisco.....	190
Total.....	3,175

Railway Equipment Manufacturers' Association

At the annual meeting of the Railway Equipment Manufacturers' Association, which was held during the Traveling Engineers' Convention, \$100 was contributed to the Railway Regiments' Tobacco Fund and \$200 to the American Red Cross. During the first day of the convention of the Traveling Engineers' Association, W. E. Brumble, president of the Railway Equipment Manufacturers' Association, presented the Traveling Engineers' Association with a service flag having 20 stars. This flag bears one gold star for Lieut. J. Boyden Russell, who was killed in an aerial bombing expedition on the Italian front.

The following officers were elected for the ensuing year: President, Gilbert E. Ryder, Locomotive Superheater Company; vice-president, C. W. Floyd Coffin, Franklin Railway Supply Company; secretary, D. L. Eubank, Galena Signal Oil Company; treasurer, B. C. Hooper, American Steel Foundries; executive committee members for three years, C. L. Brown, Manning, Maxwell & Moore; Morris Brewster, United States Metallic Packing Company, and F. W. Venton, Crane Company.

REVENUES AND EXPENSES OF RAILWAYS

Name of road	Mileage operated during period	Operating revenues			Maintenance of way and structures		Equipment	Operating expenses			Operating ratio	Net railway operating income	Railway tax accruals	Operating income or loss	Income per car-mile last year
		Freight	Passenger	Total	Way and structures	Equipment		Freight	Passenger	Total					
Albany, N. Y.	1,125	2,532,746	70,119	8,366,862	545,691	1,390,225	30,600	3,060,000	1,072	6,955	104.77	104,575	86,864	17,711	1.68
Albany, N. Y.	1,125	2,532,746	70,119	8,366,862	545,691	1,390,225	30,600	3,060,000	1,072	6,955	104.77	104,575	86,864	17,711	1.68
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Albany, N. Y.	1,125	2,532,7													

REVENUES AND EXPENSES OF RAILWAYS

SEVEN MONTHS OF AVERAGE

Name of road.	Average mileage operated during period.	Operating revenues.			Maintenance of way and equip.			Operating expenses.			Net from railway operation.	Railway tax income (or loss).	Operating income (or loss).	Increase (or decrease) last year.
		Freight.	Passenger.	Total.	Way and equip.	Traffic.	Portation.	Total.	Operating ratio.					
Houston East & West Texas.	475	\$8,900,792	\$2,764,145	\$11,664,937	\$1,612,261	\$13,893	\$403,382	\$4,243,387	73.95	\$906,467	\$45,056	\$2,451,171	\$1,113,076	
Illinois Central.	4,705	\$4,008,854	\$9,941,690	\$8,172,523	\$11,020,511	31,803	\$403,382	\$4,243,387	73.95	\$906,467	\$45,056	\$2,451,171	\$1,113,076	
Chicago & North Western.	475	\$4,008,854	\$9,941,690	\$8,172,523	\$11,020,511	31,803	\$403,382	\$4,243,387	73.95	\$906,467	\$45,056	\$2,451,171	\$1,113,076	
St. Louis & North Western.	475	\$4,008,854	\$9,941,690	\$8,172,523	\$11,020,511	31,803	\$403,382	\$4,243,387	73.95	\$906,467	\$45,056	\$2,451,171	\$1,113,076	
St. Louis & North Western.	475	\$4,008,854	\$9,941,690	\$8,172,523	\$11,020,511	31,803	\$403,382	\$4,243,387	73.95	\$906,467	\$45,056	\$2,451,171	\$1,113,076	
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Traffic News

The grain loaded by all the railroads during the period from July 1 to September 21 amounted to 367,886 cars, an increase of 106,000 as compared with the corresponding period of 1917, according to the weekly report made public by the Railroad Administration.

A towboat and three steel barges carrying 2,200 tons of grain and miscellaneous freight left St. Louis on Saturday, September 28, for New Orleans, the initial departure of the government service on the Mississippi river. The equipment at present consists of 5 towboats and 30 steel barges. Weekly departures from both St. Louis and New Orleans are contemplated, although the capacity of the carriers is very limited at present.

Inland Waterways Conference

Director General McAdoo has authorized G. A. Tomlinson, director of inland waterways of the Railroad Administration, to confer with owners and operators of boats engaged in general traffic on the inside water route between Philadelphia and Trenton and Beaufort, N. C., with the object of securing greater coordination and efficiency of operation. As a result, Mr. Tomlinson will hold such a conference in Washington on Friday, October 11, to which will be invited these owners and operators of boats and also representatives of the chambers of commerce of the cities along these waterways. Interested shippers in this region will be welcome to this meeting if they desire to attend.

California Fruit Traffic

Shipments of California fresh fruits this year have broken all records, amounting to 15,004½ cars to September 15 against 11,719½ last year. Up to September 8, the excess of shipments this year amounts to 3,285 cars. A fourth more grapes than last year and nearly twice as many peaches as last year have been shipped. The California Fruit Distributors give the following comparisons of the totals of cars forwarded:

	1917	1918
Cherries	995	351
Apricots	403	440½
Pears	4,111½	3,991½
Peaches	2,238	3,036½
Plums	2,598½	2,478½
Grapes	2,062½	4,683
Miscellaneous	11½	23½
Totals	11,719½	15,004½

Coal Production

Bituminous coal production during the week ended September 21, according to the Geological Survey report, is estimated at 12,650,000 net tons, or 19.4 per cent above that for the corresponding week of 1917. A strike in the anthracite fields caused a decrease in anthracite production of 11.3 per cent, the output being estimated at 1,847,000 net tons. The percentage of full time output lost on account of car shortage during the preceding week, according to the reports of bituminous operators, was 4.2 per cent.

A report by the Car Service Section of the Railroad Administration shows a total of 263,830 cars of all kinds of coal loaded during the week ended September 14, as compared with 233,880 in the corresponding week of 1917. The estimated total for the week ended September 21 was 259,295, as compared with 222,202 in the corresponding week of 1917. This makes the increase from January 1 to September 21 over the same period of 1917 a total of 607,070 cars.

The total coal produced in the United States in 1917, according to a report by the Geological Survey, was 651,402,374 net tons, as compared with 590,098,175 in 1916. These figures included 99,611,811 tons of anthracite in 1917 and 87,578,493 in 1916. The number of men employed in 1917 was 608,174, working an average of 251 days, as compared with 590,949 working an average of 235 days in 1916.

Commission and Court News

Interstate Commerce Commission

The commission has granted, with conditions, a request filed by Edward Chambers, traffic director of the Railroad Administration, for approval for the filing of tariffs on one day's notice making changes in rates, fares, etc., applying jointly between carriers under federal control and those not under federal control.

Counsel for the American Newspaper Publishers' Association and of several of the larger newspapers appeared at a hearing before the fifteenth section board of the Interstate Commerce Commission on October 1 to protest against the application of the American Railway Express Company for an increase in the express rates for the carriage of newspapers. The application for the increase was filed after the recent 10 per cent general advance in express rates granted by the commission and before the proposal for a new advance made by the director general of railroads.

Personnel of Commissions

Hon. George W. Anderson, of Massachusetts, who has been a member of the Interstate Commerce Commission for about one year, has been nominated by President Wilson for appointment as United States circuit judge for the first circuit.

Henry Thurtell, attorney examiner for the Interstate Commerce Commission, has been appointed chief examiner, with office at Washington, succeeding J. W. Carmalt, resigned. George M. Crosland has been appointed chief of the Bureau of Tariffs, succeeding J. W. Jones, deceased.

Court News

Installation of Interlocking Plants

The Missouri Supreme Court holds that a contract wherein a railroad agrees to defray the expenses of construction and operation of "crossing signals and gates" at a crossing of its tracks with those of another railroad does not obligate the former to pay the cost of an interlocking plant. It also holds that where intersecting railroads were ordered by the Public Service Commission to install an interlocking plant, one road having a daily average of 16 trains over the crossing and the other six trains, an apportionment against the latter of 28.6 per cent of the cost of construction and maintenance was reasonable.—State ex rel. Chicago & Alton v. Commission (Mo.), 204 S. W., 531. Decided June 13, 1918.

Tunnel Construction Contract Construed

The contract for building a tunnel provided that, if extras were furnished for which prices were not fixed in the contract, no payments should be made for them unless they had been ordered in writing by the railroad's chief engineer. Under the plans, the framework of the roof of the tunnel was to be supported by posts resting on the floor. The parties decided that it would be better to have short posts niched into the walls of the tunnel, instead of using longer ones resting on the floor of the tunnel; it being agreed that the cost of the work of cutting the niches for the short posts was equal to the difference between the cost of the long and the short posts and should be paid for as lumber. In an action by the contracting company against the railroad to recover compensation claimed for certain extra items of work done, material furnished, and expenses incurred, the Kansas Supreme Court holds that such work was not an "extra" within the meaning of the contract.—Lantry Contracting Co. v. Atchison, T. & S. F. (Kan.), 172 Pac. 527. Decided May 16, 1918.

Equipment and Supplies

Iron and Steel

THE ST. PAUL UNION DEBOT COMPANY, has ordered from the St. Paul Foundry Company 272 tons of structural steel for the new union station at St. Paul, Minn.

Signaling

CHICAGO & ALTON—A mechanical interlocking has been ordered from the General Railway Signal Company for Schoper, Ill.; 15 levers, and 5 spare spaces.

NORTHERN PACIFIC—A Saxby & Farmer interlocking machine is to be put in at Jamestown, N. D. The material is to be furnished by the General Railway Signal Company.

LOUISVILLE & NASHVILLE—Automatic block signals are to be installed on the line between Maplewood, Tenn., and Brentwood, 16 miles. The material has been ordered from the General Railway Signal Company.

LEHIGH VALLEY—An electric interlocking, 16 levers, is to be installed at the drawbridge at Newark Bay, New Jersey. The machine, a model 2, unit lever type, together with other material, has been ordered from the General Railway Signal Company.

GREAT NORTHERN—Automatic block signals are to be installed on 117 miles (single track). The material has been ordered from the General Railway Signal Company. The signals will be single arm, upper quadrant, three-position, top-of-the-mast, model 2-A.

CHICAGO, BURLINGTON & QUINCY—Material with which to enlarge the electric interlocking at Hawthorne, Ill., from 56 levers to 96 levers has been ordered from the General Railway Signal Company. Complete new locking will be provided; also lever lights, detector locks and approach and route locking.

PENNSYLVANIA LINES WEST OF PITTSBURGH—An electric interlocking machine, 51 working levers, and 13 spare spaces, is to be installed at Richmond Junction, Ind. The material has been ordered from the General Railway Signal Company. The machine will have lever lights. Approach and sectional release route locking will be provided. This plant will be installed by the signal company.

ANOTHER AMERICAN STEEL COMPANY IN BRAZIL—By a decree dated August 7, 1918, the president of Brazil has authorized the American Steel Company's Brazilian corporation to operate in this country. This is a branch of the American Steel Export Company of New York city. The objects of the company are the manufacture of iron, steel, manganese, copper, and other metals and their alloys, the purchase and sale of metal products, and the purchase and exploitation of mines and timber lands of all kinds. The capital stock of the company's branch is \$20,000, divided into 200 shares of \$100 each.—*Commerce Reports*.

RAILWAY SERVICE SUSPENDED FOR THE WAR—Not the least interesting chapter in the history of British railway operation during the war is that relating to the closing of stations and branch lines "for the duration." The total number of stations and the mileage affected is by no means inconsiderable, and the suspension is of two natures; either no public traffic is handled at all, or the week-day services are maintained, while the line or station is closed on Sundays. On the South-Eastern & Chatham, for instance, both systems have been adopted. Some of the South-Eastern & Chatham stations in the London district have been closed up entirely, while on other sections, as for example, the Dunton Green and Westerham branch, the normal week-day service is maintained, but there are no Sunday trains. On the same line there are also stations which are closed for passenger traffic, excluding troop trains and specials, but which still handle certain classes of freight traffic.—*Railway Gazette, London*.

Supply Trade News

HORACE N. TRUMBULL, advertising manager of the SKF Ball Bearing Company, of Hartford, Conn., has entered the Reserve Officers' Training Camp, at New Haven, Conn.

M. F. COVERT, assistant master car builder of Swift & Co., Chicago, has been appointed sales manager of the Chicago and northwest territory of the Standard Car Construction Company, with office in the Peoples Gas building, at Chicago.

F. O. BUNNELL, chief engineer of the Southern Wheel Company, St. Louis, Mo., and formerly engineer of tests on the Chicago, Rock Island & Pacific, has been elected vice-president of the Southern Wheel Company, with headquarters at St. Louis.

A. E. BROWN, former general agent of the Chicago & Alton, at Detroit, Mich., and previously in the same capacity for the Denver & Rio Grande and the Western Pacific at that point, has been appointed manager of the railroad department of the Truscon Steel Company.

J. M. HOPKINS, chairman of the board of the Camel Company, Chicago, has been appointed a member of the priorities committee of the War Industries Board. Mr. Hopkins will handle export matters except those for Japan and for the allied governments having war missions.

THE LOCOMOTIVE PULVERIZED FUEL COMPANY, New York, has received an order from Morris & Company, packers, covering the installation of complete apparatus for pulverizing, distributing and burning powdered coal, to be installed in the company's plant at Oklahoma City, Okla.

THE AYER & LORD TIE COMPANY, INC., Chicago, has discontinued its creosoted wood block department and has turned over that portion of its business and practically all of its selling force to the Republic Creosoting Company, Indianapolis, Ind. W. H. Blythe, of the Ayer & Lord Tie Company, will have charge of the block department of the Republic Creosoting Company.

ROBERT C. BYLER, for nearly four years advertising production man for the SKF Ball Bearing Company, of Hartford, Conn., has been appointed advertising manager of the SKF Administrative Company of New York City, and will direct the advertising of the SKF Ball Bearing Company of Hartford, the Hess-Bright Manufacturing Company of Philadelphia, and the Atlas Ball Company of the same city, all of which are controlled by the SKF Administrative Company. Until arrangements are made in New York, Mr. Byler will remain with the SKF Ball Bearing Company of Hartford, Conn.

Trade Publications

PULVERIZED FUEL—The Locomotive Pulverized Fuel Company, New York, in Bulletin No. 6, describes results obtained from burning coal under stationary boilers with the "Lopulco" pulverized fuel system.

GUN IRON—Why Railroads Use Hunt-Spiller Gun Iron, is the title of an eight-page booklet published by the Hunt-Spiller Manufacturing Corporation, South Boston, Mass. It contains a brief discussion of the merits of gun iron which led to recognition of its value in locomotive construction several years ago.

TRAIN OPERATION BY SIGNAL INDICATION—This is the title of a pamphlet, 8½ in. x 11 in., issued by Henry M. Sperry, 120 Broadway, New York city, and containing a reprint of his article describing the block signal practice on the Susquehanna division of the Erie Railroad, published in the *Railway Age* of July 5, last. Mr. Sperry's "constituents"—the Union Switch & Signal Company, the General Railway Signal Company, the Federal Signal Company and the Hall Switch & Signal Company—announce on the last page that other bulletins of this kind will be issued from time to time.

Railway Construction

CHICAGO & ALTON.—A contract has been given to Stresenreuter, Cotton & Co., Chicago, for construction of 14 one-story bunk houses, for Mexican laborers. Each house will be 20 ft. by 60 ft., containing four rooms and a court through the center somewhat after Mexican style. The walls will be hollow tile and the floors concrete. The new buildings will be located at Dwight, Ill.; Chenoa, Elkhart, Sherman, Fancy Prairie, Auburn, Godfrey and Yeomans.

ILLINOIS CENTRAL.—This road has awarded a contract to T. S. Leake & Co., Chicago, for the construction of an extension to a freight house at Rockford, Ill., to cost about \$25,000. It will be a one-story brick structure, 32 ft. by 148 ft., with a slate roof and a platform on three sides, 10 ft. wide on one side and 8 ft. in width on the other two sides. The building will have a plank floor on a concrete base and the platform will be protected by a canopy covered with Paroid roofing.

INDIANAPOLIS UNION RAILWAY.—This road will build a passenger train shed at Indianapolis, Ind., in connection with the track elevation work it is doing in that city. The general contract for the construction of the train shed, exclusive of steel work and the foundation, has been awarded to Latham & Walters, general contractors, Indianapolis. Price & McLanahan, Philadelphia, Pa., are the architects. The work to be done under the general contract will amount to approximately \$900,000.

PENNSYLVANIA RAILROAD, WESTERN LINES.—This road has commenced the construction of car repair shops at Fifty-ninth and Leavitt streets, Chicago. The buildings which will be erected will be of brick and reinforced concrete construction and will include a machine shop, a general service and office building, a wood shop, a door shop, a paint shop, a fire station and a supply shed. In addition an ice house and the fan house for a smoke collecting system are being erected on the same property. Charles B. Johnson & Sons, Chicago, have the contract for the building construction and incidental track work will be done by the railroad's own forces.

PHILADELPHIA & READING.—Work is now being carried out on a new engine yard near Essington, Pa., on the Chester branch to be known as the Darby creek engine yard. This will consist of a one-story engine house of brick and concrete construction, 72 ft. 8 in. wide by 211 ft. long and 26 ft. high, with a continuous monitor with ventilating sash. Lean-to structures, 25 ft. wide and 211 ft. long, will be provided to be used for powerhouse, machine shop, storeroom and office. The engine house will have two longitudinal inspection pits and a wheel jack pit, with hoist. The yard will also include a 100-ft. turntable, with tractor, which will have a reinforced concrete substructure; a concrete storage pit, 10 ft. wide by 173 ft. long and 10 ft. deep, with a steel trestle track support; a concrete ash water pit, 4 ft. wide by 200 ft. long and 5 ft. deep; a concrete inspection pit, 4 ft. wide by 76 ft. long and 3 ft. 6 in. deep; two 47,000-gal. wooden tanks on concrete, and brick substructures, 21 ft. wide, 46 ft. 2 in. long and 26 ft. high; two concrete water column pits, 8 ft. 6 in. wide, 16 ft. long and 8 ft. deep; a concrete pump house, 14 ft. wide, 19 ft. long and 10 ft. deep, with a pump pit, 14 ft. wide by 19 ft. 6 in. long and 32 ft. deep, and a concrete intake well of 10 ft. diameter and 27 ft. deep.

SAN DIEGO & ARIZONA.—This road has been completed from San Diego, Cal., east about 95 miles, and from El Centro, on the Southern Pacific, west, about 31 miles, leaving a gap of approximately 10 miles, upon which construction work is now going on. These 10 miles are in the canyon of Carrizo creek, where 17 tunnels are being built, the longest of which is 2,612 ft., and the next longest 2,534 ft., the total length of all the tunnels being 2.6 miles. The road when completed will give San Diego a direct line to the East.

Railway Officers

Railroad Administration

General

William W. Morris, formerly of the purchasing department of the Pennsylvania, at Philadelphia, has been appointed secretary of the Central Advisory Purchasing Committee, with office at Washington, D. C.

Regional

F. S. Wilcoxon, special representative of the Perolin Railway Service Company at Chicago, has been appointed assistant fuel supervisor of the Northwestern region of the Railroad Administration, with headquarters at Portland, Ore. Mr. Wilcoxon's biography and picture were published in the *Railway Age* of January 4, 1918.

Federal and General Managers

E. E. Calvin, federal manager of the Union Pacific, the Oregon Short Line, the St. Joseph & Grand Island, the Los Angeles & Salt Lake and the Ogden Union Railway & Depot Company, has had his jurisdiction extended over the Leavenworth Depot & Railroad.

W. B. Storey, federal manager of the Atchison, Topeka & Santa Fe, the Pan Handle & Santa Fe, the Rio Grande, El Paso & Santa Fe, the Kansas Southwestern and the Grand Canyon, has had his jurisdiction extended over the Atchison Union Depot & Railroad and the Pueblo Union Depot & Railroad, effective September 24.

G. R. Huntington, federal manager of the Minneapolis, St. Paul & Sault Ste. Marie, the Duluth, South Shore & Atlantic, the Copper Range, the Lake Superior Terminal & Transfer, and the Mineral Range, has had his jurisdiction extended over the Mackinac Transportation Line and the Sault Ste. Marie (Mich.) union depot, effective September 24.

C. G. Burnham, federal manager of the Chicago, Burlington & Quincy, the Quincy, Omaha & Kansas City, the Toledo, Peoria & Western (west of Peoria including the Peoria terminals), the Rockport, Langdon & Northern, the Rapid City, Black Hills & Western and the Davenport, Rock Island & Northwestern, has had his jurisdiction extended to include the Keokuk Union Depot.

The authority of **Charles H. Ewing**, federal manager of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City Railroad and the Port Reading Railroad, with office at Philadelphia, Pa., has been extended over the Baltimore & Ohio Railroad New York Terminals, the Baltimore & New York Railroad and the Staten Island Rapid Transit Railroad.

Operating

T. F. Dixon, trainmaster on the Great Northern, at Everett, Wash., has been promoted to superintendent of the Butte division, with headquarters at Great Falls, Mont., succeeding **F. Wear**, promoted, effective September 18.

J. W. Allen, acting division superintendent of the Northern Pacific, with office at Seattle, Wash., has been appointed superintendent of the Puget Sound division, with headquarters at Seattle, vice **J. J. McCullough**, assigned to other duties.

I. H. Luke, vice-president and general manager of the Utah Railway, Salt Lake City, Utah, has been appointed general superintendent of the Denver & Rio Grande, Utah lines, with headquarters at Salt Lake City, effective October 1. The office of assistant general manager of the Denver & Rio Grande at Salt Lake City has been abolished.

The following officers on the Oregon-Washington Railroad & Navigation Lines have had their jurisdiction extended

over the Southern Pacific, north of Ashland, and the Pacific Coast Railroad; **S. A. Hering**, car service agent; **E. A. Klippel**, superintendent of telegraph, and **E. B. Wood**, chief special agent; all with headquarters at Portland, Oregon.

E. J. Henry, assistant manager of the marine department, division of operations of the United States Railroad Administration, with office at Washington, D. C., has been appointed supervisor, rail and lake traffic, Allegheny and Eastern regions, with jurisdiction over the Lehigh Valley Transportation Line and the interchange of business of other Lake Lines with railroads of the administration at Eastern lake ports. His headquarters are at the Lehigh Valley passenger station, Buffalo, N. Y.

George M. Smith, who has been appointed superintendent of the Delaware division of the Pennsylvania Railroad, with office at Wilmington, Del., as has already been announced in

these columns, was born on October 9, 1866, in Baltimore county, Md., and was educated in the public schools. He began railway work in 1881 as a brakeman on the Baltimore & Potomac, now the southern portion of the Baltimore division of the Pennsylvania Railroad. On July 13, 1883, he was made flagman, and on February 13, 1885, he was promoted to freight conductor. He was transferred to passenger conductor on April 30, 1894, which position he held until January 15, 1911, when he was

appointed assistant trainmaster of the Maryland division, at Perryville, Md. He was appointed freight trainmaster of the Maryland division on February 1, 1915, with headquarters at Wilmington, Del., and three years later was promoted to assistant superintendent of the Maryland division at Lamoikin, Pa., which position he held until his recent appointment as superintendent of the Delaware division, as above noted.

George Bradshaw, safety engineer of the Grand Trunk and the Grand Trunk Pacific, with headquarters at Toronto, Ont., has been appointed supervisor of safety of the Pere Marquette, the Ann Arbor, the Detroit & Toledo Shore Line, the Fort Street Union Depot, the Lake Michigan Car Ferry Association, the Grand Trunk-Western Lines, the Detroit & Mackinac, the Detroit, Bay City & Western, the Port Huron Southern, and the Port Huron & Detroit, effective September 25. Office at Detroit, Mich.

Financial, Legal and Accounting

Joe Marshall has been appointed freight claim agent on the Missouri, Kansas & Texas Railroad of Texas, with headquarters at Dallas, Tex., effective September 16.

Robert Adams, assistant auditor of the Southern Pacific, has been appointed assistant general auditor of the lines south of Ashland, Ore., and assistant federal auditor of the lines north of Ashland, with headquarters at San Francisco, Cal.

J. J. Hooper has been appointed freight claim agent, with headquarters at Washington, D. C., with general charge of loss and damage freight claims over all lines under the jurisdiction of **E. H. Coapman**, federal manager, with the exception of the Piedmont & Northern, and the Baltimore & Ohio (segregated line between Harrisonburg and Lexington, Va.).

J. O. Talbott, assistant general auditor of the Pere Marquette, the Grand Trunk, western lines, the Detroit & Toledo Shore Line and the Fort Street Union Depot Company, with office at Detroit, Mich., has been appointed acting federal auditor of all the above roads, also of the Ann Arbor, the

Lake Michigan Car Ferry Association, the Detroit & Mackinac, the Detroit, Bay City & Western, the Port Huron Southern and the Port Huron & Detroit, vice **C. S. Sikes**, who has resigned as general auditor to take service with the Pere Marquette Railway Company (Corporation).

Traffic

J. J. Byrne, general eastern agent of the Delaware, Lackawanna & Western, with office at New York, has been appointed assistant general freight agent; **W. F. Griffiths**, general passenger agent, has been appointed assistant general passenger agent; **A. B. Wallace**, assistant general freight agent, has been appointed chief of tariff bureau, and **T. J. McGeoy** has been appointed foreign freight agent; all with headquarters at New York.

O. A. Constans, freight traffic manager of the Baltimore & Ohio, western lines, with office at Chicago, has been appointed assistant traffic manager (freight); **B. N. Austin**, general passenger agent, at Chicago, has been appointed assistant traffic manager (passenger); **S. T. McLaughlin**, assistant freight traffic manager, at Cincinnati, O., has been appointed assistant to traffic manager, and **Edward Hart, Jr.**, western general freight agent, at St. Louis, Mo., has been appointed assistant general freight agent.

Harry Parry, who has been appointed general passenger agent of the New York Central, lines east, and the West Shore Railroad, with headquarters at New York, as has

already been announced in these columns, began railway work in 1883, as a messenger in the traffic manager's office of the Great Western Railway, at Hamilton, Ont. The following year he became stenographers in the rate department and subsequently served in the freight claim department until the consolidation of that road with the Grand Trunk. From January to April, 1885, he was stenographer in the freight claims department of the Grand Trunk, at Montreal, Que., and then to the following

September was stenographer to the general freight and passenger agent on the Northern & North Western, at Toronto, Ont. He then served as clerk to the general agent in the passenger department and assistant city passenger and ticket agent on the West Shore at Buffalo, N. Y., until December, 1885, when he took a similar position with the New York Central & Hudson River under consolidation arrangement. In May, 1889, he was appointed city passenger and ticket agent of the New York Central and the West Shore, at Buffalo, and in March, 1897, he was appointed general agent of the passenger department of the same lines, at Buffalo. In January, 1916, he was promoted to assistant general passenger agent, which position he held at the time of his recent appointment as general passenger agent of the same lines as above noted.

Engineering and Rolling Stock

J. Q. Barlow, assistant chief engineer, and **R. M. Drake**, maintenance of way assistant to the chief engineer on the Southern Pacific, Pacific system, have resigned.

The jurisdiction of **J. F. Graham**, superintendent of motive power of the Oregon-Washington Railroad & Navigation Company, with office at Portland, Ore., has been extended over the Southern Pacific north of Ashland, and the Pacific Coast Railroad.

Fred W. Bender, chief clerk in the signal department of the Central Railroad of New Jersey, with headquarters at



G. M. Smith

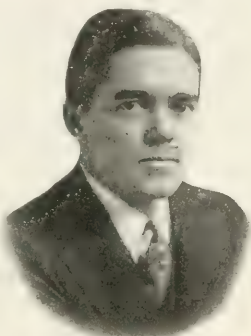


H. Parry

Elizabeth J. has been promoted to assistant signal engineer on that road and the New York & Long Branch, effective September 25, succeeding **J. S. Longworth**, deceased.

John C. Wrenshall, Jr., division engineer of the Philadelphia & Reading, with office at Reading, Pa., has been transferred to the New York division, with headquarters at Philadelphia; **W. D. Kenzie**, division engineer at Tamaqua, succeeds Mr. Wrenshall; **John S. Goodman**, division engineer at Harrisburg, succeeds Mr. Kenzie, and **N. W. H. Schafer, Jr.**, supervisor at Lebanon, has been appointed division engineer at Harrisburg, succeeding Mr. Goodman.

Harry G. Clark, whose appointment as chief engineer of the Chicago, Rock Island & Pacific, with headquarters at Chicago, was announced in the *Railway Age* of September 27, was born at Leavenworth, Kan., on July 8, 1875. Mr. Clark graduated from the civil engineering course at the University of Kansas in 1898. In September of that year he entered the service of the Atchison, Topeka & Santa Fe as chairman on its Kansas lines. Subsequently he was a rodman on construction and transitman on location with the Chicago, Burlington & Quincy in Iowa; from October, 1900, to September, 1905, he was successively resident engineer and division engineer on the western division of the Choctaw, Oklahoma & Gulf, now a part of the Rock Island, and division engineer of the Pan Handle and Arkansas divisions of the Rock Island. From September, 1905, to October, 1909, he was first district engineer on the Choctaw district, and from the latter date to June, 1912, trainmaster on the Arkansas and Oklahoma divisions. Mr. Clark was then appointed assistant to the second vice-president, and later he held the same position under the first vice-president in charge of operation. On August 1, 1918, he was appointed general supervisor of maintenance of way, which position he held at the time of his appointment as chief engineer, as mentioned above.



H. G. Clark

Corporate

Executive, Financial, Legal and Accounting

E. O. McCormick, vice-president in charge of traffic of the Southern Pacific, under private control, with headquarters at San Francisco, has been granted a leave of absence.

J. G. Drew, vice-president of the Missouri Pacific, with headquarters at St. Louis, Mo., has been elected also president of the Natchez & Southern, with the same headquarters.

Marvin Hughitt, Jr., vice-president in charge of operation of the Chicago & North Western, under private control, continues as vice-president in the corporate organization. **John D. Caldwell**, secretary, has been elected secretary and assistant treasurer of the corporation. **Lewis A. Robinson**, controller under private ownership, has been appointed controller of the corporation. **J. F. Cleveland**, general right-of-way agent, has been appointed land commissioner for the corporation. The headquarters of these officers are at Chicago.

Henry Ruhlender, chairman of the board of the St. Louis-San Francisco, has been also elected president of the corporation, with headquarters at New York. **C. W. Hillard**, fourth vice-president, is second vice-president and treasurer of the corporate organization, with headquarters at New York. **T. A. Hamilton**, secretary and treasurer has been

elected third vice-president and controller of the corporation, with headquarters at St. Louis, Mo. **S. J. Fortune**, assistant to the auditor under private control, has been made secretary and assistant treasurer, with headquarters at St. Louis. **W. A. McAuliffe** has been appointed assistant treasurer at New York, and **F. H. Shaffer** has been appointed traffic and transportation agent at St. Louis.

Edward H. Lee, who has been elected president of the Chicago & Western Indiana, and the Belt Railway of Chicago, was born at Dayton, Ohio. He attended Ohio State University in 1877, 1878 and 1879, and the University of Wooster during 1883 and 1884. He began railway work in 1880 on the Scioto Valley as a rodman and subsequently to 1887 was on various roads as instrument man, assistant engineer and resident engineer, including the New York, Chicago & St. Louis, the Wisconsin Central and the Union Pacific. He then went to the Elgin, Joliet & Eastern as office engineer. From 1889 to 1893 he was chief engineer of that road. Mr. Lee was engaged in private practice as an engineer and superintendent for contractors and in charge of field work for the Sanitary District of Chicago from 1893 to 1898. Since 1898 he has been chief engineer of the Chicago & Western Indiana and the Belt Railway of Chicago. Since March, 1914, he has been vice-president also. He has now been elected president of these companies, as mentioned above.



E. H. Lee

Engineering and Rolling Stock

J. R. Leighty, engineer maintenance of way of the Missouri Pacific, at Kansas City, Mo., has been appointed chief engineer of the corporation, with headquarters at St. Louis, Mo.

E. G. Hawkins, power engineer on the New York Central, lines east of Buffalo, with headquarters at Albany, N. Y., has been appointed signal engineer of the corporation, with headquarters at New York City.

E. H. Lycett, general accountant on the Missouri Pacific, with headquarters at St. Louis, Mo., has been elected secretary and treasurer of that corporation and of the Natchez & Southern, with the same headquarters.

P. J. Neff, district engineer of the St. Louis-San Francisco, at Springfield, Mo., under private control, has been appointed engineer for the corporation, with headquarters at St. Louis, Mo.

Obituary

Samuel P. Shane, formerly freight traffic manager of the Erie, with headquarters at Chicago, died on September 24, at Cleveland, Ohio. Mr. Shane was in the service of the Erie for more than 25 years. He left railroad service in 1908 to go into other business and, at the time of his death, was president of the Great Lakes Towing Company at Cleveland. Mr. Shane was born in Pittsburgh, Pa., on May 31, 1857, and entered railway service in 1871. Subsequently he served in various capacities on the Pittsburgh, Cincinnati & St. Louis, the New York, Lake Erie & Western, now a part of the Erie, and the Erie. In February, 1903, he became freight traffic manager of the last-named road. Six years later he resigned to become general manager of the Gilchrist Transportation Company at Cleveland, and later became president of the Great Lakes Towing Company, which position he held at the time of his death.

EDITORIAL

Railway Age

EDITORIAL

The Kaiser is at his old tricks again. He began his latest stunt two or three weeks ago when he had Austria propose a meeting to consider peace terms.

Our Only Terms Are Restated

Having been repulsed there he has advanced to the next step in his campaign and has now had his own imperial chancellor make a request for a restoration of peace by negotiation. No longer having any reserves left in the field to parry Foch's repeated skilful blows, he has brought up his diplomatic reserves instead, and has launched in another quarter a new attack that, were it not for the Allies' past experiences with similar drives for peace, would be far more dangerous than a campaign in the field, for the reason that its objectives and its methods might be less well understood. But, in this case, the Allies have little to fear from the new peace drive. We know its objectives beforehand. We realize that what the German wants is to get away with his booty—or at least a large part of it—before he has been entirely subdued and defeated, and we know that he hopes by discussing peace to undermine the morale of our soldiers in the field and the people at home by making them think that the war is nearly over, thus leading us to relax our efforts. But this time, the German will reach neither of these objectives. The allied peoples are behind this war to the limit and they realize that there can be no let-up until the final and only conclusion. There can be no discussion of peace terms with the arch villain of the century—with an autocrat to whom treaties of peace, promises to observe neutrality, or even international law itself mean absolutely nothing—or with a tyrant who wants to stop the war now before he is entirely defeated so that his successors may arise again at some future time to trample once more over the rights and liberties of the rest of mankind. The Allies have not yet completely won the war—they are, however, on the road that leads straight to victory and to the downfall of Kaiserism and autocracy. They have but one set of peace terms to offer. However these terms may be stated or whatever their details may be they are based on a single thing—unconditional surrender.

Lend the Way They Fight

The *Railway Age* holds no brief for the map-makers, but it would like to suggest to any of its readers who may be

It's a Long Way to Berlin

ready to take any stock whatever in the Kaiser's proposal for a peace by negotiation—who are beginning to think that the war is already won, or who have not yet gone their limit in Liberty Bonds that they secure a map of the western front and mark by means of colored tacks the progress of the allied armies from day to day. They will find two very interesting things, as those of us who have kept such maps for the last few weeks will testify. One is that there is an unbounding pleasure and a pleasant feeling of optimism in advancing these little tacks nearer and nearer the Franco-Belgian border day by day as Foch launches one successful attack after another. And on the other hand they will quickly realize that, however big the newspaper headlines may look, Germany itself is still many, many miles away and that the

advance of the tacks towards the line between France and Belgium—and still less the line between Belgium and Germany—is exasperatingly slow. All of which will set a man thinking and he can think along but one line. Namely, that we cannot let the German out by peace by negotiation while he still holds almost all of Belgium, while he still is mining France's iron ore in the fields between Verdun and Metz and while he is still burning towns and maliciously blowing up cathedrals and other noted works of art in northern France itself. In short, the map very plainly will show that while the Allies are going strong under Foch's able direction, there is still a great ways left to go. And go it we must. Peace moves and stories of broken German morale, notwithstanding, we must go our limit pushing behind that line until it is at least over the Rhine. Every dollar spent in Liberty Bonds will help directly or indirectly in advancing these tacks out of France and Belgium. Are you putting all the effort you can behind your little part of that line? In other words—Have you gone your limit in Liberty Bonds?

Buy Bonds to Your Utmost

The Spanish Influenza

The severe epidemic of Spanish influenza which seems now to be running almost unabated throughout large sections of the country cannot receive too much attention on the part of railway operating officers. The authorities in many cities have closed the theatres and other places of amusement. Liberty Loan meetings have been called off and in many places the opening of colleges has been postponed until the attack is over. In Philadelphia, which is suffering severely from the epidemic, the saloons have been closed. In New York, the hours for opening various kinds of business have been rearranged so as to relieve the congestion on the city transit lines. The danger of contagion is most serious in crowded places. For that reason it behooves the railways to take every possible measure to the end that they may not serve in any greater degree than necessary as an agency in spreading the disease. Crowding in passenger trains should be avoided as much as possible. The presence of an influenza victim in the midst of a crowd is exceedingly serious. A car added here or there will no doubt help considerably in many cases. Insistence on open windows and ventilators is a positive necessity. Notices should be placed in the cars that any one having to sneeze or cough should do so in his handkerchief; and what is more important, instructions should be issued to the conductors and trainmen looking to the enforcement of these things. Spitting in passenger coaches is still occasionally seen and is a particular evil in smoking cars. It is not only a most obnoxious habit but under present conditions it is positively dangerous. The present signs in cars on many railroads saying that spitting is against the law are almost a joke. Such signs should explain in far more emphatic terms how obnoxious and dangerous spitting is. Trainmen should be instructed to remonstrate with those who persist in the habit. The situation is exceedingly serious and no steps should be left untaken to remedy it.

Buy Bonds to Your Limit.

Railway Employees in Politics

THE OFFICERS of the railway labor brotherhoods continue to protest to Director General McAdoo against his order prohibiting railway officers and employees from participating actively in politics. The heads of the brotherhoods had conferences with the director general on September 27 and October 3. According to reports, the director general refused to recede from his position, and another conference is to be held on October 15.

Railway officers and employees are now in government service. It is difficult to see why, while they are in that service, any rule very different from that applied to officers and employees in the government civil service should be applied to them. Civil Service Rule 1, Section I, provides that officers and employees of the government subject to the rules, "while retaining the right to vote as they please and to express privately their opinions on all political subjects, shall take no active part in political management or in political campaigns. . . . Petitions or other communications regarding public business addressed to the Congress or either house, or any committee or member thereof, by officers or employees in the Civil Service of the United States shall be transmitted through the heads of their respective department or offices, who shall forward them without delay, with such comments as they may deem requisite in the public interest. Officers and employees are strictly prohibited from attempting either directly or indirectly to secure legislation, or to influence pending legislation, except in the manner above described." If this rule should be applied to railway employees they would be obliged entirely to discontinue making representations directly to the state legislatures and to Congress regarding legislation which they want, and to begin making such representations solely through the officers of the Railroad Administration. It is further provided by the Federal Civil Service rules that "an employee may not publish, or be connected editorially, managerially or financially with any political newspaper, and may not write for publication any letter or article, signed or unsigned, in favor of or against any political party, candidate, faction or measure." During recent political campaigns members of the railroad brotherhoods have been very active in doing most of the things prohibited by this rule.

Director General McAdoo is merely trying to give effect on the railways to the spirit of the United States Civil Service rules. He is not trying to apply them to the letter. But doubtless if government ownership and operation of railways should be adopted as a permanent policy, the Civil Service rules would be applied literally, and in their entirety, to officers and employees of the railways. Whether all the 2,000,000 voters employed upon the railroads could be forced to obey them is a momentous question.

It need hardly be said that strict and prolonged enforcement of rules prohibiting railway employees from participating in politics would ultimately result in the destruction of the railway brotherhoods as effective organizations. This the heads of the brotherhood clearly foresee, and undoubtedly it is this which is causing them to make such vigorous and persistent protests. On the other hand, if under government operation railway employees should be allowed to participate in politics without restriction, they probably could, through their organizations, secure a power which would enable them to dictate to both of the great political parties and to the government itself.

If the present Railroad Administration, with its autocratic authority, cannot keep railway employees out of politics in time of war, no future Railroad Administration, possessing less power and exercising it in time of peace, could possibly do so. The test of strength now being made by the director general and the railway brotherhoods is one of national importance and should be a subject of national interest.

The Case of the Engineer

THE trained engineer is a prime necessity in all the complex ramifications of modern warfare. Whether it be in the laying out of trenches, the building of bridges under the enemy's fire, or the erection of buildings for the production of war supplies, the advantages of the engineer's specialized training and skill are fully recognized. So urgent has been the call for technical men for purely military work that the United States army has arranged with the colleges to give short courses of intensive training to selected young men of draft age who include in their number practically all of the high school graduates who would ordinarily be taking up the study of engineering. As a result, practically all civil activities requiring the services of engineers are more or less embarrassed by a lack of properly qualified applicants for the subordinate positions in their technical corps and, as outlined on another page of this issue, this shortage of competent men is being felt keenly by the railroads. At present the job is seeking the engineer while in the past the engineer was usually seeking the job.

Superficially this would seem to indicate that the engineer had arrived but, insofar as it concerns the railroads, this is not the case. The increases in compensation accorded him have not been on a parity with the demand for his services, the increased cost of living or the advances granted other classes of employees. The engineers, along with other employees receiving less than \$250 monthly, were granted advances under Order No. 27, based upon rates in effect on December 31, 1915, and like all other employees who had not been wresting periodic additions to their pay checks through the agency of collective bargaining, they found that the advances awarded them did not compensate for the decreased purchasing power of their earnings. But unlike most other classes of employees who sought relief from the inadequate provisions of Order No. 27, no supplemental order has been issued in recognition of their contentions. Thus the transitman, the assistant engineer, the resident engineer and others of their kind, find that after spending four years in technical training and from one to ten years in actual experience, they are being paid little if any more than the artisans and foremen of the various crafts in the maintenance of way department and notably less than the foremen, clerks and craftsmen employed by construction contractors.

This inequitable situation is aggravated by daily contact between the engineers and workmen and the humiliation arising from the knowledge that the latter are also thoroughly conversant with these facts. Like foremen on monthly pay the engineers are subjected to a further disadvantage through the fact that unlike the workmen they cannot increase their earnings through over-time, although they are subjected to calls at any hour of the day or night and their services are in no way restricted to definite work day hours.

The present inadequacy of compensation to engineers is not the result alone of inequalities brought about by war conditions. The salaries paid them had been disproportionately low for a number of years previous to the war. This situation was reviewed in our columns about a year ago and disclosed the fact that the decreased attractiveness of engineering positions with railroads had had a noticeable tendency in some cases toward decreasing the caliber of the engineering graduates who applied for railway positions. With an aggravation of this disproportion in compensation under present conditions, a further falling off in the quality of material available for positions is to be expected.

The men who at present compose the engineering departments of American railroads are far too loyal to allow their present plight to lead them into defection from duty, nevertheless it is paramount that this situation be corrected at

the earliest possible date if the spirit and personnel of the technical staffs of the railroads are to be maintained at the present high standard. The subject deserves consideration also as a matter of simple justice to the men themselves.

The Service Rendered by Railway Supply Companies

MANUFACTURERS of many classes co-operate actively with those to whom they sell their products in getting the best possible results from the use of those products. Numerous manufacturers in the railway supply field, after they have sold materials or devices, send out experts thoroughly familiar with their construction and operation to help the railways get the best use and the longest life from them at the least cost. The development of the service rendered by supply companies has been due largely to requests made by the railways for it.

There has been a tendency on the part of the Division of Purchases of the Railroad Administration to insist that the expense incurred by the railway supply companies in rendering this service shall not be included in the cost of doing business which the companies are required to furnish to the Division of Purchases. The Division of Purchases has defended its attitude on the ground that such service is not needed because, as is contended, the experts of the railways themselves can do everything needed in connection with the maintenance and use of equipment, materials and devices.

Is not the Division of Purchases making a serious mistake in taking this position? There is no difference of opinion over whether service of the kind mentioned is necessary in many cases. The difference arises over whether it should be rendered by the manufacturers and included in their costs and in the prices they charge, or by the experts of the railways and charged directly into railway operating expenses. The real point of issue, then, is whether the service will be better and its cost less in the long run if rendered by the experts of the supply companies or of the railway.

The experts of the supply companies are more likely thoroughly to understand the maintenance and operation of devices made by their companies, because they are specialists in these matters, while railway officers and employees have to handle materials and devices of numerous kinds purchased from many different concerns. Furthermore, it is even more to the interest of the supply company than to that of the railway for the best possible results to be obtained from materials or devices furnished by the supply company, for if the results obtained are poor, the supply company may lose a customer that will be difficult to replace, while the railway can readily turn to other supply companies for material or devices of similar kinds. Experience certainly does seem to show that the best results are obtained from many materials and devices when the supply companies which make and sell them are given full opportunity to co-operate with the railway in carrying out the best methods of maintaining and operating them.

As to cost, it is difficult to see why it should be greater when the service is rendered uniformly by a single supply company to several or many railways than when rendered by each railway to itself. It may be, of course, that in some cases supply companies have added excessive amounts to their prices to cover the cost of service, but if so, this raises the question, not whether they should be allowed to render a valuable service and charge for it, but whether they should be allowed to charge too much for it.

Unless our observation is very misleading, if the service rendered by the supply companies to the railways should be discontinued, no good substitute for it usually would be provided, because the higher officers of the railways are al-

ready so overwhelmed with work that they would not furnish the supervision necessary to provide a good substitute. If this should be the case, many materials and devices will wear out faster than they would if the service of the supply companies were secured, and the result will be that the railway scrap pile will increase faster in future than it has even in the past. Now, it is very desirable that a comprehensive program for the reclamation of scrap should be initiated and energetically carried out, but scrap prevention or postponement is under present conditions much more important than scrap reclamation.

The railway equipment and supply companies of the United States, by their co-operation with the railways, have contributed greatly in past years to the improvement of the design, manufacture and operation of all kinds of railway equipment, materials and devices. They can and will contribute even more in future if given the opportunity. The service they are in a position to render in connection with the maintenance and operation of the things they make and sell can be made, if the railways will properly and adequately avail themselves of it, a potent agency for further increasing railroad efficiency.

One Way to Get More Rails

WOULD you rather have 10 miles of 130-lb. rail or 15 miles of 100-lb. rail? This in large measure is the question confronting railway men today. In an endeavor to distribute the steel output of the country among the consumers that are most important to the national welfare, the War Industries Board is drawing a sharp line between the so-called essential and non-essential industries and is curtailing or withholding deliveries to many concerns.

Although the steel output of the country has been increased greatly since 1914, the demands for war purposes have increased so much more rapidly that the surplus of steel available for industrial needs has become small, particularly in recent months. The railways are one of the industries most essential to the welfare of our country and their needs ought to be met. They are normally among the largest users of steel for a wide variety of purposes and their inroads on the available production are therefore heavy. Furthermore, their receipts of new materials, and particularly rails, this year have been hardly half of normal and this has followed several years of subnormal renewals. As a result their necessary demands in 1919 will show an increase over the amount they received this year.

Within recent years there has been a marked tendency towards the adoption of heavier sections of rails. The Lehigh Valley has adopted a 136-lb. section while the Pennsylvania has made a 130-lb. section standard for its main lines. The transitions from 90 lb. to 100 lb. and from 85 lb. to 90 lb. sections have been general. However, the fact that each increase of 5 lb. in weight of section requires 8 tons more steel per mile of track, is now a most important consideration, and in view of the present shortage of steel, it would seem advisable to return to some of the lighter rail sections recently abandoned. In practically all cases, rails of these lighter sections are still carrying the same traffic as the newer patterns, since it normally takes several years to change out all of the rail in a line. By reverting to the old section of rail on each line, no change in standards for fastenings would result, a consideration which would render the adoption of a common standard of rail section unwise at this time.

If the average weight of section rolled next year was reduced 5 lb. it would result in a saving of 100,000 tons. Under normal conditions a suggestion to use a lighter rail would be open to criticism as a step backward, but at present it has much to recommend it as an emergency measure.

Three Hundred and Fifteen

Passengers Killed

ONCE MORE WE have a distressing succession of railroad disasters; the above number representing the total persons, other than employees, killed in only eight recent collisions and derailments, four in Europe and four in America. The collisions at Dijon, France, and Dresden, Saxony, follow the disasters in Prussia and Holland recently reported, making four in Europe; and those at Marshfield, Mo., Alliance, Neb., Nashville, Tenn., and Ivanhoe, Ind., make four in the United States. The aggregate of the casualties in the eight accidents, 332 persons killed, and 482 injured, is an impressive number.* It is nothing like the numbers reported from the battlefield; but the pity of it is that the sacrifice seems so needless; and 12 of the victims of the accident at Marshfield were soldiers, aspiring to the honor of making sacrifices of a kind that should more truly exemplify their heroic spirit.

As to the three disasters in Europe, the causes cannot be discussed, as we have no details. We can only make the trite observation that railroads are still operated by fallible human beings and that everywhere the burden on the railroad manager presses, day and night, in peace or in war time. He has to be prepared against carelessness and neglect at every smallest point—as the admiral commanding a blockading fleet must watch on the bridge, at the guns and in the engine-room, against every possible surprise by the enemy, and every imaginable loosening of stitches which may become an aid to the enemy.

Our American problem differs from past instances in the same field mainly in the different relation of the government to the situation. The threat of a law making the use of the block system compulsory—which may be found, more or less definite, in the doings of Congress and the recommendations of the Interstate Commerce Commission every year since 1903—has undoubtedly spurred some roads to introduce the space interval more rapidly than would otherwise have been done; and the investigations of notable collisions and derailments which the commission has published during the past six years, have exposed facts of bad management in many cases which must have aided in emphasizing the problem of safety; but all these developments have left much to be desired.

The Railroad Administration now, like the individual railroad managements under the former condition, must, in specific cases, compare the expenditure of hundreds of thousands of dollars paid out for deaths and injuries, with the expenditure of similar sums for improved appliances, or works, or the establishment of a better personnel, and try to decide whether any mistake has been made; whether the question, Prevention versus Cure, has been properly considered.

There are two principal problems. The outstanding lesson of the butting collision near Nashville is the need of the block system. The Railroad Administration now controls the whole situation. The introduction of the block system is simple and need not take much time. It does take money; but the expenditures which would be required to carry out the proposals of the Interstate Commerce Commission prob-

ably would bulk very small as compared with the recent wage increases.

The collision at Ivanhoe emphasizes the automatic train stop issue. The visual block signals were faultless. Here, the present situation is a deadlock. The principal railroads declare, in substance, that the problem is so complicated, difficult and costly that they see nothing to do but to continue to get along as they are now doing; they would expect no ultimate net benefit from the use of any apparatus to apply the brakes of a train independently of the will of the engineman. The Interstate Commerce Commission says in substance that the railroads have made a wrong decision. A few railroads have made some experiments and the Commission has done some investigating, but not much progress is made by either; and everybody is looking to the future. The railroads are right in saying that the problem is difficult. Automatic stops would be costly to introduce and, without a serious diminution of track capacity, would be costly to maintain.

The Railroad Administration is going to appoint a committee to tackle the problem. Unless practically all of the signal engineers of the country are wrong, the task of this committee will be anything but a light one, and its deliberations will not be brief. The least that it can do will be to test one, two or more devices on one, two or more sections of road, and on a considerable number of locomotives. Judging by past experience this work will take many months.

Audible signals retain the human element, but they give it an important prop. Why not test this theory, as well as the brake application theory? The audible roadside signal proposed by the late John T. Cade five years ago is well known to American railroad men. The experience of the Great Western of England and the Northern of France with audible cab signals, whatever the faults of those signals, constitutes too large a body of experience to be neglected. The Paris & Orleans, a large system, is said to have used audible signals for fifty years and with such success that *there have been no collisions* due to the failure of an engineman to observe the visual stop signal.†

In the Marshfield case the problem is the same as at Ivanhoe. According to the evidence thus far reported there was coincident negligence on the part of an engineman and a despatcher, the first case of the kind ever reported, so far as we can recall, on a single track line equipped with automatic block signals. The engineman and the despatcher are, no doubt, equally to blame; but from our present point of view, the engineman alone can be considered. The block signal system should be a complete preventive of butting collisions without the support of written meeting orders (as it should always prevent rear collisions without the aid of the flagman). One of the reasons that has impelled railroad managers to introduce automatic block signals on single track lines is to make the function of the operator less important. The consideration of the automatic stop problem must therefore take account of single track as well as double track lines.

The fact that the troublesome questions connected with this country wide problem are now in the hands of an authority which has plenary power is one on which the railroads and the public are to be congratulated. Enough experimenting has already been done so that probably the tests which the government is expected to make will not have to go over a great amount of elementary ground. And it must be that by this time we are prepared to go about the work in a sincere and businesslike way. That European government which (before the war) put in some cab signals, not because they were believed to be a suitable and necessary thing, but because it was deemed good policy to pacify the people, the legislature, the inventors, or somebody, was pursuing a policy which is to be hoped is now out of date. That policy has had too much favor in this country already.

*The casualties in the eight accidents, four in Europe and four in America, as reported to date are as below:

	Killed	Injured
September 11—Schneidemühl, Prussia	36	17
September 13—Weesp, Holland	10	100
September 19—Dijon, France	30	20
September 24—Dresden, Saxony	31	50
June 22—Ivanhoe, Ind.	68	127
July 9—Nashville, Tenn.	101	101
September 10—Alliance, Neb.	11	38
September 17—Marshfield, Mo.	15	39
Total	332	482

Since this article was written the cable has brought a report from Malmö, Sweden, of a derailment, at a washout, killing many of the occupants of a 14-car passenger train, the number being vaguely given as from 50 to 500.

†Railways Age Gazette, August 7, 1914, page 229.

Letters to the Editor

Setting the Clocks Back

NEW YORK CITY.

TO THE EDITOR:

A train is tied to its schedule, and the schedule is tied to the clock. When the hands of the clock are moved forward, therefore, the train should move forward (make up time) and when the hands of the clock are moved back the train should move back.

Some of us found difficulty last Spring, when the clocks and watches were changed, in making it clear to our own minds just where we were at; deciding whether a train which was on the road at 2 a. m. should go forward, or backward, or stand still. The above is a simple rule by which to adjust ourselves to such a change, if we find ourselves confused. And one is to be made on the 27th of October.

It is a rule, I mean, for simplifying our mental processes—not one to be literally acted on. A train cannot at once go forward with the clock—make up 60 minutes—and so it must run late; and it cannot go backwards an hour (or any length of time) because it has no right to the road; and the dispatcher will not give it the right, when it has a load of passengers or freight which cannot be thus sent where it does not want to go. But, having got the principle clearly fixed in your head, it will be easy to adjust your mind to the change without any delay or doubt. Trains on the road at 2 a. m. of October 27 will have to stop and wait an hour, unless the dispatcher gives them orders to run extra. In some cases, the most convenient thing to do will be to hold the trains, the previous evening, at their starting point, for an hour, and notify the public beforehand that this is going to be done.

E. A. K.

Lead the Way They Fight

Get the Proper Scoop for Firemen

TO THE EDITOR:

MONROVIA, ALABAMA, AUGUST 25, 1918.

I have just read your editorial on "The Real Secret of Fuel Economy," and noted that as usual you hit the nail on the head. May I say something along this line? Some years ago I listened to a gentleman tell in a convention meeting how he had saved coal by keeping so close a check on the quantity consumed by the engines on his road that he could tell each night how much coal had been used on the road that day. The whole story of office checking and reports received did not impress me to any extent, nor do I believe that it would impress any other man who had been out on the road and observed at first hand what you so well name "execution." When the gentleman got through with his speech I asked him this question. "Have you ever considered the importance of the coal scoop used by your firemen?" He answered, "No, not particularly. There are many good scoops."

Let me explain why I asked that question. Some years ago I was in close touch with the locomotive men on a certain railway. One of the things they told me was that the scoop they were supplied with was "rotten." It was too big and therefore picked up more coal than was wanted! that meant a waste of coal. Not being well balanced it took extra energy to handle; that was a waste of energy or man power. I found that the men were cutting the scoop and trying to hammer it into shape to suit them. Now a man on an engine must get results; that is, he must "keep her hot" no matter how much or how little coal he uses or

what kind of a shovel he has. If he knows of a way to get results by using less coal and less energy, why not let him do it? The story of my troubles in interesting the men higher up, and finally securing a scoop that had the approval of the firemen is a long one. But I did it, and I believe that this question of a proper scoop has more to do with the saving of coal than much of the stuff we read about. It is "execution" or a part of it.

E. J. M.

Bus Bonds to Your UTMOST

Proposed Changes In Time Zones

BUFFALO

TO THE EDITOR:

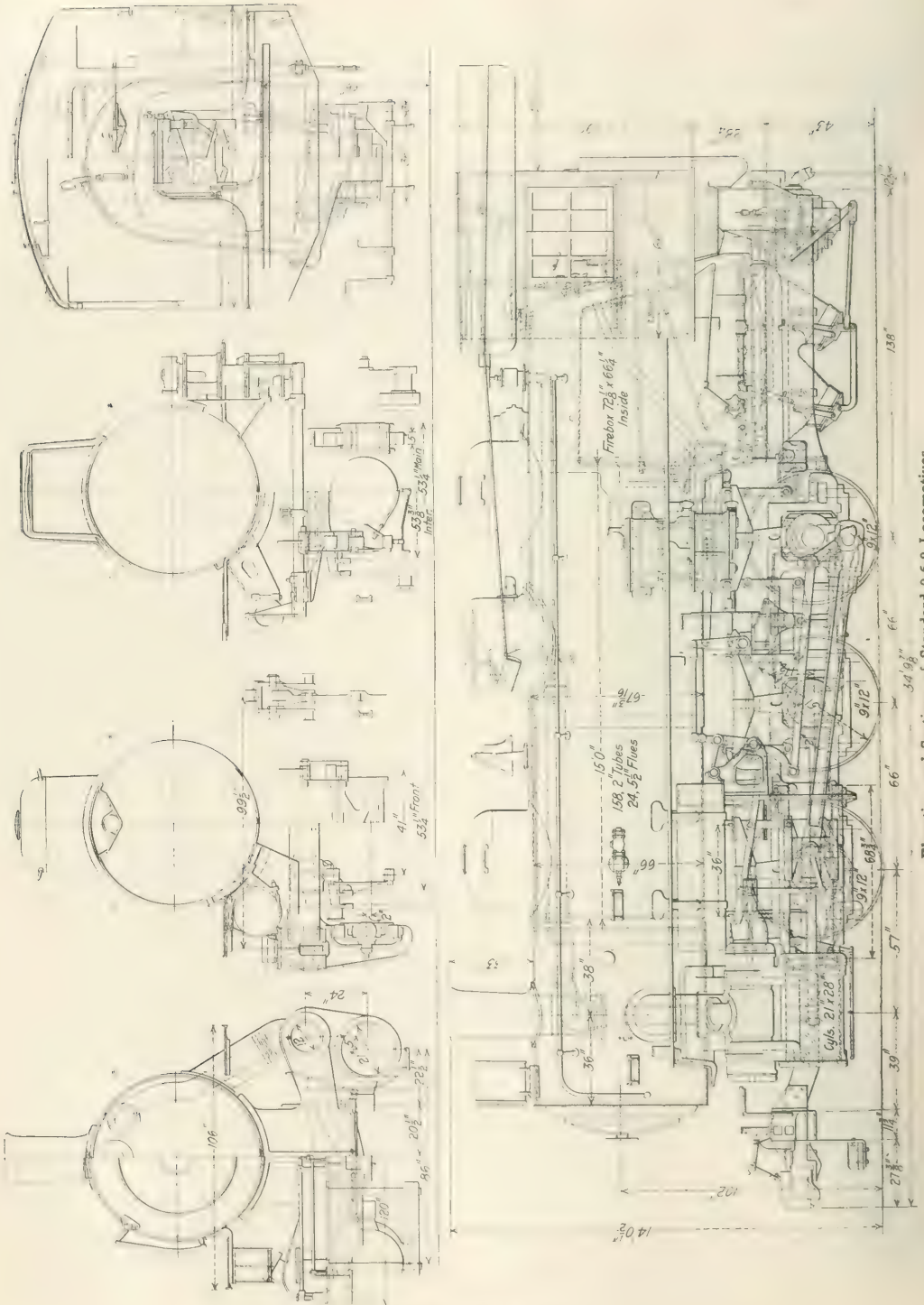
The bold scheme for changing the boundaries of the time zones proposed by Mr. Judd and printed by you on August 2, page 209, certainly has its attractive features; but what will the railroads say? He dismisses their objections with a paragraph, simply observing that they will have to submit.

In view of the numerous acid and brittle pills from Mr. McAdoo's pharmacy that the railroads have swallowed in the last eight months, it is possible that they will the more meekly submit to this innovation; but even Mr. McAdoo will balk at some things. Mr. Judd seems to think that millions of people are not merely inconvenienced; but that they are deprived of their birthright, in being compelled to live in places like Buffalo and Pittsburgh, where two times are in use. The roads will challenge him to produce proof.

In advance of any final official action, it is perhaps hardly worth while to discuss at any great length the merits of the proposed change; but the American railroad officer who desires to be really progressive will do well not to be scared too easily. Changing watches at other than division termini is not such a terrible thing as it is sometimes said to be. Colonel Henry S. Haines, president of the American Railway Association in 1892, in the course of his annual address before the association, on October 12 of that year, in New York City, dealing with the problem of developing a thoroughly satisfactory code of train rules, declared that "this problem can only be said to have been definitely solved when trains can be run frequently at high speed from start to finish without time card or train order, secure against derailment or collision and controlled only by the block signal."

This advanced ideal, which was so far ahead of its time, is brought to mind by the present discussion. Running trains without a time card means running without watches—or at least, running without depending on the watch as the vital element of safety. The running of trains "controlled only by the block signal" which in 1892 seemed somewhat visionary to, perhaps, the majority of American railroad men, has since become common on many hundreds of miles; and so we have, today, in the matter of watches, a question not of safety, but of convenience. Mr. Judd puts in a strong plea for the convenience of the citizens. The railroads have a right, also, to plead convenience. But when a railroad argues against the change on the ground that it would be unsafe, it will find itself 25 years behind the times—or, at least 25 years behind the president of the American Railway Association. With complete block signal protection the safety of trains is secured "without time card or train order" and, consequently, without watches. The engineman who passes through Sandusky or Toledo Junction at a mile a minute can, therefore, with perfect safety, swap watches at the next stopping place. In our worship of the watch, as in our veneration for the Standard Code, we need to walk with circumspection. The standard rules for the operation of trains under automatic block signals have nothing to say about time, or about clocks or watches.

E. ADAMS.



Elevation and Sections of Standard 0-6-0 Locomotives

The Huns Are Still in France.



Standard Six-Wheel Switcher for the United States Railroad Administration

U.S.R.A. Standard Six-Wheel Switching Locomotive

The First of the Smallest Government Engines to Be Built;
Very Similar to the 0-8-0 Locomotives

THE FIRST OF THE SMALLEST of the standard locomotives to be built for the United States Railroad Administration, the Six-wheel switcher, has been completed by the American Locomotive Company and it is one of fourteen to be delivered to the Chicago Junction Railway. The locomotive weighs 165,000 lb. in working order, 55,000 lb. being carried on each axle. It has 21-in. by 28-in. cylinders, 51-in. drivers, and with a working boiler pressure of 190 lb. a rated tractive effort of 39,100 lb. is obtained. Five locomotives of this design will also be delivered to the Atlantic Coast Line and 20 to the Pennsylvania Lines West in the near future. These engines are in many details similar to the standard 0-8-0 locomotives which were described in the *Railway Age* of September 20, page 542. The clearance dimensions are 10 ft. 2 in. maximum width with 10 ft. over cylinders and 14 ft. $\frac{1}{2}$ in. maximum height. The overall length of engine and tender is 66 ft. $2\frac{3}{4}$ in.

These locomotives are very similar in design to the Six-wheel switchers that have given such excellent results on the Chicago & North Western in both switching and transfer service and which were briefly described in the *Railway Age Gazette* of March 30, page 698. These two engines have the same size cylinders, the same size drivers, practically the same size firebox, and there is only a difference of 6,000 lb. in the total weight, 2,000 lb. in the tractive effort (this is due to a working boiler pressure of 180 lb.), about 100 sq. ft. in total evaporating heating surface and 40 sq. ft. in superheating surface. The boilers are of the same diameter and of the same general type. These North Western engines have proved so satisfactory that there is every reason to believe that the standard engines, which are so nearly like them, will be found to be efficient. In order to assist the roads that will use these locomotives in determining their proper loading, a tonnage rating chart is included with this article, which is similar to those shown in the *Railway Age* for October 4, page 627.

The boiler of the standard 0-6-0 switcher is of the same general design as that of the Eight-wheel switcher. It was designed for a pressure of 200 lb. but has a working pressure of 190 lb. It is 66 in. in diameter, of the straight telescopic type, with 19/32-in. barrel sheets, 9/16-in. front tube sheet and $\frac{1}{2}$ -in. back tube sheet. There are 158 two-inch tubes and

twenty-four $5\frac{1}{2}$ -in. flues, 15 ft. long over tube sheets. The size and length of the tubes are the same as those in the Eight-wheel switcher. The firebox is 72 $\frac{3}{8}$ in. long by 66 $\frac{1}{4}$ in. wide. The door and crown sheets are $\frac{3}{8}$ in. thick and the wrapper sheet and back head are 9/16 in. and $\frac{1}{2}$ in. thick, respectively. The water legs are 5 in. wide at the throat and 4 $\frac{1}{2}$ in. wide on the other three sides. There are three tubes for a Security brick arch and the O'Connor fire-door flange is used. There are 346 flexible, 58 hollow and 383 solid staybolts. The boiler is equipped with a 24-unit type A superheater having a heating surface of 442 sq. ft., which with an evaporating surface of 1,886 sq. ft. given an equivalent heating surface of 2,536 sq. ft.

The general design of the frame for these engines is the same as for the 0-8-0 standard locomotives. These frames are 5 in. wide from the front to just back of the rear set of drivers, where a slab section 2 in. wide by 12 in. deep, increasing to 3 in. wide by 18 in. deep at the extreme end is provided. They are 5 in. deep over pedestals and 4 $\frac{1}{8}$ in. deep at the smallest section of the upper rail. The lower rail is 3 in. deep. A heavier section is provided under the cylinders, the depth of the frame being increased to 7 $\frac{3}{8}$ in. and to 9 $\frac{1}{2}$ in. at the buffer beam. The pedestal binders have a minimum section of 3 in. by 5 in.

The side rods are of slab section, the front rod being 5 in. by 1 $\frac{1}{2}$ in. and the back rod 4 in. by 1 5/16 in. These are coupled together with a 4-in. knuckle pin. The connecting rods are of channel section, being 6 in. deep with 7 $\frac{1}{2}$ -in. flanges 3 $\frac{1}{2}$ in. wide and 10 in. wide. A cast iron box type piston is used, having Hunt-Spiller bull and packing rings. The piston rod is 3 $\frac{3}{4}$ in. in diameter. The crosshead is of the alligator type, having Hunt-Spiller gun iron shoes. The steam distribution is controlled by the Baker valve gear, which in general is of a design similar to that used on the 0-8-0 switchers, many parts of which are duplicates. Both the Lewis and Mellin reverse gears will be used on locomotives in this order. The packing of both the valves and cylinders is of the United States Metallic Packing Company's design.

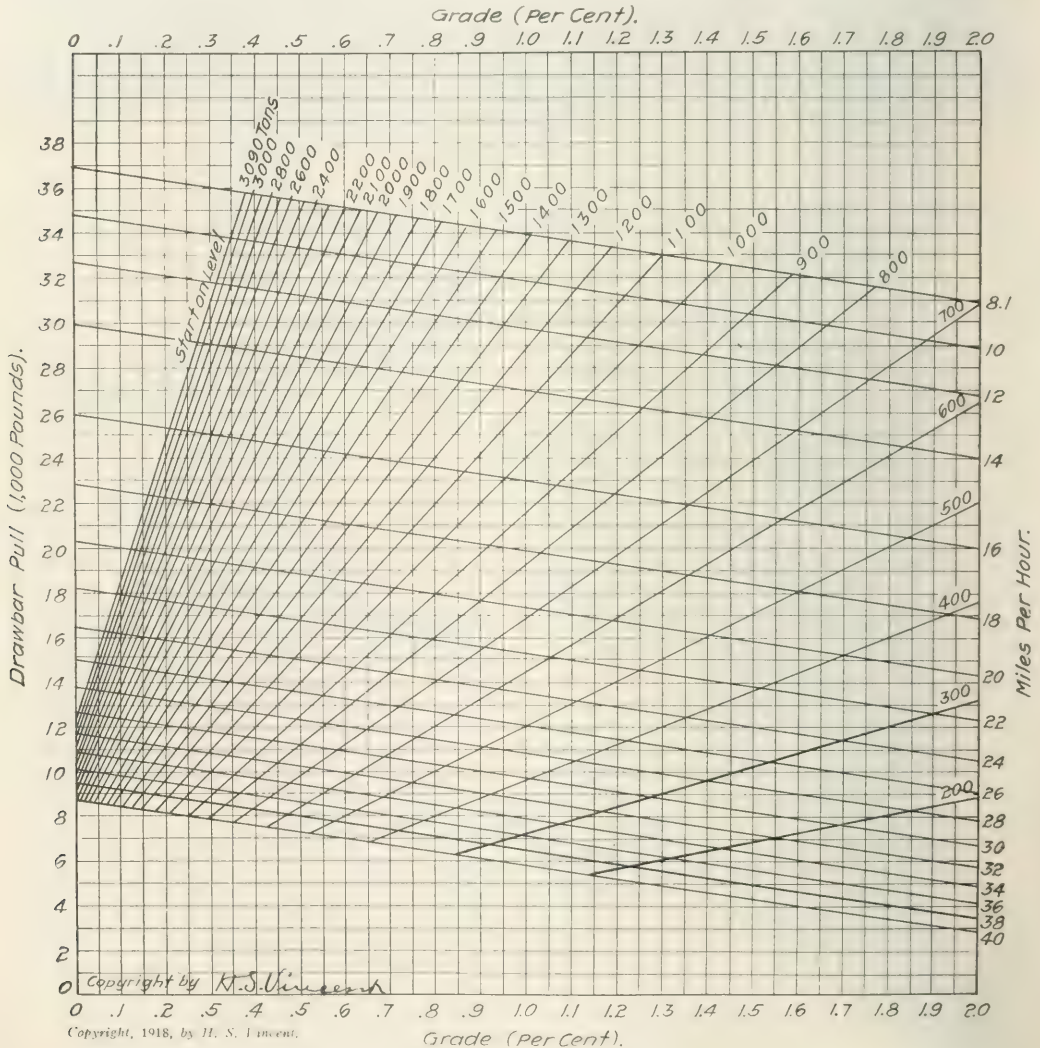
The valves are 10 in. in diameter and are fitted with bushings and packing and bull rings of Hunt-Spiller gun iron. The cylinder bushings are made of the same material.

The tender is identical with that used with the 0-8-0 switchers, having a capacity of 8,000 gal. of water and 16 tons of coal. The tank has the Locomotive Stoker Company's type D coal pusher, Commonwealth cast steel underframe, and cast steel tender truck side frames to be furnished by the American Steel Foundries and the Buckeye Steel Castings Company. The tender wheels are cast iron, being 33 in. in diameter.

There are a large number of details on this locomotive that are common to the standard Eight-wheel switcher and a few common to all of the standard locomotives. Among the items

common to both of the switchers may be mentioned driving axles, driving boxes, shoes and wedges, pedestal crosstie, grates, tube setting, coal pusher, many of the cab fixtures, bumper arrangement, bell details, reverse shaft yoke and bell crank. Such details as the dome cap, coupler, coupler drawhead, eccentric rod bearings, cylinder cocks and gage cocks are common to all of the standard locomotives.

These engines are to be equipped with the Shoemaker fire door, Cole safety valve, Sargent safety three-face water gage, No. 11 non-lifting Nathan injector, Detroit three-feed lubricator, Pyle electric headlight, Westinghouse air brakes, Im-



Tonnage Rating Chart for the U. S. R. A. Standard Six-Wheel Switcher

The curves of hauling capacity are constructed for a car resistance of 4 lb. per ton. The chart may be used for any other car resistance or for any combination of resistances by converting them into terms of grade.

1 lb. car resistance = .05 per cent grade
1 deg. curve uncompensated = .04 per cent grade

For example, find the tonnage capacity of the locomotive at 16 m.p.h. on

a one per cent grade combined with eight-degree uncompensated curve and with a train having a frictional resistance of five pounds per ton.

The combined resistance in terms of grade are $1 + (.8 \times .04) + (1 \times .05) = 1.37$ per cent at the intersection of the ordinate for 1.37 per cent grade. With the drawbar pull curve for 16 m.p.h. we find that nearly 700 tons is the capacity of the engine.

perial type B uncoupling device, unit drawbar, Franklin flexible metallic joints, Ashcroft steam gages, Chicago Railway Equipment Company brake beams, Woods tender side bearings, Westinghouse type D-3 draft gear, Hancock sprinkler, Chambers throttle and United States Metallic Packing Company pneumatic sanders.

The following table contains the principal data and dimensions of these engines as compared with those built for the Chicago & North Western by the American Locomotive Company a few years ago:

General Data

	U. S. R. A. Standard	Chicago & North Western
Gage	4 ft. 8 1/2 in.	4 ft. 8 1/2 in.
Service	Switching	Transfer
Fuel	Bit coal	Bit coal
Tractive effort	39,000 lb.	37,000 lb.
Weight in working order	165,000 lb.	171,000 lb.
Weight on drivers	165,000 lb.	171,000 lb.
Weight of engine and tender in working order	309,000 lb.	298,000 lb.
Wheel base, driving	11 ft.	11 ft. 6 in.
Wheel base, total	11 ft.	11 ft. 6 in.
Wheel base, engine and tender	49 ft. 3 1/2 in.	47 ft. 6 1/2 in.

Ratios

Weight on drivers ÷ tractive effort	4.22	4.62
Total weight ÷ tractive effort	4.22	4.62
Tractive effort × diam. drivers ÷ equivalent heating surface* ÷ grate area	78.2	78.9
Firebox heating surface ÷ equivalent heating surface*, per cent.	5.41	5.89
Weight on drivers ÷ equivalent heating surface*	64.7	66.28
Total weight ÷ equivalent heating surface*	64.7	66.28
Volume both cylinders	11.22 cu. ft.	11.22 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	226.5	229.8
Grate area ÷ vol. cylinders	2.04	2.04

Kind	Simple
Diameter and stroke	21 in. by 28 in.
Kind	Simple
Diameter	12 in.
Greatest travel	12 in.
Outside lag	1 in.
Inside diameter	1 in.
Lead at full gear	1/8 in.
Driving, diameter over tires	51 in.
Driving, thickness of tires	3 1/2 in.
Driving journals, main, diameter and length	9 1/2 in. by 12 in.
Driving journals, others, diameter and length	9 1/2 in. by 12 in.

Style	Straight
Working pressure	180 lb. per sq. in.
Outside diameter of first ring	66 in.
Firebox, length and width	72 1/2 in. by 66 1/2 in.
Firebox plate thickness	3/8 in.
Tubes, number and outside diameter	158—2 in.
Tubes and flues, length	15 ft.
Heating surface, tubes	1,233 sq. ft.
Heating surface, flues	515 sq. ft.
Heating surface, firebox	138 sq. ft.
Heating surface, total	1,886 sq. ft.
Superheater heating surface	442 sq. ft.
Equivalent heating surface*	2,549 sq. ft.
Grate area	33 sq. ft.
Smokestack, height above rail	14 ft. 1/2 in.
Center of boiler above rail	102 in.

Part	Water bottom
Frame	Water bottom
Weight	144,000 lb.
Wheels, diameter	33 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	5 in. by 9 in.
Coal capacity	16 tons

*Equivalent heating surface is 1.25 times the superheating surface.

Lead the Way This Fight

\$74,971,150 in Bonds Subscribed by Railway Men

Reports to the Director General Show How Well the Loan Is Going in the Federal Regions

REPORTS OF SUBSCRIPTIONS by railroad employees on railroads under Federal control made so far to Director General McAdoe indicate that these employees have purchased a total of \$74,971,150 of Fourth Liberty Loan Bonds. Most of the reports are as of the close of business October 4.

The subscriptions of railroad employees so far reported are given herewith in the order of the total subscriptions in each region although the number of employees in the regions varies materially:

Northwestern Region	\$16,468,150
Central Western Region	16,406,050
Eastern Region	
Southwestern Region	
Allegheny Region	7,319,250
Southern Region	
Poconantas Region	

Eastern Region

An incomplete report from A. H. Smith, Eastern regional director, as of October 4, shows that out of 288,229 employees, 174,401 or 54 per cent had subscribed to the Fourth Liberty Loan a total of \$15,209,100, or an average of \$81.00 per subscriber.

Up to October 4, several eastern railroads had passed 90 per cent of their total employees subscribed.

The Maine Central led all lines with 98 per cent, 5,966 of its 6,080 employees having subscribed in the first four days.

The Delaware, Lackawanna & Western was a most creditable second, 20,351 employees out of a total of 21,095 having subscribed with the same promptness, or 96 per cent.

Third was the Grand Rapids & Indiana and fourth the

Lehigh & Hudson River, the former with 95 per cent and the latter 94 per cent of all the employees signed up for bonds.

In amount of subscribers and bonds taken, the initial report shows the Pennsylvania Lines west of Pittsburgh leading, there being 47,608 subscribers recorded for a total of \$4,091,900.

Up to the close of business October 4, out of 8,399 employees of the Wabash, 6,221 or 74.07 per cent had subscribed to the Fourth Liberty Loan a total of \$474,800, or an average of \$76.32 per subscriber.

Allegheny Region

The report to the Director General from C. H. Markham, director of the Allegheny region, shows that out of a total of 315,990 railroad employees in that region 106,288 had subscribed to the Fourth Liberty Loan a total of \$7,830,000 up to October 4, or an average of \$73.67 each; 33.64 per cent of the employees in the region have bought bonds.

Poconantas Region

N. D. Maher, regional director of Poconantas region, reported as follows for railroads in his region for the period ending with the close of business October 4

Virginia	158,900
Norfolk & Western	
Poconantas	

A report from A. C. Needles, federal manager of the Norfolk & Western, shows that every employee of the Norfolk

& Western office building at Roanoke, Va., totalling 9.0 men, women and children, white and colored, has subscribed to the Fourth Liberty Loan a total of \$127,600.

Northwestern Region

The total reported to the Director General by R. H. Ashton was \$16,468,150, making the Northwestern region the leader of the seven regions.

Reports received from railroads in the Northwestern region up to 10:00 a. m. on October 5, the seventh day of the liberty loan campaign, showed that 158,261 employees out of a total of 266,038 in the region, or 59.59 per cent, had subscribed to the fourth liberty loan. The aggregate amount of the subscriptions was \$16,468,150, or an average of \$104.05 per subscriber. Reports received up to 10:00 a. m. on the previous day showed subscriptions totalling \$14,187,450 as compared with \$3,568,665 subscribed by the same roads in the first six days of the third liberty loan campaign. It is apparent, therefore, that the sale of the fourth issue of bonds is progressing more rapidly in this region than was the case with the third issue. The Northern Pacific led the roads of the region in the aggregate amount subscribed on the seventh day, with subscriptions amounting to \$3,110,950. The Chicago, St. Paul, Minneapolis & Omaha was first among the large roads in the percentage of employees subscribing, 92.94 per cent of the men and women on its pay roll having taken bonds up to October 5. Both the office of the regional director and that of the Chicago terminal manager reported that 100 per cent of their officers and employees had subscribed. In the regional director's office subscriptions totaled \$25,750, or an average of \$250 per person.

The Northwestern region has classified its subscriptions according to the kinds of employees. On October 5 the officers and general office employees led in the percentage who had subscribed 75.8 per cent having taken bonds. Mechanical employees were second in rank with 71.89 per cent, and agents and station employees third with 70.67 per cent.

Central Western Region

The Central Western region was second, from the standpoint of total subscriptions. The report of Hale Holden, regional director showed that for the period ended October 4, 50 per cent of the railroad employees in the region had subscribed \$16,406,050 to the Fourth Liberty Loan, an average of \$93 per subscriber.

Roads in the Central Western region reported subscriptions up to 10:00 a. m. on October 5, to the amount of \$16,937,550, or an average of \$89 per subscriber. Of the total number of employees in the region, numbering 326,965, 58 per cent or 189,970 had taken bonds. Of the large roads, the Chicago, Rock Island & Pacific led in the percentage of employees subscribing. Of the 27,319 employees of this road in the region, 25,820 or 95 per cent were reported as subscribers up to October 5. Subscriptions for the road totalled \$2,096,150 or \$81 per subscriber. The Chicago & Alton reported that 78 per cent of its employees had subscribed a total of \$552,250, or \$81 per subscriber. The Des Moines Union has been added to the list of 100 per cent roads, its 468 employees having subscribed an average of \$57 per person.

Southwestern Region

B. F. Bush, regional director of the Southwestern region, reported that in the period ended at midnight October 4 railroad employees of that region had subscribed \$10,392,900 to the Fourth Liberty Loan.

Employees of the Missouri Pacific at the end of first week of the Fourth Liberty Loan campaign had purchased \$3,500,000 worth of bonds, a million dollars more than the amount subscribed by employees of this railroad in the Third Liberty Loan campaign.

Director General McAdoo has also announced that up to

the close of business on Friday, October 4, subscriptions to the Fourth Liberty Loan totalling \$194,500 had been made by officers and employees of the central headquarters of the Railroad Administration in Washington where the employees total about 1,000.

Buy Bonds to Your UTMOST

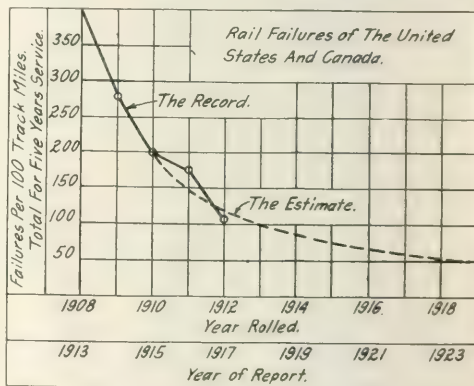
Rail Failure Statistics for 1917*

By M. H. Wickhorst

Engineer of Tests, Rail Committee, American Railway Engineer Association, Chicago

THIS REPORT DEALS with the statistics of rail failures collected for the year ending October 31, 1917, furnished by the railroads of the United States and Canada, in response to a circular sent out by the American Railway Association. The information furnished by each railroad showed the number of tons laid of each year's rolling from each mill, the equivalent number of track miles, and the total number of failures that occurred in each year's rolling from the date laid until October 31, 1916.

The failures were divided into four classes; namely, head, web, base and "broken." The reports cover rollings for



General Diagram of Rail Failures

1912 and succeeding years, and the ages of the rollings in track would average about as shown below:

1912	..... 5 years	1915	..... 2 years
1913	..... 4 years	1916	..... 1 year
1914	..... 3 years	1917	..... Several months

The tonnages represented by the statistics in this report are shown below.

Year rolled	Bessemer	Open-hearth	Total
1912	311,125	1,308,601	1,519,726
1913	153,417	1,647,659	1,801,076
1914	69,854	1,073,098	1,142,952
1915	19,141	1,075,111	1,094,252
1916	41,737	1,219,694	1,261,431
1917	14,613	681,669	696,282

The equivalent track miles are as follows:

Year rolled	Bessemer	Open-hearth	Total
1912	1,548.71	9,259.97	10,778.68
1913	1,107.32	11,419.28	12,526.60
1914	431.3	7,388.40	7,819.70
1915	80.80	7,253.76	7,334.56
1916	319.44	8,213.09	8,532.53
1917	108.22	4,605.54	4,713.76

The table below shows the comparative performance of Bessemer and open-hearth rails in failures per 100 track miles; the relative failures of Bessemer rails are also indi-

*Abstracted from Bulletin No. 309 of the American Railway Engineering Association.

calculated by figuring the failures of open-hearth rails as 100:

Year rolled	Years' service		Comparative failures	
	Open-hearth	Bessemer	Open-hearth	Bessemer
1912	5	102.7	134.1	100
1913	4	68.5	79.7	100
1914	3	30.8	70.2	100
1915	2	19.0	19.8	100

A summary of the general results as given in the reports for 1913 to 1917 inclusive is submitted in the following table showing the average failures per 100 track miles of the rollings for the several years, including both Bessemer and open-hearth rails:

Year Rolled	Years' service				
	0	1	2	3	4
1908	.....	.....	.....	.....	398.1
1909	.....	.....	.....	.....	275.5
1910	.....	.....	124.0	132.7	198.5
1911	.....	.....	7.6	14.4	176.1
1912	.....	28.7	32.1	49.3	78.2
1913	2.0	12.5	25.8	44.8	69.5
1914	1.2	3.2	19.8	35.9	.....
1915	0.7	8.9	19.0	.....	.....
1916	1.6	11.8	.....	.....	.....
1917	5.3	.....	.....	.....	.....

It will be noted that the 1908 to 1912 rollings show successively decreased numbers of failures compared on a basis

of five years' service, and the rollings for 1913 and 1914 also show successively decreased failures when compared on a shorter period of service. The more recent or "war-time" rollings, however, are not starting out so well, although the final performance can only be told after they have been in track a sufficient length of time.

In this connection, the writer wishes to call attention to a diagram submitted with a paper entitled, "The Rail Failure Situation," on which was shown the completed rail failure record taken from the reports for 1911, 1914 and 1915, and on which also was projected what we would like the record to be in future reports. This diagram is reproduced in the figure with the insertion of the records from the 1916 and 1917 reports. It will be noted that thus far this estimate is coming true, but when we come to recent rollings, the record may acquire an upward bump. It may be that owing to war conditions the standard of quality of both the manufacture of the rails and the maintenance of the track has not been upheld. It behooves the railroads to watch closely the material going into rails and the condition of the track in order not to have too large a crop of rail breakages blamable indirectly to the war.

Buy Bonds to Your UTMOST

Doings of the United States Railroad Administration

Railroads and Standard Equipment; Bankers Are Praised; Repair Shops to Work on New Locomotives

WASHINGTON, D. C.

SIXTY-FOUR NEW LOCOMOTIVES were shipped by the builders to railroads during the week ended September 28, according to a statement issued by the Railroad Administration. Of these, 42 were delivered by the American Locomotive Company, 7 by the Lima Locomotive Corporation, and 15 by the Baldwin Locomotive Works. The total included 42 of the U. S. R. A. standard types, of which 14 Mikados were delivered to the Union Pacific, 12 Mikados to the Chicago, Milwaukee & St. Paul, 4 switchers to the Toledo & Ohio Central, 6 Mikados to the Seaboard Air Line and 6 Mikados to the Lake Erie & Western.

Railroads Reluctant to Accept Standard Equipment

The allocation of freight cars and locomotives ordered by the Railroad Administration to the various railroads has encountered some obstacles because many railroad companies are displaying considerable reluctance to accept and pay for the standard equipment. The original plan was to have the Railroad Administration acquire the cars and locomotives with the idea of disposing of them to the railroad companies after the period of government control is over if the railroads are returned to their owners. This plan was changed, however, and the 100,000 freight cars and the 1415 locomotives ordered were definitely allocated to the railroad companies to be charged against their budgets and financed by the companies. The roads were asked how many of the standard locomotives they desired and they placed their orders for various numbers, in some instances, at least, because there was no opportunity to secure any other engines. Later some of them asked to have different types than those originally allotted to them and several changes were made when the request was received in time. This has resulted in several changes from the allocation as published in the *Railway Age* of June 28.

About September 1 some of the car builders began to turn out the new freight cars in considerable quantities but a large number of roads have objected to accepting them

Most of the objections have been on the ground that the companies did not want to pay for the cars at the high prices prevailing this year as all the revenue from their use goes to the Railroad Administration and the companies can get nothing but interest and the amount of the depreciation. In other cases the objection was to the type of the standard cars. Some changes have been made in the allocation, particularly where the road has been able to show that more cars were allotted to it than should have been, perhaps because an order for cars previously placed by the road had not been taken into consideration, but generally the Railroad Administration is taking the position that the companies must take the cars and pay for them. On the other hand, it is understood that some of the companies are refusing to accept any cars they have not ordered. Thus far the Railroad Administration has advanced the funds necessary to pay for the cars and locomotives delivered and up to October 1 a total of \$30,660,255 had been so advanced.

McAdoo Praises Bankers

In authorizing an announcement with regard to the extension of certain notes of the Baltimore & Ohio Director General McAdoo took occasion to express his appreciation of the public spirit and patriotism of American bankers generally, and particularly of the attitude of the two New York banking firms through whose co-operation the extension in question was arranged without commission.

"My duties as Secretary of the Treasury and director general of the railroads, involving as they do the raising of enormous sums of money, have been greatly lightened by the reliance that I have come to feel upon the wholesome public spirit of the American banking fraternity," he said. "With but few exceptions they have shown themselves willing and eager to help in distributing the financial burden of the war that is now being carried with an ease that surprised the world. They have helped to educate the financial community to a broader vision and to widen the field

of investments in this country and in so doing have been themselves benefited, for from being American bankers they have become world bankers with all the duties and opportunities that the description implies."

The Division of Finance and Purchases was advised a short time ago that the Baltimore & Ohio had \$22,500,000 short time collateral notes maturing October 1; that the railroad had made inquiries as to the prospect for renewal as result of which authority was requested to arrange for a four months' extension on an interest basis of $7\frac{3}{4}$ per cent, including banker's commission. In reply the company was informed that market conditions did not, in the opinion of the director general, justify the rate asked and that in agreeing to it he would be lending his approval to an interest charge which he considered unwarranted in the present conditions. The Division of Finance and Purchases thereupon telegraphed a number of banks who were understood to be holders of the maturing Baltimore & Ohio notes asking whether they would be willing, under the circumstances, to accept a renewal at 6 per cent. With but two or three exceptions these banks responded promptly agreeing to renew at 6 per cent. Upon receipt of these replies the Baltimore & Ohio was notified that the holders of approximately \$11,000,000 of the notes had readily agreed to the desired extension and it was suggested that the railroad should communicate with the remaining holders and ascertain their attitude in the matter, with the understanding that the Railroad Administration would furnish the railroad with any money that might be required to pay off the holders who refused to extend their notes at 6 per cent.

As a result the Baltimore & Ohio has just been able to inform the director general that the holders of about 80 per cent of the outstanding notes have agreed to an extension at 6 per cent so that the government will be called upon to supply only about \$4,000,000 out of the \$22,500,000.

Railroad Shops Have Capacity for Work on New Locomotives

The condition of locomotive repair shops of the various railroads has been improved so much during the year that in addition to repairing more than 500 more locomotives per week than last January, some of them now have surplus capacity to undertake some work to relieve the plants of the locomotive builders. Last January the railroads were trying to have some of their locomotive repair work done by the locomotive builders. Now the builders are doing practically nothing in the way of repairing locomotives for the Railroad Administration and at the request of the Baldwin Locomotive Works, the mechanical department of the Railroad Administration has ascertained that at some shops there are machines which are not being used to maximum capacity and arrangements have been made to allow the surplus capacity to be used on work for the Baldwin company. The work thus far arranged for includes the following:

The Philadelphia & Reading shop at Reading, Pa., will plane and slot locomotive frames at the rate of two per week and will build new boilers at the rate of one per week.

The Delaware, Lackawanna & Western will plane and slot 50 sets of frames and finish 50 sets of rods per week.

The Lehigh Valley shops at Sayre, Pa., will plane three sets of frames per week and the shops at Easton will finish 16 driving boxes per week.

The Erie at its Meadville, Pa., shops will finish shoes and wedges for four locomotives per week and at the Susquehanna shops cylinders for one locomotive per week and frames for three locomotives per week. At its Dunmore shops it will finish driving boxes and shoes and wedges for three locomotives per week.

The New York Central will build new boilers at its West Albany, N. Y., shops.

It is understood that under no circumstances will this work be allowed to interfere with the regular shop output.

Report of Wage Increases for Five Months Required

The Division of Public Service and Accounting has issued a circular for the purpose of determining the effect of the wage increases upon operating expenses for the five months ended May 31, 1918, requiring each Class 1 road to file a report of the amount of the wage increases for that period. In a circular issued some time ago carriers under federal control were directed to include in their accounts for June the actual or estimated amount of the wage increases for the five months ended May 31. It is now desired to secure a more accurate statement, particularly in view of the fact that later supplements of General Order 27, making further increases in wages retroactive to January 1, have increased the amount. The information called for is the amount of wage increases chargeable to operating expenses classified among the appropriate general accounts without reference to those increases which relate to additions and betterments.

Instructions for Changing Back to Standard Time

On the recommendation of the Committee on Transportation of the American Railway Association Director General McAdoo has issued, in General Order No. 45 the following instructions, in connection with changing the hands of the clocks and watches on Sunday, October 27, as provided in the federal law "To Save Daylight and to Provide Standard Time for the United States":

First: At 2:00 a. m., present standard time, Sunday, October 27, 1918, all clocks and watches in train dispatchers' offices, and in all other offices open at that time, must be turned back one hour, to indicate 1:00 a. m. Employees in every open office must, as soon as the change has been made, compare time with the train dispatcher. Clocks and watches in all offices at the first opening, at or after the time the change becomes effective, must be turned back to conform to the new standard time, and employees, before assuming duties in such offices, must, after the change is made, compare time with the train dispatcher.

Second: Each railroad will issue necessary instructions and arrange for such supervision and check of the watches of its employees as to insure that they have been properly changed to conform to the new standard time.

Third: Regular trains must be held to conform to schedules after change in time.

Fourth: Owing to the varying conditions which will prevail on the railroads of the United States, it is not advisable to issue a uniform rule or order to cover other details involved in the movement of trains at the period the change in standard time becomes effective. Therefore, each railroad must adopt such measures as may be necessary properly to safeguard the movement of its trains on the road at the time of the change.

Violation of Safety Laws

In General Order No. 46 the director general states that the records of the Interstate Commerce Commission and the reports of its inspectors show so many instances of violation of federal statutes for the promotion of safety that it is evident that sufficient attention is not being paid to the provision of General Order No. 8 issued on February 21 that the safety laws, and orders of the Interstate Commerce Commission made in accordance therewith, must be fully complied with. Enforcement of the provisions of this paragraph of the order will be placed under the direction of Frank McManamy, assistant director of the division of operation, who will receive reports of such violations and handle them either with the regional directors; or direct, if found necessary. All necessary investigations in connection therewith

will be conducted by the assistant director of operation and reports of violations will be sent to the regional directors for correction and not for further investigation.

The Division of Operation has also issued Mechanical Department Circular No. 3 signed by Mr. McManamy, stating that attention has been brought to numerous instances where it has been necessary for Interstate Commerce Commission inspectors to order locomotives out of service for repairs under circumstances which indicate wilful violation of the federal laws regarding safety and also where locomotives were not in condition to render efficient and economical service. In the future, the circular says, master mechanics and shop and roundhouse foremen will be required to know that locomotives are in good condition before leaving terminals and it is directed that locomotives that are in violation of the federal laws or that are not in condition to make a successful trip should be repaired before being offered for service.

Demurrage Rules Amended

Director General McAdoo has issued Supplement No. 1 to General Order No. 7, effective on October 15, modifying the national car demurrage rules to include in the exceptions to the rules "private cars on private tracks when the ownership of the car and of the track is the same." In the rules which were made effective on February 10 the exception as to private cars read as follows: "Empty private cars stored on carriers' or private tracks, provided such cars have not been placed or tendered for loading on the orders of a shipper." The new rules also include the following definitions:

"Private Car.—A car having other than railroad ownership. A lease of a car is equivalent to ownership. Private cars must have the full name of owner painted or stenciled thereon, or must be boarded with full name of owner or lessee.

"Private Track.—A track outside of carrier's right of way, yard and terminals, and of which the carrier does not own either the rails, ties, roadbed, or right of way; or a track or portion of a track which is devoted to the purposes of its use either by lease or written agreement."

The instructions and explanations which accompany the rules provide that private cars while held under constructive placement for delivery upon the tracks of their owners are subject to demurrage charges after the expiration of 48 hours free time.

The exception as to empty cars remains as before, but the instructions and explanations state that empty private cars stored on tracks not owned by the owners of such cars, and switched by carriers, taken for loading without order or requisition from shipper, and without formal assignment by carrier's agent, shall be regarded as placed for loading when actual loading is begun. Private cars which have been loaded from the tracks of their owners, received from such tracks and held by the railroad for forwarding directions, are subject to demurrage charges from the first 7:00 a. m. after they are received until proper forwarding directions are furnished with no free time allowance and without notice.

Under the new rules, except as otherwise provided, private cars while in railroad service, whether on carrier's or private tracks, are subject to the demurrage rules to the same extent as cars of railroad ownership, and empty private cars are in railroad service from the time they are placed by the carrier for loading or tendered for loading on the orders of a shipper. Private cars under lading are in railroad service until the lading is removed and cars are regularly released.

Government Will Lend to Railroads at Six Per Cent

Believing that it will be for the general welfare and a factor in beneficially stabilizing money rates, the director general announces that as to all railroad mortgage bond issues which may mature between the present time and July 1, 1919, where railroad companies may find it impracticable to obtain money for the renewal of their maturing bonds at

a rate of interest which the director general may feel warranted in approving, he will lend to all such railroad companies on safe and reasonable security at the rate of six per cent per annum such funds as may be necessary to pay off their maturing issues of mortgage, equipment or debenture bonds.

The aid thus rendered by the director general to maintain on a moderate basis the rates of interest which railroads may be required to pay on loans must not be interpreted by them as relieving them of the duty and responsibility of using their best efforts to provide for their own financial needs as occasions arise, but is intended to give them assurance that the money required for their legitimate needs, and for which they can offer satisfactory security, can be obtained without their being required to pay exorbitant or unreasonable rates or commissions.

"While the co-operation which the government has received and is receiving from the bankers, capitalists and investors of the country generally, in the huge task of financing the war and of providing the vast credits imperatively demanded for our requirements and for our Allies, has been admirable," the statement says, "at the same time there has been a tendency on the part of some bankers and money lenders to demand exorbitant rates on railroad loans which are fully protected, and for which there is no justification.

"Through the War Finance Corporation, farm loan banks, and in other ways, the powers of the government have been exercised for the stabilization of interest rates and the prevention of excessive charges for the use of money. There is sufficient capital and credit in this country at present to meet legitimate needs, if carefully conserved and used, and there is no reason why excessive rates should be demanded where the security afforded is sound and condition and character of the borrower entitles him to credit.

"The manner in which interest rates on the London market have been regulated and kept within reasonable bounds furnishes an interesting study, and has been a potent factor in the successful financing of Great Britain's war necessities."

Oklahoma Rates Reduced

Director General McAdoo, convinced of the necessity of making some revision in the class rates applicable within the state of Oklahoma, has promulgated a new schedule to become effective on 10 days' notice. This schedule was decided upon after several conferences with Chairman Humphrey and Commissioner Russell of the Oklahoma Corporation Commission, also Senator Owen and Congressmen Ferris, Thompson, Carter, Chandler, Morgan, McClintic, McKeown and Hastings, together with W. V. Hardie, manager of the Oklahoma Traffic Association, and is fully satisfactory to them.

Oklahoma's trouble lay in the fact that the application within the state of the so-called Shreveport scale of class rates constituted in itself a considerable advance over the state commission's scale previously in effect and this, with the additional 25 per cent increase provided for in General Order No. 28, resulted in rates about 60 per cent higher than formerly in effect, and considerably in excess of the interstate rates from Kansas, Missouri and Arkansas into Oklahoma, the latter having been increased but 25 per cent.

The new schedule represents approximately an average of the rates in a number of Southwestern states. It does not fully equalize Oklahoma with interstate competitors, but in the opinion of the Oklahoma representatives will provide the needed temporary relief from a condition which was affecting Oklahoma's industries to a material extent.

For the present the interstate rates from states to the north and east into Oklahoma, which are lower than the new Oklahoma schedule, are to remain in effect; but further consideration is being given by the Railroad Administration to a

more comprehensive revision and equalization of conflicting schedules in the Southwest.

Agricultural Department Activities

The Railroad Administration, through the Agricultural Section of the Division of Traffic and through other departments, is co-operating with the Food Administration and the Council of National Defense in state campaigns to reduce the number of animals killed by trains. On one railroad last year, the value of claims paid for livestock killed was \$600,000. Campaigns are already under way in several of the Southern and Southwestern states where these losses principally occur, to secure the co-operation of owners of stock in keeping it off the right of way and to secure a better enforcement of stock laws. As a result of these efforts, a large conservation of food supply and of leather has been obtained.

Several of the principal railroads in the Southern region, through the agricultural departments, have sent their livestock agents to drought stricken sections of Texas to assist southeastern purchasers in selecting suitable cattle for bringing into the southeastern states for breeding purposes and for fattening.

The railroads, through their agricultural departments, also are co-operating with the war department and Red Cross in the collection of fruit pits and nut shells for making charcoal for gas masks for our soldiers. They have taken the matter up with canning plants, hotels, local agents and others and are giving all the help possible to this important work.

The Agricultural Section of the Railroad Administration is also co-operating actively with the state agricultural authorities in Missouri in an energetic campaign to increase the number of silos. The railroads in Missouri are sending out circulars and pamphlets, showing the great advantage to farmers of using silage.

A meeting of the heads of the agricultural development work of the federal railroads in the Eastern and Allegheny regions has been called by J. L. Edwards, manager of the Agricultural Section, at the office of Regional Director A. H. Smith in New York for Friday, October 11, for the purpose of working out plans for more thorough co-operation with the work of the United States and state departments of agriculture and the Food Administration and for a general discussion of the development work in hand and plans for future work.

Marine War Risk Insurance

Director General McAdoo has issued a statement saying that from the number of inquiries received, it is evident that there is not a general understanding as to the inclusion of war risk insurance by the Railroad Administration to cover the movement of traffic by the coastwise steamer lines, particularly in the case of shipments diverted to these lines by the Railroad Administration, for the relief of the rail lines over which it may have been routed by the shipper. The rates of the coastwise lines under federal control will include war risk insurance and the tariffs will so provide. These lines are under the jurisdiction of H. B. Walker, federal manager, New York, and comprise the Old Dominion S. S. Company, Clyde Line, Ocean S. S. Company, Merchants & Miners Transportation Company, Southern S. S. Company, Mallory Line, and the Morgan Line (Southern Pacific).

To remove any uncertainty as to the assumption of war risk by the government, the following notation is to be placed on bills of lading covering coastwise water borne traffic: "Rates include war risk and marine insurance subject to the provisions of the tariffs on file with the Interstate Commerce Commission notwithstanding any condition to the contrary in this bill of lading."

Where the traffic is routed by the shipper and arbitrarily

diverted by the Railroad Administration for its purposes, the rates and charges via the shippers' route will be protected, and in all cases of this kind, where a shipment is diverted from a rail route to a water route, the movement over the water route will be protected by both marine and war risk insurance.

Wage Orders

Amendment No. 1 to Supplement No. 4 to General Order No. 27, provides as follows:

To remove certain inequities resulting from the application of section 2, Article III, of Supplement No. 4 to General Order No. 27, and as a substitute therefor, it is hereby ordered, effective September 1st, 1918:

Compensation for Helpers—Shop Crafts

For helpers in the basic trades specified in Supplement No. 4 to General Order No. 27, who, on January 1, 1918, were receiving less than 32 cents per hour, establish a basic minimum rate of 32 cents per hour; to this basic minimum rate, and all hourly rates of 32 cents per hour and above in effect as of January 1, 1918, add 13 cents per hour, establishing a minimum rate of 45 cents per hour.

Interpretation No. 1 to Supplement No. 4 provides:

Employees in any department, performing the classes of work specified in Supplement No. 4 to General Order No. 27 and Addendum No. 2 thereto, shall receive the rates of pay and be governed by the conditions of employment provided for therein.

If their present pay-roll classification does not conform, they shall be given correct classification.

Division of Labor

H. H. Reed, chief clerk of the Division of Labor, has been appointed special assistant to the director of the Division of Labor. Mr. Reed has been assigned to handling correspondence and cases to be submitted to railway boards of adjustment, as provided in General Orders Nos. 13 and 29, and such similar orders as may be issued by the director general creating additional railway boards of adjustment. He will also handle for the director of the division, W. S. Carter, correspondence and matters pertaining to interpretations of wage orders, submitted through the Division of Labor to the Board of Railroad Wages and Working Conditions in accordance with Supplement No. 6 to General Order No. 27.

Brotherhoods Again Seek Modification of Political Order

The heads of the four brotherhoods of train service employees held another conference with Director General McAdoo on October 3 regarding their protest against the order requiring all railway employees to abstain from political activities. It is understood that Mr. McAdoo remained firm in his attitude as expressed in the order, but that another conference will be held on October 15, at which the brotherhood leaders will endeavor again to have the order modified.

Instructions for Painting Freight Cars

The Division of Operation, in mechanical department circular No. 1, repeats the series of instructions regarding the painting of freight cars which were previously issued by the regional directors, with an additional instruction intended to make it clear that these directions apply equally to all cars owned by railroads under government control and that all cars should be repainted in accordance with the instructions when on repair tracks, regardless of ownership.

Committee on Standards

The regular monthly meeting of the Committee on Standards for Cars and Locomotives, which was to have been held at Washington on October 15, has been postponed and the next meeting will be held on November 19.

The B. & O. Completes the Long Fork Railway

This Line Is an Important Step in the Development of the Coal Resources of Eastern Kentucky

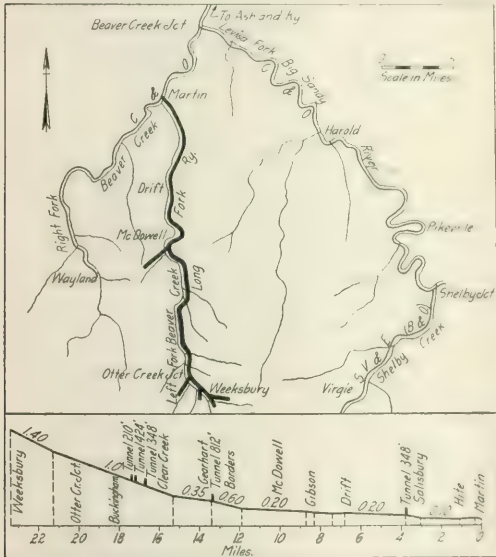
By A. C. Clark

Assistant to Chief Engineer, Baltimore & Ohio

THE RECENT COMPLETION of the Long Fork Railway in Floyd County, Kentucky, marks another step in the development of the vast coal area situated in the eastern part of that state. This road is a subsidiary of the Baltimore & Ohio and extends from the forks of Beaver creek up the Left Branch to mines of the Elkhorn-Piney Coal Co. at Weeksbury, near the headwaters of the creek. The length of main line is 23.4 miles. There are also four short branch lines aggregating 6.5 miles of single track.

The purchase and consolidation of coal properties in this territory was carried out largely by the Beaver Creek Consolidated Coal Co. about 1905-06. However, no active de-

veloped the valley of the left fork, following the course of the stream closely throughout its entire length. Fortunately the valley is wide for a mountain stream and it was found possible to locate a line devoid of many of the difficulties generally encountered in mountainous country. It was necessary, however, to undertake no less than 26 stream changes



Map and Profile of the Line

velopment was attempted until 1911, when an agreement was entered into with the Chesapeake & Ohio for the extension of its Elkhorn & Beaver Valley branch from Beaver creek on the Big Sandy division to the headwaters of the right fork of Beaver creek. The Chesapeake & Ohio completed the construction of this branch in 1913 and the line was placed in operation the following year.

With transportation facilities available along the right fork of Beaver creek, the coal operators turned their attention to their properties on the left fork. With the assurance that coal would be ready for shipment upon the completion of the line, the Baltimore & Ohio undertook the construction of the Long Fork Railway in 1916. The new line leaves the Elkhorn & Beaver Valley branch of the Chesapeake & Ohio at Martin, a small settlement at the junction of the right and left forks of Beaver creek. From Martin the line proceeds



Bridge Over Left Fork of Beaver Creek Near Mouth of Caleb Fork

in order to keep within the limit of a maximum curvature of 10 deg.

Paralleling the water level of the creek at an elevation sufficient to avoid overflow during high water, the line rises on a maximum 0.6 per cent compensated grade for the first 15 miles out of Martin. From this point to the mouth of Otter creek, a 1.0 per cent compensated grade opposes the empty movement while the last two miles on the upper end of the



Looking North Towards Tunnel No. 3

line are on a 1.4 per cent basis. About 55 per cent of the line is constructed on tangent.

There are five tunnels on the line with a total length of 2,142 ft. With the exception of tunnel No. 2 which was driven through sandstone for a distance of 812 ft., all tunnelling was through a formation of stratified shale which was not at all difficult to work. In the case of tunnel No. 1, seams in the shale formation permitted such rapid disintegra-

tion that it was found necessary to line the tunnel throughout. It is planned to line all of the tunnels eventually except No. 2 where the sandstone guarantees a permanent natural structure.

To expedite the work at tunnel No. 2, a rectangular drift, approximately 9 ft. by 14 ft. was driven throughout the entire length of the tunnel, the work being carried on from both ends simultaneously. The required 12-cu. yd. section was then obtained by removing the material from the sides and top of this drift, working from both ends of the tunnel

changes accompanied by alternate violent rainstorms and heavy snows and the following spring witnessed a succession of freshets which threatened to hamper the work seriously at times. In addition, it was almost impossible to secure an adequate supply of labor with which to maintain the desired rate of progress. Particularly during the past winter with its general labor shortage throughout the country, it was practically useless to attempt to induce experienced workmen to remain in this mountainous district. Of necessity, recourse was had to the inexperienced local labor supply, and this added a severe handicap to the task of completing the work in the scheduled time.

When the line was turned over to the operating department in May, 1918, there were already 30 mine openings in the valley. It is estimated that these mines have a coal supply of 550,000,000 tons available above water grade. No prospecting has yet been done below water level, but it is regarded as not at all improbable that additional seams of commercial value will be found whenever such prospecting and operation is justified. The coal taken from this district closely resembles the Jenkins coal mined along the Sandy Valley & Elkhorn to the south. Analyses of the product show it to be very low in ash and with a small percentage of sulphur and phosphorus. It is essentially a "by-product" coal and as such forms a welcome source of additional supply for the growing by-product coking industry in this country.

The construction of this line was carried out by Bates & Rogers, contractors, under the supervision of H. A. Lane, chief engineer, Baltimore & Ohio, and Richard Mather, district engineer of that road.

Report on Nashville Collision

THE INTERSTATE COMMERCE COMMISSION has issued the report of W. P. Borland, chief of the Bureau of Safety, dated August 16, on the butting collision near Nashville, Tenn., July 9, on the Nashville, Chattanooga & St. Louis, in which two passenger trains, No. 4 northbound, and No. 1 southbound, met at about 50 miles an hour, and six carloads of passengers were killed or injured. The facts are substantially as stated in the reports already published in the *Railway Age*, July 19, page 134, and October 4, page 640; but the number of casualties is given as 202, namely: 87 passengers and 14 employees killed, and 87 passengers and 14 employees injured. The engineers and firemen of both trains, and the porter of train 4, were killed.

Northbound train No. 4 left Nashville at 7:07 a. m., and passed "Shops" at 7:15 a. m. It had passed from the double track and only about its length beyond the signal cabin at Shops when (the operator in the cabin having been informed by the dispatcher that the train should have been stopped) it was signaled from the cabin by the whistle which is provided there for such emergencies; but the signal was not heeded. It will be recalled that the flagman of No. 4 was an inexperienced man, never having been on this train before. Conductor Eubank, in his testimony, says that while still on the double track, between Nashville and Shops, he told the flagman to look out for train No. 1, at the same time delivering to him the order making a meeting point between No. 4 and No. 7, which order also gave the number of the locomotive of train No. 1; but the flagman in his testimony says that this order was given to him by the conductor after reaching Shops; and that the conductor said nothing to him about looking out for train No. 1. The report makes no comment or explanation concerning this discrepancy in the testimony. This flagman's entire experience as a trainman appears to have been in making two trips as a flagman on a freight train.

Conductor Riggle, who alternated with Conductor Eubank on train No. 4, said that he always kept train No. 1 in mind



One of the Large Coal Tipples

and from two headings located approximately at the one third points. The method was found effective as a time saver.

There are nine bridges on the line, all of which are of the deck plate girder type on concrete piers and abutments. The spans are all of moderate length.

The line is single track throughout, is provided with two 85-car passing sidings and is laid with 85-lb. rail on standard ballast section. Both granulated slag and washed gravel were



Looking North Through Tunnels Nos. 4 and 5

used as ballast. It was necessary to haul the gravel from Huntington, W. Va., while the slag came from Ashland, Ky., Wheeling, W. Va., and Jackson, Ohio.

An engine house, fully equipped with a machine shop and repair facilities, has been established at Weeksbury, the upper terminal of the line. All engine and car repair work will be carried out at this point which is conveniently located with reference to the larger mining operations located at the head of the valley.

The principal difficulties encountered in the construction of this line were of a practical rather than a technical nature. The winter of 1916-17 covered a period of sudden weather

until "Shops" was passed; but he depended upon the flagman, porter and enginemen to identify the train.

The traveling engineer testified that Engineman Kennedy, of train No. 4, who was killed, was a very careful man and one who obeyed the rules. The traveling engineer had observed that enginemen, passing Shops, took the operator's word as to whether the single track was clear of superior trains; and thereafter, on May 28 last, the superintendent issued a bulletin forbidding such practice; the bulletin required northbound trains to assure themselves from the train register that superior southbound trains had arrived, or else to get an order to that effect from the train dispatcher.

In its conclusion the report says:

"Conductor Eubank of No. 4 apparently relied wholly upon the other members of the train crew to identify train No. 1 and allowed his train to pass from double track to single track at Shops without making any effort to ascertain whether train No. 1 had arrived. His statement that he was busy collecting tickets and that he passed a train in the yards between Nashville and Shops, which he did not see, but assumed was train No. 1, can not be considered a valid reason for overlooking or failing to identify that train. His first duty was to provide for the safety of his train and see to it that it did not pass from double track to single track before train No. 1 had arrived; and particularly in a yard where switching movements are constantly being made, he was extremely negligent in assuming that a passing train was No. 1 without seeing it and without being notified of its identity by some member of his crew who had seen it."

"That responsible operating officers were well aware of the conditions existing at Shops (trains passing without being properly assured of the right to the road) is evidenced by the superintendent's bulletin issued last May. It appears that bulletin contemplated orders would be issued and delivered to outbound trains at Shops giving notice of superior trains which had arrived, but no practice of this nature was in effect. The custom of merely notifying outbound train crews of the number of the locomotive hauling an opposing superior train was utterly inadequate as a safeguard, for under the practices followed, the train crew was required to observe and correctly read the number of the passing locomotive under all conditions of weather and traffic. The records show that during the month of June, an average of 23 trains daily were operated to and from Nashville over this division, and the number of yard movements materially increased the density of traffic between Nashville and Shops."

"Under these circumstances, it is absolutely essential to safety that some means be provided for supplying to outbound crews definite information regarding opposing superior trains, as, for example, by the maintenance of a train register at Shops, or by issuing orders to outbound trains at Shops, giving definite notice of the arrival at that point of superior trains which had not arrived at Nashville at the time of departure of the outbound trains."

"This accident would have been prevented, beyond question of doubt, by a properly operated manual block system on the single-track line north of Shops, for which all necessary appliances and facilities were already available. The time table indicates that between Nashville and Hickman, Ky., 172 miles, there are 27 train-order offices, of which 14 are continuously operated."

On this line there are four passenger trains in each direction, and a total of 12 scheduled freight trains. With this volume of traffic, and in view of the universally recognized features of increased safety afforded by the block system, there can be no valid excuse for the failure or neglect on the part of the railroad company to utilize existing facilities for the purpose of operating a block system on that line."

"This accident presents a more appalling record of deaths and injuries than any other accident investigated by the Commission since the accident-investigation work was be-

gun in 1912. Had steel cars been used in these trains, the toll of human lives taken would undoubtedly have been very much less. * * *

Lead the Way, They Fich

The Mechanics of Curve Resistance*

By J. S. Sullivan

Consulting Engineer, Winnipeg, Man.

A. M. WELLINGTON stated: "The coning now put in wheels is chiefly useful as a prospective provision for wear; and experiment shows that whether the wheels be coned or not, the tendency of any rectangular wheel-base is to roll very nearly in a straight line." This statement appears logical but unfortunately it is not entirely true as the writer will try to prove further on. What Mr. Wellington said years ago is still true, that "Curve resistance has never yet been exhaustively investigated, and our knowledge is in several respects deficient."

Mr. Wellington also stated, "The consequences of this condition of things are these: first, the disproportion in the diameter of the wheels: hence the necessary longitudinal slipping, and hence the curve resistance, is materially increased. If the increase of radius of wheel be $\frac{3}{16}$ in., the extra distance slipped through per station of 100 ft. by one wheel will be 1.16 ft." The writer believes that the emphasized statements are exactly opposite to the facts.

Referring to the theory of centrifugal force in this problem, the writer believes that with track having anything like the correct elevation of the outer rail this is a very minor factor. The theory of obliquity of traction, of course, is absurd for we have positive evidence on all railroads that the flanges of railway wheels cut away the head of the outside rail, while the evidence is plain that there is no flange wear against the head of the inner rail.

The writer will have to admit that he cannot offer any scientific formulae that will satisfactorily explain actual curve resistance as we find it in practice. On the other hand he has never seen in print a statement of what he considers the real reason why all outer wheels of railway equipment exert a pressure against the outer rail on a curve. The reason that this is true regardless of degree of curve speed of train or elevation of track (within reasonable limits) is that a revolving cylinder tends to rotate in a straight line perpendicular to the axis of rotation. If our wheels were manufactured with flat treads and vertical flanges on account of their being fastened rigidly to the axle we would in practice have our equipment carried on revolving cylinders with a portion of the cylinder cut away, and if this were the case I believe it would be possible to devise formulae that would correctly represent the actual amount of curve resistance.

It is generally conceded that curve resistance amounts to approximately 0.8 lb. per ton of load per degree of curvature. A great many believe that the major portion of this resistance consists in the skidding of the wheels in a longitudinal direction on account of the difference in lengths of the inner and outer rails. If this skidding actually took place, (the difference in length between the inner and outer rails on a 1-deg. curve for a distance of 100 ft. being approximately one inch), and assuming a large coefficient of friction for a moving body, say 22 per cent, a little calculation will prove that the work done in this skidding would only account for one-fourth of the 0.8 lb. mentioned above.

In order to check the writer's ideas he had a long 8-deg. 10-min. curve carefully measured. He then calculated what the diameter of the inner and outer wheels would be to make them directly proportional to the length of the two

* Abstracted from a paper in Bulletin No. 207 of the Am. R. & E. Engineering Association.

rails on this curve. These wheels were then turned accordingly, with a standard flange but with a flat tread; they were put under a steel flat car 36 ft. 10 in. long with a tare weight of 31,200 lb. and a live load of 99,000 lb. of steel rails. The first experiments made with this car were with the idea of testing the tractive force necessary to move it. It was apparent from the start that the equipment of the dynamometer car used was not delicate enough to measure small pressures accurately. The writer, therefore, abandoned the idea of attempting to get a definite figure in pounds per ton with this machine, but the results prove conclusively what he expected, viz., that the resistance on the 8-deg. 10-min. curve was only 50 to 60 per cent of the resistance on straight track.

The next test consisted of pulling another flat car, similar in all details except that it had standard trucks which were in very good shape. The dynamometer car results indicated, as we expected, that the resistance on straight track was only 40 to 50 per cent of the resistance on the curve. The most important feature of these tests was the fact that the trucks with the special wheels never pressed against the head of either the inner or outer rails while going around the 8-deg. 10-min. curve but ran exactly as true as the ordinary truck runs on a straight track and this was true regardless of speeds from 5 to 25 miles per hour, thus proving,

of fact, however, the writer is convinced that the outer leading wheels on a truck take a position with the flange against the rail head, and that there is absolutely no backward skidding of the inner leading wheels of any railroad truck in rounding a curve. Any skidding that may take place in the wheels of the leading axle is equal and in a forward direction. A very small amount of backward slip of the inner wheel axles 1 and 3 going north and 2 and 4 going south is indicated in column 4 where we know the taping was taken on a larger diameter than the one the wheels were rotating on. This, taken with the figures in column 6 for the inner wheels of the leading axles of the trucks, which indicate a positive forward slip of the inner wheel, (when we know that the diameter on which the wheels were rotating could not have been larger than the diameter on which measurements were made) would indicate that the outer wheel was pressed so hard against the outer rail that the resistance against free rotation was so great that the result is that both wheels were actually skidded a short distance forward.

By making a study of all the outer rear wheels of the trucks it is very plain to the writer, as observation and experiments proved, that these wheels press against the outer rail and ride on a larger diameter than the official taping indicates but not sufficient to overcome skidding entirely;

TABLE I

1 Axle numbered 1 2 3 4 from North to South Axles No.	2 Distance on rail measured in feet traveled by wheels making 70 complete revolutions		3 Seventy times circumference of wheels in feet taped in field close to flange		4 Difference between distance measured on rail and 70 times circumference		5 Seventy times cir- cumference of wheels in feet as officially taped after test 1 in. from base of flange		6 Difference between distance measured on rail and 70 times official tap- ing of circumference	
	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer	Inner
Car moving North										
No. 1	605.88	601.68	602.39	602.29	+3.58	-0.61	601.01	600.83	+4.87	+0.85
No. 2	605.58	601.39	605.21	605.21	+0.37	-0.32	604.11	604.11	+1.47	-2.72
No. 3	605.92	601.73	602.29	602.29	+3.63	-0.56	601.38	601.01	+4.54	+0.72
No. 4	605.46	601.27	603.02	603.02	+2.44	-1.75	602.11	602.29	-3.35	-1.02
Car moving South										
No. 1	604.67	600.48	602.29	602.29	+3.88	-1.81	601.01	600.83	+3.66	-0.35
No. 2	608.88	604.68	605.21	605.21	-3.67	-0.53	604.11	604.11	+4.77	+0.57
No. 3	604.63	600.43	602.29	602.29	-3.34	-1.86	601.38	601.01	+4.25	-0.58
No. 4	605.08	602.89	603.02	603.02	-3.06	-0.13	602.11	602.29	+4.97	+0.60

at least to the writer's mind, that the rectangular shape of the wheel-base, especially so for the short wheel-base of a freight truck, has very little or nothing to do with causing the pressure of the wheels against the outer rail.

The next test that was made was one to determine, if possible, which wheels of a railway car do the skidding and the amount thereof. The writer has always been of the opinion that, on account of the extra horizontal pressure of the leading wheel of a truck against the outside rail, unless the vertical pressure on the inner rail was largely in excess of the vertical pressure on the outer rail, there would be very little or no skidding of the outer front wheel of the truck. The writer is convinced that this is true; also that there is no backward skidding of the inner front wheel which was more than was at first expected.

Some tests were made with a view of attempting to measure the amount of skidding of the wheels. A flat car with a gross weight of 129,100 lb. was run a distance of about 600 ft. in both directions over the above mentioned 8-deg. 10-min. curve at a speed of about four miles an hour. The revolutions on all the wheels were counted and measurements taken to show how far they would have to go to complete 70 revolutions. The table gives the results of these measurements.

We started out with the idea that there would be very little or no skidding of the outside leading wheels of any truck. If one will note, however, the outer wheels on axles No. 1 and 3, columns 4 and 6 on the car going north and also the outside wheels on axles 2 and 4 in columns 4 and 6 when the car was going south, he would be apt to say that these were the wheels that did the skidding. As a matter

that is, there is some skidding of the inner wheel of the rear axle of a truck although the amount is rather small.

The writer's object in giving this matter to the public is to revive interest in this subject, bring out discussion, and if possible get more information, as it is only when the actual causes of trouble are really understood that the proper remedies can be applied. The second reason is to call the attention of operating officers of railways to the fact that it is a waste of fuel to haul cars over railways, the wheels of which are not running true.

The writer is convinced that the greater portion of the curve resistance is caused by the pressure of the flange against a single rail. Therefore, the mating of wheels or the setting up of trucks not properly true that cause the flange on one wheel of an axle to wear sharp is not only shortening the life of the wheel but is costing the company considerably more money to acquire this undesirable result. The following is a summary of the writer's conclusions:

1. All outer wheels of railway equipment exert a pressure against the outer rail when rounding a curve.

2. The cause of this pressure is the tendency of a cylindrical body to rotate in a straight line at right angles to the axis of rotation.

3. There is never any skidding of either wheels of the leading axle of a truck unless it is a forward skidding of both wheels caused by the resistance to rotation being great enough to cause a slight retardation to rotation which results in an apparent forward skidding.

4. There is no skidding of the outer wheel of a rear axle; in general, any skidding that does take place is on the inner wheel of the rear axle.

Notable Stationary Installation of Pulverized Coal

Tests at Milwaukee Show Remarkable Efficiency and Demonstrate Requirements for Burning Powdered Fuel

AT THE MEETING held recently by the Fuel Conservation Section of the Railroad Administration to discuss fuel economy in railway stationary plants* a paper was read by John Anderson, chief engineer of power plants, Milwaukee Electric Railway & Light Company, Milwaukee, Wis., on the use of pulverized coal in stationary power plants, in which he described the equipment at the Oneida Street station of that company, and gave a report of a test recently made. This installation is noteworthy not only by reason of the high efficiency obtained, but also because of

a trial installation at the Oneida Street station. The necessary equipment for preparing and feeding the coal was installed and the boiler was placed in service during the early part of May. From that time until early in August, when the installation was finally proven successful, changes were made to eliminate undesirable conditions encountered during the preliminary operation.

Equipment

The drying and pulverizing equipment, installed in a room located near the plant coal bunkers, consists of one 15-ton per hour indirect fired dryer, and one 4-ton per hour pulverizer. From one of the coal bunkers the fuel as delivered to the plant is carried to the dryer supply bin by means of a screw conveyor and a bucket elevator. From this supply bin the coal is drawn into the drying cylinder by means of another screw. It is carried through the dryer by means of gravity and discharged into an elevator which carries the dried fuel to the pulverizer supply bin. In the dryer the moisture is reduced from 11 per cent to 1 per cent at the rate of about 10 tons per hour.

The coal in passing to the pulverizer supply bin is run over a magnetic separator pulley, which removes any iron and steel which has been carried that far. From the bin last mentioned the fuel is fed to the pulverizer through a small screw conveyor located on the top of the mill.

The fuel after passing through the pulverizer is carried on by means of a screw conveyor to the pulverized fuel storage bin located in front of the boiler. All drives on the conveying and pulverizing equipment are so arranged that only the machinery which is in use will be operating.

The equipment for firing the fuel into the furnace consists of a blower and two screws, driven by variable speed motors. The screws located at the base of the powdered coal bin carry the coal at a uniform rate to the feeder pipes, where it is thoroughly mixed with air by means of agitator wheels attached to the end of the screw shafts. From the paddle wheel the fuel is carried into the furnace by the air blast supplied from the blower. The furnace is of the Dutch oven type to insure the proper flame travel, thus preventing destruction of the brick work.

Operation

When the boiler was first put into operation, a number of undesirable conditions resulted. An insufficient air supply caused high furnace temperatures resulting in fusion of the ash particles and a consequent accumulation of slag between the tubes, on the furnace walls and in the ash pit. The removal of the molten slag presented considerable difficulty. It was also found that the combustion chamber was of insufficient size. High gas velocities resulting from insufficient air in the chamber tended toward destruction of the refractory surfaces of the furnace.

A new furnace was therefore designed. The combustion chamber was enlarged and a regulated air supply was provided for by means of a number of auxiliary air openings equipped with dampers. The accumulation of slag in the pit was prevented by raising the point of admission of the fuel into the furnace. As a result the flame path has been raised above the base of the pit; hence particles of ash dropping from the flame are not fused. The ash can therefore be drawn from the pit in the form of a powder and small slugs of slag. Analysis has shown that the ash contains practically no carbon.

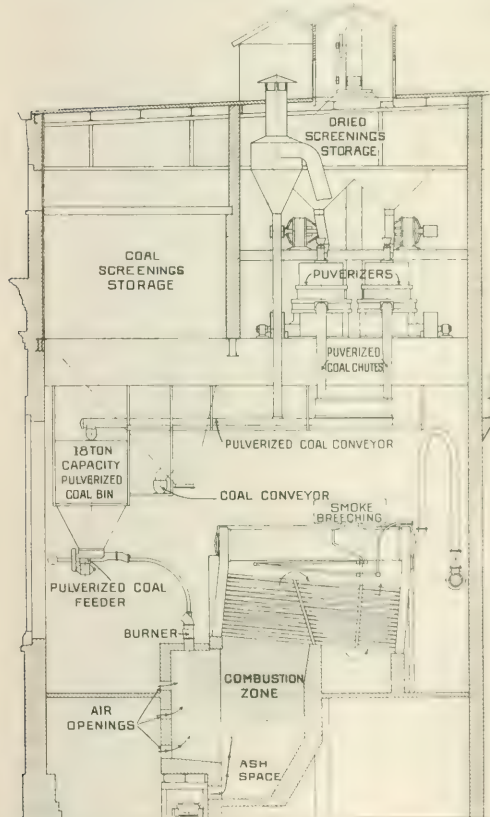


Diagram of the Power Plant Arranged to Burn Pulverized Coal

the fact that it has made clear some of the conditions necessary for the successful operation of boilers utilizing powdered fuel. An abstract of this paper with a brief report of the discussion follows:

During the early part of 1918 the Milwaukee Electric Railway & Light Company, in an effort to determine the advisability of utilizing pulverized fuel in its plants, decided upon

*See *Railway*, Vol. of September 13, 1918, page 517.

Tests

Having established satisfactory furnace operating conditions, a series of efficiency and capacity tests were conducted preliminary to proving the contract guarantees. The brick work was then given a thorough trial by carrying the boiler at a continuous rating of 180 per cent over a period of several days. On August 12 and 13 a final efficiency test, the results of which are published herewith, was run.

The boiler is an Edge Moor, three pass water tube boiler, equipped with a superheater. The coal feeders and burners are of the Lupulco type, manufactured by the Locomotive Pulverized Fuel Company, New York. Because of the nature of the equipment the coal could not be weighed on the firing floor. To arrive at exact coal figures, it was necessary to run all drying and pulverizing equipment free of coal. The fuel in the pulverized storage bin was run to as low a level as possible and a measurement taken to determine the cubical contents of the powdered coal on hand at the start. Coal for the test run was then weighed into the system at the moist coal bunker. At the close of the run the starting conditions, so far as was possible, were again established. The samples for analysis, upon which the test results are based, were taken at the moist coal bunker as the coal was weighed in. Moisture samples were also taken at the pulverizer feeder and the burners. All analyses were made at the laboratories of the Milwaukee Electric Railway & Light Company.

The feed water used during the test was weighed on the standard tank scales at 2,000 lb. capacity each. All temperatures and pressures were taken with instruments which, previous to the test, had been checked against standard instruments. Flues were blown five times during the 24 hours. Flue gas analyses were determined by means of an Orsat apparatus. Throughout the test very uniform conditions were maintained. The speed of the coal feeders and the drafts carried were held constant. The feed pump speed had to vary somewhat from time to time. The variation in the rate of evaporation was, however, due to slight changes in the quality of coal during the test run.

LAST OF TEST—PULVERIZED FUEL BURNING, STATIONARY BOILER
Date, August 12-13, 1918

Make of boiler.....	Edge Moor
Rated horsepower.....	168
Heating surface.....	4,685 sq. ft.
Time fired or test started.....	11:15 a. m., 8/12/18
Time fire out or test finished.....	11:15 a. m., 8/13/18
Duration of test.....	24 hr.
	Maximum Minimum Average
Temperature of boiler room (deg. Fahr.).....	99 85 93.3
Temperature of feed water (deg. Fahr.).....	168 135 157.2
Temperature of steam (deg. Fahr.).....	477 437 448
Barometer inches of mercury.....	29.35 29.20 29.25
Temperature of flue gases (deg. Fahr.).....	515 455 495.3
Average boiler pressure.....	167.0 deg. F.
Atmospheric pressure.....	14.4 lb.
Temperature of steam.....	373.8 deg. F.
Superheat.....	74.9 deg. F.
Safety valve set for.....	175 lb.
Fuel fired per hr.....	1,995.6 lb.
Total fuel.....	47,775 lb.
Total water.....	393,168 lb.
Water apparently evaporated per hr.....	16,392.0 lb.
Water apparently evaporated per lb. of coal.....	8.23 lb.
Factor of evaporation.....	1.1502
Water evaporated from and at 212 deg. F. per lb. of coal.....	9.47 lb.
	Maximum Minimum Average
Carbon dioxide (CO ₂) per cent.....	15.4 12.2 13.8
Oxygen (O ₂) per cent.....	5.6 3.2 4.38
Carbon monoxide (CO).....	None
Fuel used.....	Bituminous screenings
Fuel analyses.....	
Amount of coal represented by each sample.....	No. 1 No. 2 No. 3 Average
Per cent of total.....	41.3 41.1 16.9
Moisture (per cent).....	10.3 11.0 9.7 10.49
Volatile (per cent).....	36.96 36.96 38.77 35.96
Fixed carbon (per cent).....	50.43 49.13 48.29 49.53
Ash (per cent).....	14.36 13.91 12.94 13.93
Sulphur (per cent).....	1.90 2.06 2.12 2.04
B. t. u. as received.....	10,400 10,763 11,263 10,779
B. t. u. dry.....	11,817 12,093 12,473 12,405
Vacuum in burner.....	.000 in.
Vacuum under primary arch.....	.000 in.
Vacuum in combustion chamber.....	.000 in.
Vacuum in first pass.....	.000 in.
Vacuum in second pass.....	.0057 in.
Vacuum in breeching.....	.09 in.
Feeder speed, r. p. m.....	(No. 1), 53.6; (No. 2), 50.7

Coal per rev. of screw.....	318 lb.
Accumulation of slag at discharge.....	None
Flame blowing during test.....	5 times
Operation of furnace.....	Very satisfactory
Discharge.....	None
Condition of samples.....	Light
Heat effect on brick.....	None
Back lash of flame in burner.....	None
Pounds of steam per hr.....	1,639.03
Pounds of steam per lb. of fuel.....	16.845.6
Horsepower.....	546.2
Per cent of rating.....	116.7
Boiler efficiency.....	85.22 per cent
Motor preparation deduction:	
Coal used in dryer.....	1,140 lb.
Motor operation.....	449.3 kw. hr.
Coal equivalent at 3 lb. per kw. hr.....	1,348 lb.
Total deduction.....	2,488 lb.
Resulting net efficiency.....	81 per cent
No deduction made for stand by losses in dryer.....	

Pulverized Coal vs. Mechanical Stokers

1. Under this heading fuel preparation costs will first be considered. In the case of powdered coal this can be classed under three general divisions:

(a) The cost of crushing the coal. This expense is the same for pulverized coal equipment as for stokers.

(b) The cost of drying and pulverizing the coal. Although no cost records are available at present, it is estimated that 32 cents per ton will cover this preparation cost on a 200-ton per 24 hour plant using bituminous coal containing about 12 per cent moisture.

(c) The maintenance costs of the drying and pulverizing plant. This unit has not been determined from actual experience, however, it is estimated that 3 cents per ton will cover the maintenance. In stoker practice the maintenance cost per ton of fuel fired is close to 5 cents per ton.

Summarizing the above facts it is evident that, with fuel at five dollars per ton, the gross efficiency shown by the pulverized fuel boilers will have to exceed that shown by the mechanical stoker fired boilers by six per cent in order to offset coal preparation costs. A six per cent deduction from a gross efficiency of 85.22 per cent results in a net efficiency of 79.22 per cent for the powdered coal burner. In stoker practice the maximum attainable gross efficiency at any of our plants has been 80.54 per cent. Deducting the 2.5 per cent for auxiliary uses, the resulting net efficiency is 78.04 per cent, which is lower by 1.18 per cent than the figure obtained in pulverized fuel practice.

Other advantages resulting from the use of pulverized fuel are summarized herewith:

2. Continuous boiler operation at a uniform rating as well as a constant efficiency is made possible. At no time is there a loss in capacity due to the clinkering of coal on the grates or the cleaning of fires.

3. Heavy overloads can be taken on or dropped off in a very brief time through adjustment of the coal feeders and the furnace drafts.

4. From 97 per cent to 98 per cent of the combustible in the coal is utilized, regardless of the quality of the fuel.

5. The ash handling costs are reduced to a minimum due to the reduced volume.

6. The banking conditions when operating with pulverized fuel are somewhat different from those obtained in stoker practice. By stopping the fuel supply and closing up all dampers and auxiliary air inlets a boiler can be held up to pressure for about 10 hours. The furnace brick work having been heated to incandescence during operation gives off a radiant heat which is absorbed by the boiler rather than being sent out through the stack. The ease of controlling the fuel, feed and drafts, the ability to take on heavy overloads in a brief time, the thorough combustion of the coal and the uniform high efficiency obtainable under normal operation, make pulverized coal a most satisfactory form of fuel for central station uses.

The full story of maintenance expense is only partly known as yet. Indications are that no unusual difficulties will be met. The cost of fuel preparation and labor for operating

a boiler room fully equipped with pulverized coal burning boilers will be a question for the engineer to decide for himself according to his particular conditions. If properly installed with respect to capacity of storage, size of dryer and pulverizers, and on a sufficient number of boilers to properly and fully employ the minimum number of men, the pulverized fuel installation will undoubtedly be more advantageous. The main item that must be borne in mind by engineers is that the ease with which a high efficiency is obtained and the constant nature of that efficiency, as compared to the lack of constancy of efficiency in a stoker fired boiler, unless very closely supervised, is the one factor about the burning of pulverized fuel which justifies its use. There is no doubt that with a well equipped plant burning pulverized fuel, having all the necessary recording and indicating instruments to guide the operators in maintaining the proper conditions, a lower cost of generating steam will be possible than has heretofore been the case in any type of equipment.

Discussion

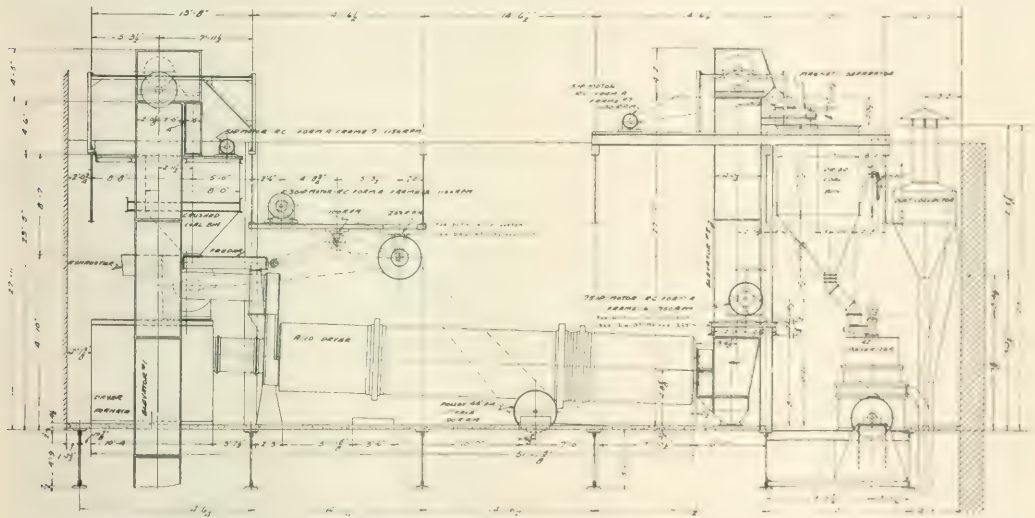
Attention was called to the liberal deduction made for coal used in operating the auxiliaries. In computing the relative economy of boilers fired by stokers and by pulverized

p. m. with 175 lb. pressure on the boiler and in the morning the pressure was 165 lb. and the brick work was still hot enough to ignite the coal when the blower was turned on. These remarkable results are due to the fact that the damper can be closed tightly and there is no heat lost up the stack.

In order to secure the best results the pulverizing and drying equipment should be of sufficient capacity to enable one shift of workers to prepare all the coal required for the entire day so this operation may be kept in the hands of one set of men.

Mr. Anderson stated that in his opinion pulverized coal would be the ideal fuel for central station use as it provided the needed capacity for overloads and made it easy to bank the fires. However, it would require a plant of considerable size to show economy.

The furnace in which the powdered coal was burned was 12 ft. high, 10 ft. wide and 15 ft. from front to back. This gave a volume of slightly less than one cubic foot per pound of coal burned per hour, or approximately four cubic feet per horsepower. The draft in the furnace was very low. Stationary boilers equipped with stokers require a vacuum of about 0.4 in. of water over the fire and nearly 1 in. at the damper. With the pulverized coal when operating with a



Arrangement of the Drying and Pulverizing Machinery

coal, six per cent of the fuel burned under the boilers was allowed for preparation. The proportion actually consumed for this purpose as shown by the log was 4.22 per cent. The drier and pulverizer were operated intermittently and therefore inefficiently and no deductions were made for standby losses. The drier was designed to handle 15 tons an hour and the pulverizer 4 tons an hour, while the actual hourly consumption was only 1 ton. With a plant in full operation this loss should not amount to more than 2.5 or 3 per cent. The coal allowed for operating the stoker and auxiliaries is assumed to be 2.5 per cent, whereas it usually ranges between 3 and 5 per cent. The efficiency of stoker fired boilers varies due to variations in the size of coal, while pulverized coal maintains a constant economy. In this test three different kinds of coal were used. Mr. Anderson stated that in his opinion pulverized coal in regular operation would probably show a saving of 10 per cent over stokers.

As an instance of the results secured by banking fires, it was stated that on one occasion the fuel was shut off at 11

vacuum of 0.2 inch at the damper slag and honeycomb gathered on the flues. The trouble was eliminated when the draft was reduced to approximately 0.1 in. at the breeching. The air was not all fed in through the burner, but a large proportion was drawn in through a number of openings about 10 in. in diameter in the front of the furnace.

A TURN OF THE WHEEL — Disclosures of the presence of Americans engaged in building railroads in Italy, says the Omaha Bee, suggests another of the anomalies of war. In days not so very far gone, we have been accustomed to watch "Tony the Wop" tamp the ties and maul the spikes on American railroads. He has constructed the roadbed and laid the rails, and afterwards has manned the handcar and attended to the manifold duties of the humble section hand. Now he is a soldier, fighting the Kaiser for the preservation of his home land, and the young American is doing for Italy the service that Tony and his kind did for America.

Orders of Regional Directors

SOLICITATION OF RAILROAD EMPLOYEES.—The United States Employment Service, recruiting labor for War Industries, has issued instructions that no railroad employees be solicited.

Dining Car Rates for Trainmen and Pullman Employees.—The Railroad Administration has approved a uniform charge of half rate for trainmen and Pullman employees en route in dining cars, except that a fifty cent rate shall be effective on trains where \$1.25 is charged for dinner. This applies only to those employees who are actually engaged in service on the train to which dining car serving the meal is attached.

Shipments of Grain Via New Orleans.—The Northwestern regional director announces that hereafter United States war department transportation orders will be required on bulk grain destined to New Orleans, La., or via New Orleans for points abroad, when shipped for account of the war department.

Cost of Handling Material and Stores.—The southern regional director has asked the railroads to advise promptly the cost of purchasing, handling and storing material in and distributing it from the company storehouses, including the pay of officers and employees in the purchasing and other stores departments, and their traveling, office, and other expenses for the six months ending June 30, 1918. The roads are also asked to furnish a statement of the issues of material and stores for the six months ending June 30, 1918, by months.

Fire Protection During the Winter.—The Southwestern regional director quotes Bulletin 3 of the manager of the Insurance and Fire Protection Section and requests that a copy of it be placed in the hands of every officer in charge of railroad property and its protection from fire hazards down to and including foremen. The bulletin contains detailed precautions to be observed during the winter to prevent fire losses.

Must Notify Boards if Exempted Men Quit.—Local draft boards must be notified when railroad men given deferred classification on account of their employment, terminate their service.

Stock Car Loading.—The Northwestern regional director orders the loading of stock cars to be confined to live stock, live poultry or perishable freight, until November 15. Any road having a surplus of this equipment will report that fact to the regional director.

Economy in Passenger Train Heating.—The manager of the Fuel Conservation Section has addressed the regional directors as follows, calling attention to the possibilities in affecting economies in passenger train heating:

The time is at hand when passenger trains will be heated. Much coal can be saved by attention to the suggestions given below. Will you kindly ask the federal managers or the chief operating officials of the roads in your territory to bring these suggestions to the attention of all passenger trainmen and to such others as are concerned.

1. The temperature in cars should be maintained at about 65 deg. It should never be more than 70 deg. Thermometers should be installed in all cars. Where thermostats are used have them tested for accuracy.
2. Control the temperature by the steam valve or by the damper where stoves are used—not by opening doors and windows. No man does this in his home; why do it on trains? In live-steam systems regulate the pressure at the locomotive.
3. Do not allow drip valves to run too wide open. Do not allow too much steam to escape from the rear-end hose.
4. Thoroughly insulate all steam heat pipes on cars, tenders and locomotives; and maintain all valves and connections so as to prevent steam leaks. The most serious losses are by radiation and by leakage.
5. Keep stoves, stove dampers and all other heating equipment in good order.
6. In terminal yards keep cars heated only enough to prevent the freezing of water pipes. Do not bring them up to final temperature too long in advance of their use, and do not overheat them for purposes of car cleaning.
7. By notices in cars and stations ask the public to co-operate and help to save fuel which is greatly needed for war purposes.

Execution of Contracts and Agreements During Federal Control.—The regional directors have received the following instructions from the Division of Law, United States Railroad Administration:

1. All contracts or agreements on behalf of the United States Railroad Administration shall be executed in the name of W. G. McAdoo, director general of railroads, in the following form:

"W. G. McAdoo, Director General of Railroads,
Name of Executive Officer, Federal Railroad"

UNIFORMITY OF EXECUTION

2. All contracts or agreements of a general nature should be executed by the federal manager, or in his absence by the federal manager by his assistant.

Federal managers may continue or establish practices whereby certain officers or agents under their jurisdiction are authorized within specific limitations to execute contracts or agreements relating to their particular departments, the execution to be in the name of the director general of railroads, by such authorized officer or agent, in the form prescribed in the first section hereof.

Bills of lading, live stock contracts and other similar local agreements may be executed by agents as heretofore, printing or stamping required by instructions issued July 16, 1918, operating to constitute them contracts with the director general of railroads.

CONTRACTS RELATING JOINTLY TO FEDERAL AND FEDERAL INTERESTS

3. Contracts or agreements of a permanent nature, involving mutual covenants or affecting the interests or property rights of the corporation, which will or may extend beyond federal control, should be executed jointly on behalf of the corporation and the director general of railroads. Where such contract or agreements are principally or solely in the interest of the corporation, they may be executed by the corporation, with an endorsement signifying the acquiescence of the director general of railroads during the period of federal control, in the following form:

"The consent of the director general of railroads is hereby given to the execution and delivery of this instrument.

"W. G. McAdoo, Director General of Railroads,

"By (Name) Federal Manager.

"..... (Name of Railroad) Railroad."

Where the corporation declines to become a party to contracts or agreements involving mutual interests or covenants, such execution may be made in the name of the director general of railroads, limited to the period of federal control. This policy should be followed only where absolutely essential.

4. Where additions, betterments or road extensions or equipment are made or provided by the director general, the contracts in respect thereof shall be made in his name.

LIMITATION TO PERIOD OF FEDERAL CONTROL

5. All contracts executed on behalf of the director general of railroads except those containing covenants specifically providing otherwise, shall contain the following: "This agreement of W. G. McAdoo, director general of railroads, shall not extend beyond the period of federal control of railroads, and unless sooner terminated, shall as to him, terminate at the end of such federal control."

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King George Visits the Front on a Light Railway

Only a Quitter Favors a Negotiated Peace Now.

Functions of Railway Corporate Organizations

Their Officials and Important Work as Illustrated by Pennsylvania System

INQUIRIES HAVE BEEN MADE from time to time as to the nature and importance of the duties performed by the corporate officers of railroads whose operating properties are under government control. These questions may, perhaps, be most clearly answered by taking as a concrete example one of the larger railroad systems. The Pennsylvania lends itself to this purpose well, owing to its size and prominence, and to its long continued policy of publicity in regard to its operations and activities.

The Pennsylvania System is over 70 years old, and full reports of its corporate activities and investments in other companies have been published so long that it is not difficult to ascertain the situation. It consists of over 180 active and inactive railroad and other corporations with over \$2,000,000,000 of outstanding capital issues. This represents the cost of plant and appurtenances of the largest standard railroad freight and passenger carrying system of the United States—one which, in 1917, had a ton mileage which exceeded by over 60 per cent the combined annual ton mileage before the war of all the railroads in Great Britain and France.

The total treasury investments of the system companies in stock and bonds of other railroad companies is somewhat more than \$500,000,000. These 180 corporations embrace what were originally over 600 separate corporations, but which have been reduced by merger, consolidation, sale, or otherwise, to the present number. The stock and bondholders of the corporations included in the Pennsylvania System must be in the neighborhood of 200,000 individuals and corporations, holding about one and a half billions of these securities. Anything that might tend to weaken the system, change its well established financial policy, fail to protect the interests of its stock and bondholders, impair the standard or efficiency of its transportation service, or permanently disrupt its management and organization would be a national calamity.

Duties of Corporate Officers

This gives the first glimpse of the corporate officers' responsibilities. The directors and officers of the corporations included in the system must be re-elected each year and the charter and franchise powers preserved. The records of its directors and stockholders, its charters, franchises, deeds evidencing property ownership, agreements, leases, plans of the railroad and all of its structures, etc., evidencing its contractual relations with the states, municipalities and other corporations and individuals, are essential to the United States Railroad Administration, and these contracts and evidences of ownership and operating rights must be observed during federal control. This means many thousands of documents that must be kept for use by the corporate officers and available to the federal control officers.

The capital stock and bonds of the corporation must be issued and transferred; its mortgages and other indebtedness, and the liens affecting its road and equipment must be looked after, and its investments must be safeguarded. If for no other reason, this must be done because the government is using the borrowing powers, and indeed the financial resources of the railroad corporations, by compelling them to borrow the money and provide the securities to carry on the work of additions to and betterments of the railroad and equipment taken over by the government.

From the civil and mechanical engineering standpoint, the surveys, plans and estimates and authorizations for new road

and equipment work desired by the government must be examined, and with the requisitions for additional land and right of way required therefor, must be either consented to or objected to by the corporation. For the Pennsylvania System this means thousands of separate items of new improvement work, including the acquisition of real estate and equipment, running from \$110,000,000 to \$150,000,000 per annum, which is none too much at present high prices for a system that doubles its traffic about every 12 years and serves 13 states in the most expensive and populous part of the country.

Close Relations with Federal Management

As such new improvement work proceeds, the directors must see that the corporate officers periodically inspect it, and that it is completed for the lowest possible cost and will be adapted to the permanent transportation necessities of the corporation; similarly, that maintenance, renewal and replacement work on 25,000 miles of track and on the stations, shops, bridges and other structures is properly carried out, and that the standards of the Pennsylvania System shall not be allowed to deteriorate, or if they are that claims shall be made against the United States.

Close relations with the federal management must be maintained and the observance of the government contract, when executed, will affect all of the corporate departments and will warrant the closest co-operation between the operating and corporate organizations, and with the Railroad Central Administration at Washington to agree upon the interpretation and carry out the provisions and principles of the contract, which are not detailed but must be settled by administration rulings. Co-operative action must also exist to prevent unnecessary outlays or expenditures, and to insure to the government the greatest help from the experienced officers of the corporation, as well as from the railroad officers formerly with the company and now with the government.

The Pennsylvania System should receive about \$87,000,000 annually of standard compensation under the government contract, in addition to about \$30,000,000 of other income from investments, the corporate officers must arrange for its distribution to the companies interested, and from them to their stock and bondholders, and others, in payment of interest, dividends, taxes, etc. This will vary each quarter because of additional capital expenditures, etc. The payment of these fixed and net lease-hold rentals of railroad and miscellaneous properties and facilities, as well as the payment of interest on bonds and dividends on stocks of all the companies must be looked after, as each set of stockholders will be alert to their own interests. Probably 750,000 checks will be issued per annum.

Elaborate Accounting and Auditing System Required

The accounting and auditing system required for each corporation covering all the above-mentioned transactions, including the costs and results of the improvement, maintenance and use of the company's property and equipment while under government control, and the reports required by federal and state laws must also be continued. Federal control is limited by law to 21 months following the declaration of peace and this means that the company must join in the execution of all important contracts, leases and arrangements, or otherwise all terminate with federal control and confusion would reign.

It is hardly necessary to say that the system corporations must have a very complete and experienced legal organization covering their activities with each other and with their stock and bondholders, and the relations with the government, and

to attend to corporate litigation which is bound to arise.

Summed up, an active Executive, Legal, Financial, Accounting, Secretarial and Real Estate and Engineering organization will be kept extremely busy, and experienced men that know the Pennsylvania System must be in command.

The insurance and inspection of properties not taken over by the government, as well as those carried as "Miscellaneous Rents" and used by the government in connection with the railroad system, such as detached wharves, piers, docks, etc., like those rented from the cities of New York, Baltimore, etc., must continue.

Railroad valuation is still actively proceeding so far as inventories and physical work are concerned, and later on it will be incumbent upon the corporation officers to be prepared to insist upon a fair valuation of their properties.

So long as the federal laws provide for the termination of federal control within a relatively short period after the end of the war experienced traffic men in the service of the corporation must keep acquainted with changes in rates and traffic and in touch with commercial demands, so that when federal control terminates the traffic department will be prepared to resume business on lines that will meet commercial necessities which the war has created.

Management of Properties Not Under Government Control

An examination of the Pennsylvania System as disclosed by the various manuals, reports, etc., shows that it has a number of corporations that have not been taken over by the government, and the corporate organization will continue to be responsible for their operation. The system comprises about 95 railroads, but in addition there are 5 bridge and ferry companies and 44 miscellaneous companies covering water supply, terminals, warehouse and real estate corporations requisite for present use and development of the railroad system, in all about 144 active companies. There are also several other inactive or unimportant companies. The total capitalization of the companies not taken over by the government must be about \$50,000,000. The corporate officers of the Pennsylvania System must also supervise large holdings of property not immediately used for railroad purposes, such as fuel lands and real estate for future railroad and terminal development. In addition, there are various employees' funds for savings, pensions and relief purposes and other guaranties and liabilities that must be managed, running into several millions. The Pennsylvania's corporation directors and officers have a most extensive responsibility; and in meeting it they are without the assistance of the large departments manned by many able officers and experienced employees taken over under federal control to operate the railroad properties.

Officers of Pennsylvania's Corporate Organization

The corporate organization appointed by the board of directors is relatively simple, its chief officers being:

President, Samuel Rea (as chief executive of the entire System east and west of Pittsburgh and Erie).

Vice-Presidents, Geo. D. Dixon, Henry Tatnall (who also acts as treasurer), W. H. Myers, A. J. County, (who also acts as controller).

Assistant to president, W. A. Patton. Assistant to president and engineer in charge of inspection of maintenance of roadbed, structures and equipment, J. G. Rodgers.

Corporate engineer, to inspect plans, estimates of new construction and the work as it progresses, H. C. Booz.

General Real Estate Agent, T. W. Hulme.

General Counsel, F. I. Gowen.

Secretary, Lewis Neilson.

This organization acts not only for the Pennsylvania Railroad Company, but also for all of its corporations east of Pittsburgh and Erie.

For the Western Lines, including the Pennsylvania Company, the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad Company, and the other corporations west of Pittsburgh, the following are the chief corporate officers, assisting President Rea:

Senior vice-president, J. J. Turner.

Vice-President and comptroller, E. B. Taylor.

Vice-President and engineer, Benj. McKeen.

Treasurer, T. H. B. McKnight.

General counsel, C. B. Heisserman.

Secretary, S. H. Church.

This is the outline of the \$2,000,000,000 Pennsylvania System corporate organization and the general scope of its most important work. Similar studies of other corporate organizations like those of the New York Central, Union Pacific, Atlantic Coast Line, Southern Railway, etc., will find a similar necessity for an experienced corporate staff.

The railroads of the country, as a whole, represent a capitalization of approximately \$18,000,000,000. The actual investment in their road and equipment probably exceeds \$20,000,000,000. They have in the neighborhood of 600,000 immediate stockholders, but as many of the stockholders are institutions, such as insurance companies, trust companies, savings funds, charities, and endowment funds of various kinds, it has been estimated that upward of 40,000,000 people have a direct financial interest in the continued solvency and prosperity of the railroads. The safeguarding of such tremendous interests is a responsibility of the most serious and extensive character, demanding men of the best attainments.

Co-operation of Corporate and Federal Officers Essential

The co-operation of the corporate officers is essential to federal railroad operation and the carrying out of railroad improvements and extensions, and their financing. The experience of the directors and corporate organizations can be obtained for the benefit of the country. The same ability which made their corporations successful can perform a great deal of constructive work that should be of assistance in winning the war. These small but important groups of experienced men have a reserve force that should be called into active national work to a larger extent and until their service to the country and their record for both patriotic effort and economical and efficient transportation service is surpassed, they have no reason to feel that any criticism can disparage that record.

Corporate officers realize that the war has deeply affected other persons as well as themselves. They should continue to take a wholesome interest in all railroad and public affairs where their advice and experience will be of the greatest value. The public does not forget that no more prompt or generous response was made to the country when we entered the war than the unanimous action of the representatives of eighteen billion dollars of railroad property, binding themselves to serve the country and sinking their individual and competitive interests so that cantonments might be built and troops and war traffic might have the right of way. That the Railroads' War Board gave an exhibition of great skill in furnishing efficient and economical transportation is evidenced by the fact that the effect of the measures which it put into service are yet felt and the record it made has not so far been surpassed. When the relations of the corporations with the government are settled by contract the corporate officials can perform a most important national service by bringing their best judgment to bear on the form of government relations with the railroads which will be established after the war. The officers of the railways in the service of the government will not be in a position probably to take an active part in the consideration of this important question.

Will Railroads Experience a Shortage of Engineers?

A Discussion of This Subject Based on Data Secured From Railroads and Technical Schools

NO FACT HAS BEEN DEMONSTRATED more conclusively by the war than the necessity for engineering talent, not only in the conduct of actual warfare, but also in the intensive prosecution of industrial and construction activities incident thereto. So great has been the demand both for experienced engineers and for young men possessed of technical training that there are not enough trained and experienced men available for all requirements. Recognizing the seriousness of this situation, the Engineering Council, an advisory body formed by the four leading national associations of engineers and a number of local associations, presented addresses last spring to the secretaries of war and navy and also to the provost marshal general and members of the senate committees on naval and military affairs, calling attention to the necessity for these men in various technical activities and to the unfortunate waste of such talent resulting from the induction of men into the fighting forces without regard to their qualifications for special duties.

This condition received partial recognition by the United States Army at that time insofar as it concerned engineering students through arrangements to assign a portion of them to the Engineer Reserve, subject to special call. The government also arranged for a special branch of the United States Employment Bureau for recruiting engineers for technical positions and since the passage of the second draft law arrangements have been made by the war department for the enrollment of students as enlisted men undergoing special training.

Under such circumstances it is to be expected that the engineering departments of railroads will not only suffer serious losses in personnel, but will also experience a lack of high grade material to fill the many vacancies that are occurring. Because this is a situation of no small concern, particularly from the standpoint of the possible influence on the progress of construction and maintenance work, inquiries were made of the chief engineers of a number of representative railroads in various parts of the country as to the adequacy of their present forces, the difficulty of filling vacancies and the practicability of certain suggestions made to relieve the situation. Inquiries were also addressed to the heads of ten engineering schools with a view to securing data on the supply of technically-trained men in last year's classes.

Work Is Not Being Delayed

Most roads report an adequate force to conduct the work under way, a few indicate shortages of 5 to 10 per cent and one a deficiency of 30 per cent. Another road calls attention to the fact that it has been able to fill the gaps in its construction and maintenance organizations with men released from its valuation department through the completion of the major portion of the work. Still another road has a sufficient force in all branches of the departments except the valuation work. It is entirely possible that these reports are more optimistic than would be the case if work was not being delayed by other causes than shortages of engineers. In other words, the shortage in the technical forces would be experienced to a higher degree if the supply of labor and materials was adequate for the prosecution of the season's program in the fullest measure.

The greatest shortage is in the supply of men in the lower positions, such as rodmen, draftsmen, instrumentmen, inspectors and all grades up to assistant engineer. There is

a well defined lack of applicants for positions of these grades. As the chief engineer of one road explains the situation, "about 75 per cent of the applicants may be placed in the following classes; first, the young graduates who are just out of school and who have little or no practical experience; second, the fellow who has been out of school for a number of years but who has not made a success of his profession."⁷ Other roads complain that very few of the applications they receive from recent graduates are from the high grade men of the classes.

There is a very good reason for this condition. The attendance at the technical schools interrogated was from 17 to 40 per cent lower last year than in previous years, while the number of graduates in June of this year varied from 42 to 98 per cent of the number in former years, the average being about 70 per cent. But these figures alone do not give an adequate idea of the shortage, since a very large proportion of the men graduating were definitely engaged for some form of military or civil employment some time in advance of the date of graduation. Enlistment in the Engineer Reserve accounted for from 10 to over 50 per cent of the graduates, and large numbers left school before the date of commencement. The number looking for positions at the time of graduation was practically nil, one school reporting that the only ones so situated were two or three foreigners who graduated during the year.

The shortage of men for minor positions can also be explained in another way. Men of this grade are available for and attracted by the large number of moderate salary positions that are now available in the many construction and industrial activities which require some technical training but only a limited amount of experience. On the other hand, technical positions of the higher grade, created as a result of the war, as a rule demand special experience or training for a special purpose and not so many of the higher engineering officers of railroads are especially fitted for them, although a great many railway construction men have earned enviable reputations for the success which they have secured in construction work at the cantonments, shipyards and other emergency building projects. The younger men, also, have been subject to the draft law and this has had no little bearing on the situation.

Higher Positions Filled by Promotion

It is true that the railroads have lost a considerable number of men occupying the more important engineering positions but not in like proportion with the vacancies occurring among the lower ranks. The single exception to this is one road in the Middle West which reported the greatest shortage among resident engineers, assistant engineers of maintenance of way and designing engineers. These might be classed as intermediate positions. However, almost without exception the railroads are filling these positions by promotion from the lower ranks and while most of the roads admit that this has involved the use of men with less experience as compared to the custom of previous years, there is no indication that this has resulted in any marked decrease in the efficiency with which the work is conducted. In filling the more numerous positions this has resulted in rather rapid promotion for some of the men. For instance one road reports that men with technical training have been promoted to the position of assistant supervisor after about three months' experience when under normal conditions this

position would not be attained short of about three years' service.

The influence of valuation work on the supply of men in the engineering department is dependent on three conditions, the present stage of the valuation work, the relative amount of construction work under way on the railroad and the relation between the amount of construction now in progress and that in former years. Obviously, valuation work is a much more formidable problem to the road that is compelled to start this work under the present conditions than to the road which is now bringing it to a close. The roads in the latter situation at the present time are most fortunate, since they are in a position to divert men to construction and maintenance activities as they are relieved from the appraisal work. The situation is the most serious on the small road or one of limited resources and which therefore requires but a small engineering staff to handle the amount of construction work done. On such a road the organization of a force to conduct valuation work presents a serious problem and for the same reason the discontinuation of this work would greatly relieve the situation. A special situation is presented by two western roads possessed with considerable staffs of efficient construction men, who had been engaged until recently in the building of various extensions and improvements. The completion of this work in one case and the necessity for a discontinuation of it in the other have made a large number of experienced men available for valuation work. In fact until recently this proved to be the only opportunity for retaining the men in service.

Considering the extent to which women have been employed in work entirely strange to them a year or two ago, it is rather remarkable that so few women are employed in other than purely clerical positions in the engineering departments of railroads. They have been utilized to a limited extent in drafting rooms as tracers and detailers with a few employed as computers. No specific data were obtained as to just why the number is so small. With prospects of increased limitation on man power, it will be imperative to employ men only in positions where they are positively essential. Positions in the drafting rooms not requiring an intimate knowledge of field methods or mathematical training, would seem to offer a favorable field for the employment of women.

The Situation in the Future

The most serious aspect of the situation as to the personnel of engineering forces lies in the fact that the most pronounced scarcity is in the lower ranks, i. e., the source from which the higher positions must be filled. Since experience is showing the necessity for employing men of limited training in minor positions a further scarcity of such men will make the situation increasingly severe. Lowering the limit of the draft age has placed under military control practically all of the young men available for the lowest engineering positions, while the technical schools have been taken over for the training of men for war service and will leave available for civilian duty only men who are physically unfit for even limited service positions and the few exempted on the grounds of dependency. The situation is one that concerns not alone the railroads but all undertakings involving the employment of technical men.

THE AMERICAN SUPPLY SERVICE reached a new high mark in September, overtopping its August record by 10 per cent, according to associated press despatches. American ports handled a daily average of 25,808 tons of freight. There was also a gratifying increase in rolling stock, and there are now more than 1,000 American locomotives in operation in France, while the number of freight cars is more than 10,000. This rolling stock is all used in the great system of transporting men and supplies to the front.

Pennsylvania Lines Show Additional Improvement in L. C. L. Loading

THE EXCELLENT RESULTS achieved by the Pennsylvania Lines West in its campaign to promote the intensive utilization of car space were outlined in the *Railway Age* of January 25. Records for the loading of l. c. l freight this year are even better than those attained in 1917, which were discussed in the article referred to. In July, 1918, the Pennsylvania Lines west of Pittsburgh handled 23,856 cars of l. c. l freight with an average loading of 19,402 lb. per car for all Lines West, including the St. Louis system, and 19,920 lb. exclusive of it. In July, 1917, the Lines West exclusive of the St. Louis system, for which no records were kept, had an average loading of 17,833 lb. per car; consequently the average loading for July, 1918, for the same part of the lines, was 11.68 per cent greater than that for the same month last year.

Both 1917 and 1918 were years of heavy loading as the result of the car conservation campaign carried on by the superintendent of freight transportation and the superintendent of freight station service. A better conception of the results received is secured by comparing the 1918 figures with those for July, 1912, when the loading of l. c. l freight averaged less than 11,000 lb. per car. If the same standard of performance had obtained in July, 1918, which obtained in the same month of 1912, it would have required 43,803 cars instead of 23,856 cars to have handled the 475,224,895 lb. of l. c. l freight which were transported by the Pennsylvania Lines west of Pittsburgh last month.

As indicated in the article in the *Railway Age* of January 25, monthly l. c. l. loading records are kept for each division and each station forwarding 15 or more cars per month. These bulletins enable the division superintendents and freight agents to ascertain their progress.

The quantity of l. c. l. freight handled in July, 1918, was smaller than in the same month of last year or six years ago. This leads one to believe that the intensive loading campaign has induced shippers to bring their business up to carload quantities, which of course benefits transportation conditions, provided the shipper loads above the minimum. As the congestion of freighthouses is one of the worst impediments to efficient railway operation, the conservation of car space and the reduction in l. c. l. business is of considerable importance during a period of swollen freight traffic. The following statistics of l. c. l. loading on the Pennsylvania Lines west of Pittsburgh, were prepared by the superintendent of freight station service at Pittsburgh, Pa., and show a marked improvement in the records for this year over 1917.

PENNSYLVANIA LINES WEST OF PITTSBURGH

Total Number of Cars Used in Forwarding L.C.L. Freight in July, 1918, and in July, 1917

	July, 1918	July, 1917	Increase, pounds	Decrease, per cent
Pennsylvania Lines	23,856	33,471	9,615	28.72
Northwest System	10,900	15,350	5,148	33.53
Central System	2,158	2,901	743	25.61
Southwest System	11,496	15,220	3,724	24.46
St. Louis System	3,052	"	"	"

Total Weight in Pounds of L.C.L. Freight Forwarded in July, 1918, and in July, 1917

	July, 1918	July, 1917	Increase, pounds	Decrease, per cent
Pennsylvania Lines	475,224,895	596,094,250	121,769,355	20.39
Northwest System	201,460,717	279,106,449	77,645,732	27.81
Central System	39,766,568	44,441,733	5,231,700	11.61
Southwest System	234,047,575	272,945,568	38,991,893	14.26
St. Louis System	46,896,530	"	"	"

Average Number of Pounds Per Car of L.C.L. Freight Forwarded in July, 1918, and in July, 1917

	July, 1918	July, 1917	Increase, pounds	Increase, per cent
Pennsylvania Lines	19,920	17,826	2,084	11.68
Northwest System	17,427	18,182	1,565	8.60
Central System	18,406	15,491	2,915	18.81
Southwest System	20,788	17,233	2,425	13.52
St. Louis System	15,350	"	"	"

*St. Louis System not included in comparisons as no figures available for July, 1917.

The Bonner Rail Wagon System

THE BONNER RAIL WAGON SYSTEM which is now being worked out by a syndicate of public utility and equipment manufacturing interests, with Colonel Joseph C. Bonner, the inventor, as syndicate manager, is intended primarily as a means of solving the freight carrying problem on electric railroads, but its advocates believe that it may also prove of great value to the steam railroads, particularly from the point of view of less than carload traffic.

The system proposes a method whereby merchandise may be carried from its source to its destination without rehandling. The most important factor is a so-called "rail-wagon," which is a van or container either horse drawn or motor driven, into which the merchandise is placed, the van or container then being hauled to a railway terminal or receiving point where it is loaded, as it stands, upon a specially designed chassis or carrier for transportation by steam or electric power. This carrier vehicle or chassis may be a self-contained gasoline or electric motor car, or a trailer adapted to either electric or steam haulage. The van or container will be nominally of five tons capacity and will have no abnormal proportions of weight over vehicles now generally in use on the highways. It is to be constructed of steel and is to

order as to destination, so that the carrier cars may be run beneath them and the containers then lifted clear of the street or track level by the application of air (the bottom of the container body resting on the lift of the carrier car). The train can thus in a short space of time be made ready to move upon its journey.

As to delivery at destination, the containers would be dropped off the carrier car either in the terminal yards provided or at the local freight station, being lowered by the air equipment until the wheels rest on the street level, the carrier car then being drawn from under and the container left astride the tracks whence it could be removed by horse or motor power.

The rail wagon, as above noted, is to be so constructed that when it is disengaged from the chassis it may be drawn over the road by horses or as a trailer behind a motor tractor. But with the co-operation of a motor truck builder, plans have also been drawn up for an additional motor vehicle to be known as an "auto hoss." This vehicle is a modified motor truck of five to six tons capacity adapted to the Bonner system by attaching to the frame two side channels placed like running boards, which serve as tracks for the Bonner rail wagon. The rear axle has been shortened so that the rail wagon can be loaded onto the auto hoss and



Working Model of the Bonner Rail Wagon System as Worked Out for Electric Railway Operation

be mounted on standard wheels, the body itself to be, say, 16 ft. by 7 ft. by 7 ft. in size. From one to four of the containers may be loaded on the chassis noted above.

The containers are constructed in a way that eliminates the usual cross axle of a wagon, wheels being about 40 in. in diameter, thus providing for a clearance space beneath the bodies which permits of these containers being moved astride the carrier car. Utilizing the ordinary air brake equipment for operating jacks on the chassis, the containers are raised about one foot and are then ready for transportation. The containers are patterned so that the several wagon mounts on one single carrier car are vestibuled, meeting end to end, thus presenting an unbroken car body alinement. The width over all of the carrier car is set at 7 ft. In order to insure the prompt centering of the container body on the carrier car, alinement rails may be placed alongside the track rails, thus forming a groove into which the wheels of the container will be guided before the actual mounting of these containers on the carrier cars is undertaken.

It is evident that the loading of the containers either for single car or train movement can be accomplished with despatch, it being apparently entirely practicable to line up a large number of containers astride the railway tracks, perhaps in a terminal provided for this purpose, arranged in proper

carried to its destination. Provision has also been made whereby the Bonner wagon may be drawn into place or unloaded by the engine of the truck by means of a chain connected with the yoke of the rail wagon.

The Bonner rail wagon system is meant primarily to eliminate rehandling of freight between origin and destination, whereby its use is expected to save these rehandling costs and the loss and damage claims resulting from such rehandling. But it has the further important advantage, its advocates claim, in that it supplies small units of from one to eight tons capacity, three or four of these units being capable of being loaded without rehandling or intermixture in any way on one rail chassis instead of being mixed up in one large freight car. This will supply, in short, the advantages of small shipments with much heavier carloading than is possible today in l.c.l. freight.

The idea has received the careful and detailed consideration of a number of engineers connected with street railways, car building companies and steam railroads, and detailed reports have been made in favor of its adoption in a trial form at least. One of the reports made by a committee of five street railway engineers has proposed its adoption on the Public Service Railway of New Jersey and the Hudson & Manhattan out of New York.

General News Department

The First Nine Months of Government Operation of the Railways was the subject of a paper presented before the Western Society of Engineers, Chicago, on Monday evening, October 7, by E. T. Howson, western editor of the *Railway Age*.

The tax on parlor and sleeping car berth and seat tickets will be eight per cent instead of ten per cent if Congress adopts the change in the revenue bill to this effect, which has been passed by the House and recommended by the finance committee of the Senate. Director General McAdoo requested this change for the purpose of making the tax uniform on passage tickets and Pullman tickets.

Earnings of Express Companies

The monthly bulletin issued by the Interstate Commerce Commission of the operating revenues and expenses of express companies for the four months ending with April, 1917, shows a deficit for the eight companies covered by the report of \$4,442,815, as compared with an operating income in the corresponding period of 1917 of \$1,060,354. Charges for transportation were \$81,572,920, an increase of \$13,000,000 for the four months ending with April, 1917, while operating expenses of \$45,861,562 were over \$11,000,000 greater. The larger proportion of revenues paid for railroad privileges and a decrease in the revenue from operations other than transportation account principally for the deficit. For the month of April the deficit was \$1,046,244.

Railroads File Claims for Special Compensation

Eighty railroads have filed with the Railroad Administration claims for special compensation during Federal control on account of special considerations which affected their operating income during the three test years before the war, and for which they ask compensation in addition to the standard return. These special considerations are such items as additional mileage, etc., or expenditures for improvements or equipment of which the benefit was not reflected in the three-year average in operating income.

Two conferences have been held by representatives of these roads with the representatives of the Railroad Administration, who are expected to announce this week the basis on which they will consider claims for special consideration.

Revision of M. C. B. Interchange Rules for 1918-19

Supplement A to M. C. B. Circular No. 16, referring to the revised interchange rules, has just been issued stating that all prices shown in Rules 98, 101, 107, 111 and 112 are effective October 1, 1918. Revised Rules 104, 106 and 108 are also effective October 1, 1918. However, it should be understood that old Rules 58 and 95 governing responsibility are still effective. That portion of Rule 104 which allows material charge for missing brake beams, and that portion of Rule 111 which allows charge for missing air-brake parts is not effective until November 1, 1918.

Circular No. 45, which provides that no bill shall be made for certain items of minor repairs to railroad owned cars, has been modified to apply only to cars belonging to roads under United States Federal control; this provision being also effective October 1, 1918, and known as Article III.

20 Killed in Accident at Bedford, Ohio

At the McMyler Interstate Company's plant, at Bedford, Ohio, on the morning of October third, 48 workmen, who had just alighted from a southbound passenger train, and while standing or walking on the northbound track, were struck by an express train, and 20 of the men were killed; 28 were injured, three of

them probably fatally. There was a dense fog at the time.

Bedford is on the Pennsylvania Lines, ten miles south of Cleveland. The place at which these men got off the train appears to be a temporary passenger station established to accommodate the McMyler works.

According to an officer of the road, quoted in a Cleveland paper, it appears that some or all of these workmen got off the train before it had come to a stop, and before there had been time for a flagman to get off and run forward to signal the northbound train.

Bridge and Building Convention

Further details relative to the program for the convention of the American Railway Bridge and Building Association, which will be held at the Hotel Sherman, Chicago, on October 15-17, inclusive, have been completed since the publication of the program in our last issue. C. A. Morse, assistant director, division of operation, engineering and maintenance, of the United States Railroad Administration, will speak before the convention on Tuesday afternoon on "Essential Work." Moving pictures and descriptions of recent bridge erection work which will be presented on Tuesday evening will include the erection of the Quebec bridge, described by George F. Porter, engineer of construction of the St. Lawrence Bridge Company, who was in charge of the preparation of the erection details for this structure. Moving pictures will also be shown of the erection of viaducts on the Illinois Central track elevation work through the Hyde Park section of Chicago.

Railway Fire Protection Association

The fifth annual meeting of the Railway Fire Protection Association will be held at the Congress hotel, Chicago, on October 15, 16 and 17. Charles N. Rambo, manager of the Insurance and Fire Protection section of the United States Railroad Administration, is scheduled to deliver an address on the first day on "The Co-operation Expected of Fire Protection Associations." L. F. Shedd, superintendent of safety and fire protection on the Rock Island Lines will speak on "The Advantage of Having an Insurance and Fire Protection Section." In addition the following committee reports will be presented: Statistics—S. B. Berry, chairman; Fire Protection and Passenger Equipment—George L. Ball, chairman; Hand Book on Railroad Fire Prevention and Protection—Robert Scott, vice-chairman.

At the morning session of October 16, Robert Scott will read a paper on "Maintaining Interest in Fire Protection Work," and E. Wanamaker, electrical engineer of the Rock Island Lines, will discuss "The Handling of Acetylene Welding Outfits in Shops." R. H. Newbern, superintendent of insurance and safety, Pennsylvania Railroad, will also read a paper. In addition the following committee reports will be presented: Committee on Guards and the Government's View in Relation Thereto, Guarding and Watchman Problems in Terminals and Yards—H. A. Bruck, superintendent of insurance, Western Maryland, vice-chairman; Committee on the Locomotive Spark and Ash Pan Hazard—E. C. Sasser, chairman; Committee on Fire Protection and Protection in Terminal Classification and Storage Yards—F. A. Green, Pennsylvania Railroad, chairman.

In the afternoon of October 16, C. N. Beistle, chemist of the Bureau of Explosives, will read a paper on "Welding, Cutting and Sawing Processes—Oxy-acetylene Equipment." W. F. Hickey of the New York, New Haven & Hartford, will read the report of the Committee on Wharves and Piers, of which he is chairman. The remainder of the afternoon session and the session of October 17, will be devoted to open discussion and the election of officers.

Traffic News

During the month of September, 1918, the Pennsylvania Railroad moved an average of 6,835 cars a day over its main line between Pittsburgh and Harrisburg, as compared with an average of 5,049 in September, 1917, an increase of 886 cars, or 11.5 per cent.

A total of 112,600 more cars of grain were loaded by the railroads during the period from July 1 to September 28, 1918, than during the corresponding period of 1917, according to a statement issued by the Railroad Administration. The total for 1918 was 399,770, as compared with 287,170 in the corresponding period of 1917.

Roads in the Central Western region report that the handling of grain under the embargo and permit system is working satisfactorily and not so many complaints have been received regarding it as were expected. The live stock movement in the region has been very heavy, taxing to the limit the facilities at Kansas City and Omaha. The sailing-day plan has been established at additional cities, effecting a further saving of 270 cars a week. Reports for the week ending October 1, show a saving of 44,721 car miles through rerouting. The Denver (Colo.) consolidated ticket office was opened on September 23.

In connection with the restrictions upon the shipment of lumber to points north of the Ohio and Potomac and east of the Mississippi rivers, effective on September 16, the Railroad Administration has established extension bureaus of the Car Service Section for the issuance of permits at Boston, Cincinnati and Chicago. F. E. Dewey, Boston, will issue permits for lumber destined to points in New England; H. B. Sargent, Cincinnati, will take care of destinations within the state of Ohio, and W. L. Barnes, assistant manager, Car Service Section, Chicago, will issue permits for movements to points in Wisconsin, Michigan, Illinois and Indiana.

Baltimore & Ohio and Pere Marquette passenger trains now enter Chicago over the Pennsylvania from Pine Junction, Ind. This change saves seven miles in distance. The roads operate 18 trains in and out of Chicago, so that approximately 41,000 train miles will be saved yearly. Another important feature of the change is that the roads will use the Union station at Englewood and the Pennsylvania station at South Chicago, the present Baltimore & Ohio-Pere Marquette stations at those points being abandoned. These trains will continue to run in and out of the Grand Central station, Chicago (from 16th Street), but on account of the reduction in mileage the schedules are shortened about 20 minutes.

On Monday, October 7, the number of cars of live stock and perishable freight moved east from Chicago was 1,318, or 59 more cars than ever before on one day. These cars were loaded with:

	Cars
Live stock	142
Dressed beef	142
Provisions and other perishables	684
Total	1,318

The previous high record was made on Saturday, the 5th of October, when 1,259 cars of such foodstuffs were moved east. The average for the past seven days is greatly in excess of that for any similar period since January 1, being 1,143 cars daily.

Coal Production

Bituminous coal production during the week ended September 28 is estimated at 13,043,000 net tons, representing the third successive week of increased production and an increase over the corresponding week of 1917 of 1,863,000 net tons, or 16.7 per cent, according to the weekly bulletin issued by the United States Geological Survey. During the past six months, or the first half of the coal year, production of bituminous coal is estimated at 311,216,000 net tons, which

is 33,418,000 net tons, or 12 per cent in excess of the production during the corresponding period of 1917, but falls short of the requirements for the calendar year to date by 3.4 per cent.

The percentage of full time output lost on account of car shortage during the week ending September 21 is reported as 5.9 per cent.

The production of anthracite during the week ended September 28 is estimated at 2,071,000 net tons, an increase over the corresponding week of last year of 3.2 per cent. The total production since April 1 is estimated at 51,651,000 net tons, an increase over 1917 of 2.1 per cent.

The report by the Car Service Section of the Railroad Administration for the week ending September 21 shows a total loading of all kinds of coal amounting to 260,840 cars, as compared with 223,233 during the corresponding week of 1917. With figures for the week ended September 28 estimated, the increase in 1918 up to September 28 over the corresponding period of 1917 is 641,761 cars.

New England's Minimum Fuel

Requirements Met in Advance

Continuous operation of the war industries of New England during the approaching winter is assured, says a statement issued by the Fuel Administration, unless an unforeseen catastrophe to the mines, the railroads, or the coastwise shipping, during October and November, interrupts production of coal and its transportation. Unremitting vigilance in the conservation of coal, however, will continue to be absolutely necessary. If this be observed not even a repetition of last winter's weather will prevent the furnaces of New England from operating at full blast.

The subordination by the Fuel Administration of the requirements of other industrial centers to those of New England is not an indication that the industries of New England are of greater importance; transportation difficulties alone have controlled the Administration's policy. The railroad facilities of New England are limited and this fact necessitates the transportation by water of 66 per cent of the bituminous coal consumed in that territory. Approximately 75 per cent of the war industries of the United States are located east of the Allegheny Mountains and north of the Potomac river, and a large proportion of that percentage is situated in New England. The requirements of other localities, in the order of their several transportation difficulties, will now be attended to.

Special Meals for Traveling Officers and Enlisted Men

The Railroad Administration and the war and navy departments have recently agreed upon an arrangement for furnishing meals in dining cars and eating stations to officers and enlisted men which is proving very popular with men in the service. The war and navy departments have raised the meal allowance to 75 cents. In some instances the former allowance was 50 cents and in others 60 cents. Orders have been issued that a substantial and appetizing table d'hôte meal be furnished for this sum. The weight of each article on the menu will equal or exceed the army and navy ratings. The arrangement will apply to officers and men traveling at their own expense as well as to those who are traveling on government orders, and includes inducted men on their way to enter the service.

Typical menus for breakfast, luncheon and dinner are shown below:

BREAKFAST	LUNCHEON
Fruit or Cereal	Soup
Ham or Bacon	Relish
Eggs	Roast, Stew or Boiled Meat
Potatoes	(One Other)
Bread and Butter	Bread and Butter
Tea, Coffee or Milk	Tea, Coffee or Milk
	Roast, Stew or Boiled Meat
	(One Other)
	Bread and Butter
	Tea, Coffee or Milk

Commission and Court News

Equipment and Supplies

Interstate Commerce Commission

The Interstate Commerce Commission has withdrawn its request of March 17, 1916, that copies of embargo notices and rules and regulations be filed with the commission.

Express Rate Hearing

The Interstate Commerce Commission held a hearing at Washington on October 8 for the purpose of hearing testimony on which to base an answer to the questions put to the commission by Director General McAdoo as to whether the method of advancing express rates proposed by the express company is a proper one, and adequate for the purpose of raising the estimated \$10,000,000 to \$12,000,000 additional revenue needed to cover increased wages and other expenses of the express company. Because approximately half of the gross revenues from express traffic go to the railroads the express company had prepared a plan designed to raise approximately \$24,000,000 of increased gross earnings. Practically no representatives of the shippers took part in the hearing, although there were several state commissioners, particularly from the west. J. W. Newlean, vice-president, in charge of accounting, of the American Railway Express Company, was the first witness and explained that the express company had proposed what it deemed the simplest method of raising the required additional revenue, taking into consideration the proper distribution of the burden. The largest increase under this method falls on the traffic in the first zone, for the reason that the operating costs are much higher in that zone than in the others, particularly since the United States entered the war, on account of the congestion in the east. In reply to questions by Commissioner Hall, he said that other methods which have been used were not susceptible of an exact estimate as to the effect and that the percentage method was not used because it was felt that a larger share of the increase should be borne by the short haul traffic, in the case of which the terminal expense is a large factor.

Personnel of Commissions

Alexander Wylie, assistant chief examiner of accounts of the Interstate Commerce Commission, has been appointed chief of the bureau of carriers' accounts; office at Washington.

Court News

Postponement of the hearing of all pending anti-trust suits was asked of the Supreme Court on Monday in motions filed by Attorney General Gregory. The suits on which postponement was asked include those against the anthracite coal carriers and also the Southern Pacific case.

Track Scales

The Missouri Supreme Court holds that the State Public Service Commission Law of 1913 gives the commission power to order the erection and maintenance of track scales when in its judgment the facts warrant it, and is in conflict with and has impliedly repealed Rev. St., 1909, § 3157, providing that railroads shall maintain track scales at all stations shipping 50,000 bushels of grain the previous year. On the appeal of the Missouri Pacific it is held that the terms of the older act no longer fix the measure of public necessity; and although some evidence shows the quantity of grain therein named, the commission is not bound to find a public necessity where other evidence discloses a different situation.—State ex rel. Missouri Pacific (Mo.), 204 S. W., 395. Decided June 13, 1918.

Locomotive builders in the month of September turned out 480 locomotives, according to reports to the Railroad Administration. The locomotives delivered to the railroads under government control, amounted to 251, of which 151 were delivered by the American Locomotive Company, 78 by the Baldwin Locomotive Works and 22 by the Lima Locomotive Works. This brings the total number of locomotives delivered to the railroads under government control for the year to date to 1,951. In addition to those already mentioned, during September the builders shipped 16 miscellaneous locomotives and completed 213 foreign locomotives. Of the United States Railroad Administration's locomotives, 174 have now been delivered.

Freight Cars

FALLANSBEE BROS., Pittsburgh, Pa., are inquiring for two 'drop bottom cars.

THE MERRILL STEVENS SHIP BUILDING CORPORATION, Jacksonville, Fla., is inquiring for one 80,000 lb. capacity flat car.

THE UNITED STATES RAILROAD ADMINISTRATION is preparing to place orders for 886 baggage cars, including both the 60-ft. and 70-ft. types, the designs for which were described in the *Railway Age* of September 27, page 585. The administration has asked for the allotment of the steel required for these cars.

THE WAR INDUSTRIES BOARD is expected to place orders shortly for approximately 5,000 four-wheel gondola cars for the Italian government, on which bids were asked of the builders to be submitted by October 10. Representatives of the principal car building companies were in Washington in connection with the matter last week. It was originally proposed to order as many as 10,000.

Passenger Cars

THE GOODYEAR TIRE & RUBBER COMPANY, Akron, Ohio, is inquiring for one combination passenger and baggage car.

Miscellaneous

CHESAPEAKE & OHIO.—This road has awarded a contract to the Roberts & Schaefer Company, of Chicago, for the building of a 500-ton capacity reinforced concrete, automatic, electric locomotive coaling plant, using the Duplex shallow pit feeder, for installation at Concord, Ky. A similar plant for this road is now being constructed by the Roberts & Schaefer Company, at Handley, W. Va.

PENNSYLVANIA RAILROAD, WESTERN LINES.—This road has awarded a contract to the Roberts & Schaefer Company, Chicago, for the removal of the present elevating equipment at its coaling plant, at Conway, Pa., and the installation of its standard automatic-electric duplicate counter balanced elevating buckets, with R. and S. tram car distributing equipment on the existing bins. The Pennsylvania has also awarded two other contracts to the Roberts & Schaefer Company, one for a 1,000-ton reinforced concrete automatic-electric locomotive coaling plant for four tracks, to be installed at Dennison avenue, Columbus, Ohio, and the other for a 500-ton four-pocket coaling plant of reinforced concrete construction, with automatic-electric elevating equipment for installation at Richmond, Ind.

MEXICAN RAILWAY CONSTRUCTION.—It has been decided to construct branches from Mascota, Mexico, and Autlan, to connect with the line of railway now being built between Guadaluajara and Chamela, a port on the Pacific ocean. These branches will open up rich mineral and agricultural regions.—*The Engineer*, London.

Supply Trade News

S. W. Baker has been appointed manager of the extra work department of the Lima Locomotive Works, Inc., and **M. K. Tate** has been appointed manager of the service department.

The Pacific Car & Foundry Company is having plans prepared for a one-story plate shop, 100 ft. by 340 ft., to be constructed in East Fifty-fifth street, Portland, Ore. The building will cost about \$30,000.

Garland P. Robinson, who has been assistant chief inspector of locomotive boilers for the Interstate Commerce Commission since March, 1911, has resigned that office, effective on October 15, to take a place with the American Locomotive Company.

The T. H. Symington Company, Rochester, N. Y., has closed its Chicago and Baltimore offices for the period of the war. All inquiries and correspondence from the Chicago territory will be handled by the Rochester office and from the Baltimore territory by the New York office.

Frank H. Brown has been appointed sales manager of the Sherritt & Stoeer Company, Inc., Philadelphia, Pa., and assumed his new duties October 7. Mr. Brown was one of the founders of the Brown & Zortman Machinery Company, Pittsburgh, Pa., and has been associated more recently with the Davis Machine Tool Company of Rochester, N. Y.

A. G. Lapiere, until recently assistant in the Northwestern regional director's office, has been appointed traffic manager of the Chicago Pneumatic Tool Company, with headquarters at Chicago, succeeding **E. H. Greene**, resigned. **F. O. Southbrook**, efficiency man with Joseph T. Ryerson & Son Co., Chicago, has been appointed manager of the order and production department of the same company, with headquarters at Chicago.

W. W. Coleman, president of the Bucyrus Company, South Milwaukee, Wis., and **T. H. Symington**, president of the T. H. Symington Company, Rochester, N. Y., have both been appointed special representatives to the chief of ordnance, with office at Washington. Mr. Coleman will be in charge of all matters relative to the production of cannon, carriages, their equipment and appurtenances and accessories. Mr. Symington will have charge of artillery ammunition, metal components.

The W. J. Crouch Company, Inc., and **Rownson, Drew & Clydesdale, Inc.**, announce the amalgamation of their respective organizations under the name of **Rownson, Drew & Clydesdale, Inc.**, with general offices at 68 William street, New York. **P. G. Donald**, president of **Rownson, Drew & Clydesdale, Inc.**, will continue in this office, while **I. Smulyan**, president of the **W. J. Crouch Company, Inc.**, will act as managing director of the new firm. **Victor E. Karminski** and **A. E. Hearne**, both treasurer and general manager of the **W. J. Crouch Company, Inc.**, and **Rownson, Drew & Clydesdale, Inc.**, respectively, will in future act as joint general managers of the new concern, Mr. Karminski conducting the Crouch steel division, and Mr. Hearne directing all other trading operations. Elaborate plans have been made for the further development and expansion of the **Rownson, Drew & Clydesdale** engineering division in order to cope with the demand for the gravity runways, portable elevator conveyors and other labor saving devices. These plans will be carried out under the personal direction of **John J. Smart**, secretary and assistant general manager of the **W. J. Crouch Company, Inc.** **M. Oppenshaw**, who has hitherto had charge of the advertising for the **W. J. Crouch Company, Inc.**, will be advertising manager for the new company. **H. Lad Landau**, assistant secretary and general manager of sales of the **W. J. Crouch Company**, will continue with the new concern. So will other leading officers of the company, including **John H. Allen**, purchasing agent, who will in the future be assisted by **M. Greenberg**, of **Rownson, Drew & Clydesdale, Inc.**; **Albert Smulyan**, comptroller; **O. W. Andrews**, traffic manager and head of the licensing bureau, and all others occupying positions of trust with the old companies.

Railway Construction

BALTIMORE & OHIO.—This road is making improvements to its roundhouse facilities at Lorain, Ohio, which will cost about \$156,000.

LONG ISLAND.—This road has awarded a contract to the Austin Company, Cleveland, for the construction of a building, 60 ft. by 225 ft., at Jamaica, N. Y., to cost approximately \$40,000 and to be erected in 45 working days.

MICHIGAN CENTRAL.—This road has awarded a contract to G. F. Bristol, Detroit, Mich., for the erection of an overhead bridge at Miles street, Ypsilanti, Mich., to carry a highway over the tracks of the railway. The viaduct will replace an old structure which has been in existence since the railroad was built through the city. The bridge will be built practically on the site of the old one, except that it will be skewed over the tracks so as to carry the highway practically in a straight line. The bridge will be of steel girders and reinforced concrete construction and will cost approximately \$40,000.

The Strauss Bascul Bridge Company is preparing plans for the construction of a double-track lift bridge to carry the Michigan Central and the New York Central tracks over the River Rouge, south of Detroit, Mich., to replace an old structure which is too light to carry the increased loads. The river is to be widened and deepened under the Rivers and Harbors Act, and consequently the new bridge will have a clear opening of 125 ft. The structure will be of steel and the estimated cost \$541,000, which will be borne equally by the two railroads. Bids have not yet been asked for.

The Michigan Central has commenced the construction of a classification yard, a roundhouse, machine shop, transfer platform, car repair yard, etc., and a connection between the main line and the Air Line division at Niles, Mich., to cost approximately \$1,358,000. The appropriation for this year includes the completion of a 30-stall roundhouse, a machine shop, a coaling station and other facilities needed at the engine terminal and for the building of about 47 miles of track. About 500,000 yd. of grading is involved in the work now under way. **Joseph E. Nelson & Son**, Chicago, have the contract to erect the roundhouse and other buildings; the **Link-Belt Company**, Chicago, has a contract for the construction of a 300-ton coaling station, and the **Dominion Construction Company**, Toronto, Ont., has been given a contract for the grading, track laying and ballasting.

MISSOURI PACIFIC.—This road will soon commence the construction of an engine house at Council Grove, Kan., to cost about \$6,000. The building will have three stalls, 110 ft. long, and will be constructed by railroad forces. The rear walls of the structure will be of brick and the balance of the building will be of heavy frame construction.

The road is now constructing a store and oil house, 40 ft. by 75 ft., at Osawatimie, Kan., which will cost approximately \$15,000. It will be a one-story brick structure with concrete basement and timber roof. The work is being done by **J. C. Duncan**, St. Louis, Mo.

A contract has also been let for the construction of a dry lumber shed at Sedalia, Mo., which will cost approximately \$10,000.

PACIFIC GREAT EASTERN.—This company has awarded a contract to the Northern Construction Company, Ltd., Vancouver, B. C., for an extension from Mile 183, north of Squamish, B. C., to Mile 225 north of that point, or a distance of 42 miles. In addition to grading, track-laying, ballasting and the installation of telegraph and telephone lines, the work involves the construction of station buildings, section houses, water tanks and four timber trestles, two of which will be 300 ft. in length, one 600 ft. and one 900 ft. long. Track has been laid for seven miles and one bridge has been constructed. **J. W. Kelly**, Clinton, B. C., has the contract for the construction of the bridges which involve the use of 684,000 ft. b. m. of lumber.

Railway Officers

Railroad Administration

General

W. C. DeLanoy, heretofore director of the bureau of war risk insurance of the Treasury Department, has been appointed manager of the section of marine insurance of the Railroad Administration, with office at Washington, D. C.

C. B. Heinemann, secretary of the National Association of Live Stock Exchanges, has been appointed traffic assistant in the division of public service and accounting, with office at Washington, and will give particular attention to matters pertaining to live stock traffic.

Regional

A. B. Newell, general manager of the Toledo Terminal Railroad, has also been appointed general manager of the local terminals.

Thomas E. Paradise, whose appointment as mechanical assistant on the staff of the Central Western regional director, with headquarters at Chicago, was announced in the *Railway Age* of September 27, was born at Peoria, Ill., on November 22, 1880. Mr. Paradise entered railway service on October 2, 1897, as a machinist apprentice with the Chicago, Burlington & Quincy at Hannibal, Mo. Five years later he enlisted in the U. S. navy as a second class machinist, in which capacity he served four years. At the expiration of his enlistment he returned to Hannibal and entered the service of the Chicago, Burlington & Quincy as a machinist. In 1912, he was promoted to roundhouse foreman at LaCrosse, Wis., and in 1916, he became master mechanic at Centerville, Iowa. The following year he was transferred to Hannibal, in the same capacity, where he remained until his appointment as mentioned above.

Federal and General Managers

C. G. Burnham, federal manager of the Chicago, Burlington & Quincy, and several smaller roads, has had his jurisdiction extended over the Paducah & Illinois.

J. A. Edson, federal manager of the Kansas City Southern and other lines, has had his jurisdiction extended over the Missouri & North Arkansas, which road was recently placed under federal control.

F. C. Batchelder, general manager of the Baltimore & Ohio Chicago Terminal, with headquarters at Chicago, has had his jurisdiction extended over the Chicago Heights Terminal Transfer, effective October 1.

J. M. Gruber, general manager of the Great Northern, with headquarters at St. Paul, Minn., has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with the same headquarters, effective October 1.

W. A. Winburn, federal manager of the Central of Georgia, has been appointed federal manager also of the Louisville & Wadley, the Sylvania Central, the Wadley Southern, and the Wrightsville & Tennille, with office at Savannah, Ga.

A. Robertson, federal manager of the Missouri Pacific, the St. Louis Southwestern, lines north of Texas, the Louisiana & Arkansas and the Southern Illinois & Missouri Bridge, has had his jurisdiction extended to include the Arkansas Central, with headquarters at St. Louis, Mo., effective October 1.

C. M. Kittle, federal manager of the Illinois Central, the Yazoo & Mississippi Valley, the Gulf & Ship Island, the Mississippi Central, the New Orleans Great Northern and the St. Charles Air Line, has been appointed federal manager also of the Helena Terminal (at Helena, Ark.), with office at Chicago, Ill.

J. F. Murphy, general manager of the Missouri Pacific, and of the Chicago, Rock Island & Pacific line from St. Louis, Mo., to Kansas City, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

Operating

The St. Louis & Belleville Electric has been relinquished from federal control.

R. E. Hanrahan has been appointed superintendent of the Camas Prairie, with headquarters at Lewiston, Idaho, effective October 1.

R. A. Rice has been appointed general superintendent of the St. Paul Union Depot, with headquarters at St. Paul, Minn., succeeding **R. R. Auerbach**, effective October 1.

J. C. Deans, trainmaster of the St. Louis & O'Fallon, with headquarters at East St. Louis, Ill., has been placed in charge of the operation of that road, succeeding **C. S. Darrach**.

J. H. Bice, general manager of the Ontonagon Railroad, with headquarters at Ontonagon, Mich., has been appointed superintendent, with the same headquarters, effective October 1.

C. W. Kates, general manager and purchasing agent of the Escanaba & Lake Superior at Wells, Mich., has been appointed general superintendent, with the same headquarters, effective October 1.

R. G. Edwards, assistant engineer of the Canadian Pacific, with office at Havelock, Ont., has been appointed assistant superintendent of the Windsor subdivision, with office at London, vice **F. S. Rosseter**, transferred.

O. C. Schaad, trainmaster of the Pennsylvania Lines West of Pittsburgh, Southwest system, with office at Columbus, Ohio, has been appointed assistant superintendent of the Eastern division on the Northwest system.

Charles Molony, president of the Wrightsville & Tennille, has been appointed general superintendent of that road, also the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, with headquarters at Dublin, Ga.

Roy W. Norris, chief clerk to the superintendent of telegraph of the Chicago & North Western, with headquarters at Chicago, has been appointed supervisor of telegraph and telephone service for the Northwestern region, with the same headquarters, effective October 1.

W. T. Loudon, superintendent, auditor and general freight and passenger agent of the Missouri, Illinois Bridge & Belt, with headquarters at Alton, Ill., has been appointed terminal manager at Alton, with jurisdiction over the Alton switching district, including the area lying between Godfrey, Ill.; Glassy Lake, East Alton, and West Alton, Mo., effective October 7.

The jurisdiction of **W. N. Deramus**, superintendent of car service, and **R. L. Logan**, superintendent of telegraph, of the Kansas City Southern, with headquarters at Kansas City, Mo., was extended on September 16, over the Texarkana & Fort Smith, the Midland Valley, the Houston East & West Texas, the Vicksburg, Shreveport & Pacific, and the Joplin Union Depot. On October 1, Mr. Logan was appointed superintendent of telegraph also of the Kansas City, Mexico & Orient.

T. F. Durkin, assistant superintendent on the Denver & Rio Grande, at Salt Lake City, Utah, has been promoted to superintendent, with office at Helper, Utah, succeeding **S. L. Racey**, who has been granted a leave of absence to enter military service; **W. R. McPherson**, assistant superintendent at Helper, Utah, has been transferred to Salt Lake City, to succeed **A. J. Broderick**, assistant superintendent, with the same headquarters, who will assume the road duties of Mr. Durkin, promoted, effective October 1.

The Chicago, Indianapolis & Louisville and the Cincinnati, Indianapolis & Western have been consolidated for operating purposes under the following organization: Officers from the Chicago, Indianapolis & Louisville are **H. C. May**, gen-

eral manager at Lafayette, Ind., who has been appointed general superintendent at Chicago; **E. P. Cockrell**, general passenger agent, Chicago; **A. S. Kent**, chief engineer, Chicago; **B. Cassell**, acting federal treasurer, Chicago; **W. A. Callison**, superintendent motive power, Lafayette, Ind.; and **L. B. Morehead**, mechanical engineer, Lafayette, Ind., who have all been appointed to the same positions. **E. J. Roth**, purchasing agent at Chicago, has been appointed general storekeeper, with office at Indianapolis, Ind. From the Cincinnati, Indianapolis & Western, **J. A. Simmons**, general traffic manager at Indianapolis, has been appointed general freight agent at Chicago; **D. J. Curran**, treasurer, has been appointed acting local treasurer, with office at Indianapolis; **W. J. Hiner**, purchasing agent for the Cleveland, Cincinnati, Chicago & St. Louis, has been appointed purchasing agent for the above consolidated roads at Cincinnati, Ohio; and **J. L. Hampson** has been appointed fuel supervisor at Cincinnati.

Financial, Legal and Accounting

J. B. Lacy is now federal treasurer of the Norfolk & Western, with headquarters at Roanoke, Va., and not local treasurer as was mentioned in our issue of September 27, on page 609.

E. E. Whitted, district attorney of the Chicago, Burlington & Quincy, at Denver, Colo., has been appointed general solicitor of the Denver & Salt Lake, with headquarters at Denver.

E. M. Kuntz, auditor of the Lehigh & New England, has been appointed federal auditor, and **G. W. Sitgreaves** has been appointed federal treasurer; both with offices at South Bethlehem, Pa.

R. V. Onslow, formerly assistant auditor of the Northern Express Company, at St. Paul, Minn., has been appointed auditor of freight overcharge claims of the Northern Pacific, with office at St. Paul, Minn.

T. M. Cunningham, Jr., has been appointed acting general solicitor of the Wrightsville & Tennille, the Louisville & Wadley, the Sylvania Central and the Wadley Southern, with headquarters at Savannah, Ga.

A. V. Davis has been appointed acting federal treasurer of the Kansas City, Mexico & Orient, with headquarters at Wichita, Kan., succeeding **W. H. Ross**, who has resigned on account of ill health, effective October 1.

C. A. Clark, federal treasurer of the Northern Pacific, has also been appointed acting federal treasurer of the Camas Prairie, with headquarters at St. Paul, Minn., succeeding **J. F. Taggard**, treasurer, effective October 1.

H. H. Field, general solicitor of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroad, with the same headquarters, effective October 1.

G. J. Bunting, federal auditor, and **A. G. Loomis**, federal treasurer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, have had their jurisdictions extended to include the Escanaba & Lake Superior, with the same headquarters, effective October 1.

Ira A. Place, vice-president of the New York Central, with office at New York, has been appointed general solicitor, with headquarters at New York, in charge of the law department, the land and tax department, the claims department and the freight claim department.

J. A. Baumgardner, freight claim agent of the Southern Railroad System, with office at Washington, D. C., has been appointed assistant comptroller, in general charge of overcharge freight claims of the Southern and all other roads under the jurisdiction of E. H. Coapman, federal manager, vice J. J. Hooper, transferred to the law department in general charge of loss and damage freight claims.

John J. Beattie, vice-president and general counsel of the Lehigh & Hudson River, for the corporation, has been ap-

pointed general solicitor, and **Clifford S. Beattie** has been appointed claims attorney, under the United States Railroad Administration; both with offices at Warwick, N. Y.

Louis M. Patterson, assistant local treasurer of the Maine Central, has been appointed federal treasurer, with office at Portland, Maine, vice **Frank W. York**, assigned to other duties, and **George E. Raynes** has been appointed paymaster with office at Portland, in place of **Harold J. Cole**, promoted.

J. S. Hamilton, auditor of disbursements of the Seaboard Air Line, with office at Portsmouth, Va., has been appointed assistant general auditor, vice **L. R. Powell**, who has been appointed auditor for the corporation, and **L. L. Knight** has been appointed auditor of disbursements, vice Mr. Hamilton.

M. L. Countryman, general solicitor of the Northern Pacific; **F. A. Barnes**, federal auditor, and **L. E. Katzenbach**, federal treasurer, all with headquarters at St. Paul, Minn., have had their jurisdiction extended over the Farmers Grain & Shipping Railroad, with the same headquarters, effective October 1.

J. M. Featherston, assistant auditor of the Carolina, Clinchfield & Ohio, and the Carolina, Clinchfield & Ohio of South Carolina, has been appointed auditor, vice **J. A. Muse**, resigned, and **G. A. Masengill** has been appointed assistant auditor, vice Mr. Featherston; both with offices at Johnson City, Tenn.

E. J. White, general solicitor of the Missouri Pacific, the St. Louis Southwestern, and the Louisiana & Arkansas, and **F. P. Johnson**, general auditor of the Missouri Pacific, with headquarters at St. Louis, Mo., have had their jurisdictions extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

C. H. Worcester, president of the Ontonagon Railroad, with headquarters at Chassell, Mich., has been appointed acting federal treasurer, with headquarters at Ontonagon, Mich.; **R. Cousin**, auditor, with headquarters at Chicago, has been appointed federal auditor, with headquarters at Ontonagon, Mich., effective October 1.

James C. Davis, general solicitor of the Chicago & North Western, with headquarters at Chicago, has had his jurisdiction extended to include the Chicago, St. Paul, Minneapolis & Omaha, with the same headquarters, to succeed **J. B. Sheehan**, who has been appointed general counsel for the Omaha and the North Western corporations.

W. B. McKinstry, general auditor of the Central of Georgia, has been appointed also acting federal auditor of the Wrightsville & Tennille, the Louisville & Wadley, the Sylvania Central and the Wadley Southern, and **W. C. Askew**, federal treasurer of the Central of Georgia, has been appointed also acting federal treasurer of the above mentioned four roads; both with headquarters at Savannah, Ga.

R. L. Kennedy, general attorney of the Chicago, St. Paul, Minneapolis & Omaha, has been appointed also general solicitor of the St. Paul Union Depot, the Minneapolis Eastern, and the Minnesota Transfer, with headquarters at St. Paul, Minn.; **C. Jensch**, federal auditor, and **C. P. Nash**, federal treasurer of the Chicago, St. Paul, Minneapolis & Omaha, have had their jurisdictions extended over the St. Paul Union Depot, the Minneapolis Eastern and the Minnesota Transfer, with headquarters at St. Paul, Minn., effective October 1.

A. C. Rhodes, general accountant of the Pere Marquette, the Grand Trunk Western Lines, the Detroit & Toledo Shore Line and the Fort Street Union Depot Company, with office at Detroit, Mich., has been appointed assistant federal auditor of all the above roads; also of the Ann Arbor, the Detroit & Mackinac, the Detroit, Bay City & Western, the Port Huron Southern, the Port Huron & Detroit, and the Lake Michigan Car Ferry Association; and **Fred Horton** has been appointed general accountant of all the above roads; both with offices at Detroit.

Traffic

The authority of **T. A. Graham**, assistant freight traffic manager of the Southern Pacific, with office at San Francisco, Cal., has been extended over the Western Pacific, the Tidewater Southern and the Deep Creek.

G. H. Smitton, traffic manager of the Great Northern, with headquarters at St. Paul, Minn., has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with same headquarters, effective October 1.

H. E. Pierpont, traffic manager of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroad, with the same headquarters, effective October 1.

C. E. Perkins, freight traffic manager, and **C. L. Stone**, passenger traffic manager of the Missouri Pacific, the St. Louis Southwestern and the Louisiana & Arkansas, have had their jurisdiction extended over the Memphis, Dallas & Gulf, with headquarters at St. Louis, Mo., effective October 1.

J. G. Carlisle, assistant freight traffic manager of the Central of Georgia, has been appointed also general freight agent of the Wrightsville & Tennesse, the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, and **F. J. Robinson**, general passenger agent of the Central of Georgia, has had his authority extended over the above named four roads; both with headquarters at Savannah, Ga.

Walter S. Randolph, whose appointment as assistant general passenger agent of the New York Central, with headquarters at Buffalo, N. Y., has already been announced in these columns, was born on May 13, 1862, at Brockport, N. Y., and was educated in the state normal school in his native town. He began railway work in July, 1878, on the New York Central, and served as telegraph operator and ticket clerk, at Brockport, until January, 1881 when he was transferred as ticket clerk to Medina, N. Y. He remained in the latter position until July, 1887, and then was traveling passenger agent, with office at Buffalo, N. Y., until October, 1900. He served as excursion manager, with headquarters at Buffalo, from October, 1900, to January, 1907, and since the latter date was general agent of the passenger department until his recent appointment as assistant general passenger agent of the same road as above noted.



W. S. Randolph

M. T. McCraney, assistant general agent of the freight department of the Chicago, Rock Island & Pacific, with office at Chicago, has been appointed division freight agent (Chicago Terminal division), with headquarters at Chicago. The following commercial agents have been appointed division freight agents, with headquarters at the same places as formerly: **F. H. Faus**, Colorado Springs, Colo.; **R. F. Atwood**, Kansas City, Mo.; **F. C. Johnson**, Memphis, Tenn., and **S. L. Parrott**, St. Joseph, Mo. **P. Portel**, assistant general freight agent, at Oklahoma City, Okla., has been appointed division freight agent, with office at the same place; **J. E. Utt**, general agent at Omaha, Neb., and **A. D. Aiken**, general agent at St. Louis, Mo., have been appointed division freight agents, with headquarters at the same places as formerly. **R. G. Brown** has been appointed division freight agent, with office at Minneapolis, Minn. **H. I. Battles**, general agent at

Peoria, Ill., has been appointed division freight and passenger agent, with headquarters at Peoria.

The following changes have been made in the traffic department of the Atchison, Topeka & Santa Fe, the Kansas Southwestern and the Grand Canyon, effective October 1. **A. G. Sheer**, chief of the traffic bureau, with headquarters at Chicago, has been appointed assistant general freight agent, with the same headquarters. **W. H. Simpson**, general advertising agent, and **J. Brinker**, express and mail traffic manager, with headquarters at Chicago, have been appointed assistant general passenger agents, with the same headquarters. **C. L. Seagraves**, industrial commissioner, with headquarters at Chicago, has been appointed agricultural agent, with the same headquarters. **T. A. Walcott** has been appointed assistant general baggage agent at Topeka, Kan. **Charles Walsh** has been appointed assistant general baggage agent and **C. C. Dana** has been appointed assistant general freight and passenger agent at Amarillo, Texas. **H. K. Gregory**, assistant general passenger agent, at San Francisco, Cal., has been transferred to Los Angeles, Cal. **F. P. Cruice**, assistant general passenger agent at Phoenix, Ariz., has been appointed assistant general freight and passenger agent, with the same headquarters. **W. T. Treleven**, general live stock agent, with headquarters at Kansas City, Mo., becomes live stock agent, with the same headquarters. The following division freight agents have been appointed: **J. F. Thompson**, general agent in the freight department at Chicago; **G. E. Roe**, general agent, freight department, at Kansas City, Mo.; **E. L. Jansen**, at Joplin, Mo., succeeding **E. C. Kitching**; **R. B. Cunningham**, at Topeka, Kan.; **G. W. Vetter**, general agent, at Tulsa, Okla. The following division passenger agents have been appointed: **G. T. Gunnip**, general agent, passenger department, at Chicago; **J. P. Hall**, general agent, passenger department, at Denver, Colo.; **George W. Hagenbuch**, general agent, passenger department, at Kansas City, Mo., and **J. P. Lindsay**. The following division freight and passenger agents have been appointed: **T. B. Gallagher**, at Amarillo, Tex.; **W. R. Brown**, at El Paso, Tex.; **R. M. Batcheller**, general agent, at St. Joseph, Mo.; **F. M. Williams**, at Trinidad, Col.

Engineering and Rolling Stock

E. R. Manor, chief electrician of the Northern Pacific, with office at St. Paul, Minn., has been appointed assistant engineer of tests.

James D. Young has been appointed road foreman of engines on the Lehigh & Susquehanna division of the Central of New Jersey, with office at Ashley, Pa.

Harry Modaff has been appointed division master mechanic on the Chicago, Burlington & Quincy, at Hannibal, Mo., succeeding **Thomas E. Paradise**, promoted.

H. S. Freeman, chief draftsman on the Great Northern, at St. Paul, Minn., has been appointed office engineer, succeeding **D. J. Kerr**, recently appointed corporate engineer.

J. W. Reid, bridge engineer of the Chicago & Alton, with headquarters at Chicago, has resigned to enter the service of the Robins Conveying Belt Company of Chicago, in an engineering capacity.

W. H. Penfield, engineer of track maintenance of the Chicago, Milwaukee & St. Paul, lines east of the Missouri river, with headquarters at Chicago, has had his jurisdiction extended to include the lines west of Moberidge, S. D.

C. F. Loweth, chief engineer of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroads, with the same headquarters, effective October 1.

A. H. Hogeland, chief engineer of the Great Northern and the Midland Railway of Manitoba, with headquarters at St. Paul, Minn., has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with the same headquarters, effective October 1.

H. R. Carpenter, chief engineer of the Missouri Pacific, the St. Louis Southwestern and the Louisiana & Arkansas,

with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

Charles F. Losh, assistant engineer on the Norfolk & Western, at Portsmouth, Ohio, has been appointed valuation engineer, with office at Roanoke, Va., vice **Chas. S. Churchill**, chief of valuation, who has resigned to accept service with the Norfolk & Western Railway Company.

H. Rettinghouse, chief engineer of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has had his jurisdiction extended over the St. Paul Union Depot, succeeding **W. C. Armstrong**. His authority has also been extended over the Minneapolis Eastern and the Minnesota Transfer, with the same headquarters, effective October 1.

G. H. Ballantyne, assistant engineer of the Western Pacific, with office at San Jose, Cal., has been appointed division engineer of the Eastern division of the Western Pacific, also with jurisdiction over the Deep Creek Railroad, with headquarters at Elko, Nev., and **T. L. Phillips**, assistant engineer of the Western Pacific, at Oakland, Cal., has been appointed division engineer of the Western division, with headquarters at Sacramento.

Purchasing

J. L. Bennett, purchasing agent of the Central of Georgia, has been appointed purchasing agent also of the Wrightsville & Tennille, the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, with headquarters at Savannah, Ga.

W. A. Linn, purchasing agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has had his jurisdiction extended over the Escanaba & Lake Superior and the Ontonagon Railroad, with the same headquarters, effective October 1.

I. Seddon, purchasing agent of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has been appointed also purchasing agent of the St. Paul Union Depot, the Minneapolis Eastern and the Minnesota Transfer, with the same headquarters.

Charles A. How, purchasing agent of the Missouri Pacific, the St. Louis Southwestern and the Louisiana & Arkansas, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Memphis, Dallas & Gulf, with the same headquarters, effective October 1.

W. L. Ector, division storekeeper of the Central of Georgia, with office at Cedartown, Ga., has been appointed division storekeeper at Columbus, vice **R. L. Geeslin**, resigned, and **G. P. Ward** has been appointed division storekeeper at Cedartown, vice Mr. Ector.

J. H. Clemmitt has been appointed purchasing agent of the Norfolk & Western, with office at Roanoke, Va., vice **E. T. Burnett**, who is now chairman of the Regional Purchasing Committee for the Pocohontas Region. The position of assistant purchasing agent has been abolished.

F. A. Bushnell, purchasing agent of the Great Northern, with headquarters at St. Paul, Minn., and also a member of the Northwestern regional purchasing committee, has had his jurisdiction extended over the Farmers Grain & Shipping Railroad, with headquarters at St. Paul, effective October 1.

Corporate

Executive, Financial, Legal and Accounting

A. R. Baldwin, vice-president and general attorney of the Western Pacific, with headquarters at San Francisco, Cal., has been elected vice-president and general counsel of that company and the Tidewater Southern.

A. R. Barton, assistant auditor of the Belt Railroad of Chicago, has been elected treasurer and assistant secretary of the Chicago & Western Indiana Railroad Company and the Belt Railway Company of Chicago, with headquarters at Chicago.

Arthur B. Nichols, on the staff of the president of the Boston & Maine, has been appointed treasurer of the Boston & Maine, for the corporation, and **William S. Trowbridge**, auditor of the Boston & Albany, has been appointed controller of the Boston & Maine, for the corporation, both with offices at Boston, Mass.

C. M. Levey, president of the Western Pacific, with headquarters at San Francisco, Cal., has also been elected president of the Tidewater Southern, succeeding **B. A. Bearce**, who was elected vice-president of that company. Mr. Levey was also elected president of the Deep Creek, succeeding **Duncan Mac Vichie**, who has been elected vice-president.

William Church Osborn, chairman of the Texas & Pacific, with headquarters at New York, has been elected president of the corporation, to succeed **J. L. Lancaster**, who has resigned as president and director, to become federal manager of the road under the Railroad Administration. **C. L. Wallace**, assistant to the receiver, has been elected vice-president of the corporation, with headquarters at New Orleans, La.

The corporate organization of the Norfolk & Western Railway Company is now as follows: **L. E. Johnson**, president, Roanoke, Va.; **William G. Macdowell**, vice-president, Philadelphia, Pa.; **Charles S. Churchill**, vice-president, Roanoke; **Jos. I. Doran**, general counsel, Philadelphia; **E. H. Alden**, secretary and assistant treasurer, Philadelphia; **J. S. Wynn**, comptroller, Roanoke; **J. S. Clarke**, treasurer, Roanoke, and **I. W. Booth**, assistant secretary, Philadelphia.

Robert Crosbie, assistant to the controller of the Spokane & Inland Empire and the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been elected secretary, and **Paul McKay** has been elected treasurer of these companies and the Oregon Trunk, the Pacific & Eastern, the Oregon Electric and the United Railways, with the same headquarters. They succeed **F. A. Smith**, who resigned to become federal treasurer of the Spokane, Portland & Seattle.

Clarence S. Sikes, general auditor of the Pere Marquette, with office at Detroit, Mich., has been elected vice-president, with headquarters at Detroit. **E. M. Heberd**, assistant secretary at New York, has been elected secretary, and **W. E. Martin**, assistant treasurer at New York, has been elected treasurer; both with headquarters at New York. **H. G. Myers** has been elected assistant secretary and assistant treasurer, with headquarters at Detroit.

Frank S. Elliott, president of the Spokane & Inland Empire and the United Railways, with headquarters at Portland, Ore., has also been elected vice-president of the Oregon Trunk, the Pacific & Eastern, and the Oregon Electric, succeeding **W. F. Turner**, who is now president of these companies. Mr. Elliott has also been elected vice-president of the Spokane, Portland & Seattle, succeeding **George T. Reid**, who resigned to become assistant to the federal manager of the Northern Pacific.

C. F. Craig, secretary of the Western Pacific and the Tidewater Southern, has been elected secretary and assistant treasurer of the former company, secretary and treasurer of the Tidewater Southern, and treasurer of the Deep Creek, with headquarters at San Francisco, Cal. **D. C. De Graff** has been appointed auditor of the Western Pacific, the Tidewater Southern and the Deep Creek. **R. P. Dunbar**, who was secretary and auditor of the Deep Creek, remains secretary of that company, with headquarters at Salt Lake City, Utah.

Operating

H. B. Stevens, assistant engineer of the Canadian Pacific, at Sudbury, Ont., has been appointed assistant superintendent, with office at Havelock, in place of **R. G. Edwards**, transferred.

J. B. Blair, assistant superintendent of the Canadian Pacific, with office at Farnham, Que., has been appointed superintendent of the Montreal Terminals division, and **M. W. Bard**, assistant superintendent, with office at Farnham, has been appointed acting superintendent of the Farnham division, in place of Mr. Blair.

Engineering and Rolling Stock

J. R. Caswell has been appointed division engineer of the Canadian Pacific, with office at London, Ont., to succeed **J. M. Silliman**, resigned to go to another company.

I. N. Clark has been appointed master car builder on the Ontario lines of the Grand Trunk, with headquarters at London, Ont., vice **T. A. Treleven**, retired; **J. Brooks** has been appointed assistant master car builder at the London shops, and **W. A. Pitt** has been appointed assistant master car builder at the Montreal shops.

Richard Montford, who has been appointed chief engineer of the Louisville & Nashville for the corporation, with headquarters at Louisville, Ky., was born on March 4, 1854, in Ireland. He was educated at the Royal College of Science for Ireland and graduated as a civil engineer in 1876. He began railway work on July 1, 1880, with the Louisville & Nashville, and for three years served as bridge engineer. From 1883 to 1887, he was resident engineer in charge of roadway, bridges and buildings, and then was chief engineer until 1905, when he became consulting engineer of the same road, which position he held until his recent appointment as chief engineer for the corporation, as above noted.

Horace C. Booz has received his honorable release from the United States Army, in which he held a commission as Colonel, and has entered upon his duties as corporate engineer of the Pennsylvania Railroad. Prior to the taking over of the railroads under government control, Mr. Booz was assistant chief engineer of the Pennsylvania Railroad. After Vice-President W. W. Atterbury went to France in the summer of 1917, as director general of transportation of the American Expeditionary Forces, he asked that Mr. Booz be sent over to become one of the principal members of his staff. The directors of the railroad company on September 26, 1917, granted indefinite leave of absence to Mr. Booz for this purpose. He joined General Atterbury early in October, 1917, when he was appointed engineer of construction in charge of building port and railroad facilities. Mr. Booz was at first commissioned a major and was later advanced to colonel. The directors of the company have now requested the discharge of Col. Booz, with regret, because of his intimate acquaintance with the engineering affairs of the road, Chief Engineer A. C. Shand and Assistant Chief Engineer E. B. Temple having been taken over by the United States Railroad Administration. Mr. Booz was born at Bristol, Pa., in 1875, and received the degree of civil engineer at Lafayette College in 1895. He entered the service of the Pennsylvania Railroad in the following year, as a transman, and in November, 1899, was promoted to division engineer. He became assistant engineer in 1901. He was appointed principal assistant engineer of branch lines in May, 1905, remaining in that position until January, 1911, when he was appointed assistant chief engineer of the company.

William Joseph Bergen, first assistant to the chief engineer of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been appointed chief engineer of the corporation with the same headquarters. Mr. Bergen was born at Waterbury, Conn., on February 16, 1872, and graduated from Rensselaer Polytechnic Institute at Troy, N. Y., in June, 1897. In May, 1899, he entered railway service as assistant to the division engineer on construction of the Burlington & Missouri River, now a part of the Chicago, Burlington & Quincy; from July, 1899 to January, 1900, he was levelman and instrument man on location with the same road; and from January, 1900, to July, 1901, he was division engineer on construction. In the ensuing five and one-half years he was assistant engineer on the New York, Chicago & St. Louis and from January, 1907, to August of the same year, he was chief supervisor of track. On the latter date he was promoted to first assistant to the chief engineer which position he held until his recent appointment as chief engineer of the corporation, as mentioned above.



Colonel H. C. Booz

Railway Officers in Military Service

Charles B. Falley, formerly general superintendent of the Evansville & Indianapolis, at Terre Haute, Ind., is now in France as major of the 69th Engineers. **R. E. Farmer**, formerly assistant superintendent of the same road at Terre Haute, is a lieutenant in the same regiment.

Obituary

James T. Avery, assistant secretary and treasurer of the Norfolk Southern, for the corporation, with headquarters at Norfolk, Va., died at Virginia Beach, Va., on October 2.

Robert Arthur Billingham, for the last two years mechanical superintendent of the Tennessee Central, with office at Nashville, Tenn., died on September 29, at Schenectady, N. Y., after a long illness.

William A. Moncure, real estate agent of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., was injured while alighting from a train at Fredericksburg, Va., on October 2, receiving injuries which caused his death on the following day. Mr. Moncure was 48 years old.

Charles Gustavus Roebeling, president of the John A. Roebeling's Sons Company, of Trenton, N. J., who with his brother, Washington Augustus Roebeling, completed the construction of the Brooklyn Bridge, which was started by their father, John A. Roebeling, died October 6 from Bright's disease at his home in Trenton, N. J. He was 69 years old and was born in Trenton. Mr. Roebeling was president of the John A. Roebeling's Sons Company, of Trenton and Roebeling, N. J., and of the New Jersey Wire Cloth Company, of Trenton, and vice-president of the John A. Roebeling's Sons Company, of New York. He graduated from the Rensselaer Polytechnic Institute with the degree of civil engineer in 1871, and for a number of years was mechanical engineer of John A. Roebeling's Sons Company. The achievements of the company are due in no small measure to his work. He was engineer and builder of the Oil City Suspension Bridge at Oil City, Pa.; in 1881 he was engineer and contractor of machinery for the removal of the Cleopatra Needle from Alexandria, Egypt, to Central Park, New York, and in 1902 he made cables for the Williamsburg Suspension Bridge in New York. He assisted his brother, Washington A. Roebeling, in the construction of the Brooklyn Bridge. Their father, who had undertaken the work, died in 1869, before the actual construction was begun. Mr. Roebeling was a member of the Legislature of New Jersey in 1903 and presidential elector for New Jersey in 1904. He was a member of the Iron & Steel Institute of Great Britain and the American Iron & Steel Institute, and of the Institute of Mining Engineers.

OUR INDIVIDUAL PART.—Every American at home should feel an individual responsibility and do his or her individual part in winning the war. There is not an American citizen who cannot help win the war. The Fourth Liberty Loan drive, which is now on, offers a great opportunity for concerted action and for individual action, and the loan will be a tremendous success if each American will do his or her individual part as each American soldier in France does his part. Our soldiers deserve such support from the people at home.

EDITORIAL

Railway Age

EDITORIAL

The statement was recently made by a railroad officer that "this is no time to bother about the instruction of ap-

Intensive Training a Necessity

prentices, or of giving special instruction to employees in the various departments." Is this right? Was there ever greater need for the introduction of intensive educational methods, or of

added supervision on the railroads? Hardly! It is a serious mistake to assume that these things are not essential. It will pay, and pay well, to take capable workers who can act as instructors off of productive work and use them to instruct and help those who lack in experience and skill. The increased and improved output of the small group under such instruction will be much greater than the individual output of the instructor, no matter how good a workman he may be—that is, if he has the faculty of imparting his knowledge to others. It may not be advisable to develop elaborate and extended courses of study, such as might be used to advantage in normal times, but there is no good reason why boys, new employees, and older employees who can be fitted for larger responsibilities should not receive intensive practical instruction along the lines in which they are weak or deficient. Young men who are receiving technical instruction for the aviation department are said to receive the equivalent of a college course in a few months. Something of a similar nature must be developed in the various departments of the railroads.

The title of this editorial was also the title of an individual paper presented before the American Railway Master Mechanics' Association convention in 1910

Education an Essential of Fuel Economy

by the late W. C. Hayes, who for many years was superintendent of locomotive operation on the Erie. A few men who have occupied similar

positions have recognized that education was essential to increased fuel economy, but the cost of fuel was so low, and it was so easy to get, that comparatively little was done on most roads to develop an adequate system of instruction, either among the engineers and firemen or among the various other classes of employees that have to do with fuel economy, directly or indirectly. For the same reasons comparatively little encouragement was given to the development and introduction of fuel saving devices until the limit of size was reached by the modern locomotives and it became necessary to adopt other measures to increase their capacity. It is true that more attention was at the same time given to the supervision of those who handled and used the fuel, but only to a limited extent. Now that the question is not how much money can be saved, but how much work can be gotten from each pound of fuel; and when coupled with this we have the absolute necessity of increasing the operating capacity of the transportation machine to a maximum, the situation takes on a very different aspect. The fuel conservation section of the Division of Operation of the Railroad Administration is pointing the way. What is needed is intelligent attention and co-operation on the part of all those who can help in any way—and this means at least a large proportion

of the employees of the operating and mechanical departments.

The table d'hote system established by the Railroad Administration on dining cars has now been in effect a few

Table d'Hote System in Practice

weeks and we believe that from the standpoint of the public it is a success, and an improvement over the a la carte system which it displaced. We have

had considerable experience of the meals served and in all cases they have been good, and especially good for the small price of one dollar which ordinarily is charged for them. Looking at the matter from the standpoint of the Railroad Administration, it seems very doubtful whether it can continue to serve such good meals at this low price without incurring an even larger loss than was suffered by the railways when using the a la carte system. Now that the Railroad Administration has adopted the table d'hote system we suggest that it take another step and follow the European practice of issuing tickets to those desiring to take meals in the diners, the tickets giving the number of the table and the exact hour at which the guest will be served. The introduction of this ticket system would reduce or completely abolish the waiting in line at the door of the dining car, which is now necessary on many crowded trains. It is probable that with the table d'hote system and the insurance of tickets, as suggested, it would become possible materially to reduce the number of servants that it is now necessary to employ on dining cars. Some people think that the American people would resent the adoption of the ticket system, but we believe that after they got used to it they would like it.

Attention has previously been called in these columns to the fact that the increase in the minimum wage to 58 and 68

Effectiveness of Piecework Should Be Restored

cents an hour in the car and locomotive departments, respectively, with no proportionate readjustment of piecework rates has sounded the death knell of

piecework as an effective means of building up the output of each individual employed. The indications are that the results foreseen have been fully realized. The situation thus brought about is especially serious in the car department where probably a considerably larger proportion of the output is paid for on a piecework basis than in the locomotive department. While the increases in the minimum wage have undoubtedly increased the desirability of employment in the equipment maintenance department, the fact remains that it is practically impossible to secure an adequate supply of labor in the face of a shortage affecting practically every industry in the country. Furthermore, in the car department the removal of all restraints upon the movement of foreign cars has increased the aggregate amount of car repair work, at least in certain sections of the country, and everywhere has increased the difficulties encountered in keeping up the output of repaired cars. Winter is coming, when the need for an expeditious turnover of the cars on the repair tracks as well as the dif-

facilities of accomplishing this end will be increased. To secure anything like an adequate output the incentive of the piecework system will be needed sorely. A readjustment of piecework rates may still be effected in time materially to add to the defenses of the railroads to meet whatever the winter may have in store.

Is This Necessary to Winning the War?

GOVERNMENT OPERATION of railways was adopted solely as a measure for helping win the war. That this was its only purpose was specifically stated by Congress in the Railroad Control law. It would have been easy to have raised the question as to whether many things which have been done by the administration in operating the railways were really intended to help win the war or to perpetuate government operation. This question may be raised still more forcibly regarding the propaganda relative to government operation which is being carried on by different departments of the government.

We shall give two recent examples. Oscar A. Price formerly was private secretary to Director General McAdoo and recently was appointed assistant to the director general. Under date of October 5 the New York Times, the St. Louis Republic and other newspapers published an interview which Mr. Price had been especially delegated by Mr. McAdoo to give. After discussing the question whether railway employees are more discourteous to the public under government than they were under private operation, Mr. Price continued, (the italics being our own):

"We have the positive intention that never again shall any American railroad, at least while under the present management, repeat the conditions of a by-gone era when 'public be damned' policies prevailed. Personally, I feel sure that the vast majority of the 2,300,000 railway employees in this country feel at the present time that they are more on their mettle than ever. In talking with them in all sections from coast to coast I come to the unmistakable conclusion that, as a body, they are determined to make the present test of government control and operation a success. It is but natural that this should be so—they never fared so well under private control and operation as they are faring today. Their prospects for the future were never so bright as they are now. I am sure that they are more anxious to obey, and only the better, the spirit of all orders issued by the director general than they ever could have been to obey the orders of their respective previous executives."

"Railroad employees are not devoid of a knowledge of history, as their past record proves. They are thoroughly aware that if government operation and control are to become permanent they must prove a success now. They are now on trial, and their success or failure, to a large extent, is in the hands of the 2,300,000 employees."

Two points stand out prominently in the statements quoted from Mr. Price. First, he refers to the "public be damned" policy which, he alleges, formerly prevailed, and puts stress on the fact that railway employees "never fared so well under private control and operation as they are faring today." Almost every man now giving his services in an important capacity in the operation of the railways was in that "by-gone era" the manager of a railway. This includes all the regional directors and most of the directors of divisions of the Railroad Administration. They could enlighten Mr. Price as to some important respects in which the public was better served in that "by-gone era" than it is now. They could show him that the reason why the railway companies refrained from doing many things that are being done under government operation was that the government under private operation prohibited these things from being done. They could make clear to him that the railway companies could not have advanced wages so prodigally as is now being done because they had not the power to advance rates which the Railroad Administration possesses and is exercising. The question we started to raise, however, was whether Director General McAdoo considers it essential as one means of winning the war to employ Mr. Price and others to thus cast aspersions upon the way in which the railways were operated under private control by the very men who are now loyally serving him in important positions.

Another point which stands out prominently in Mr. Price's statements is his unmistakable intimation that government operation may be made permanent and his obvious bid for the support of railway employees in the effort to make it permanent. The employees are better off now than ever before; "their prospects for the future were never so bright." Therefore, they should do everything they can to make government operation a success in order to insure its permanence. This is the line of reasoning adopted. Any reference to the fact that railway employees ought to do all they can to make government operation a success in order to help win the war is conspicuous by its absence, although this form of appeal is constantly addressed to railway officers. Is it necessary as a means of winning the war for the Railroad Administration to carry on propaganda among railroad employees for permanent government operation of railways?

The Committee on Public Information, another government department, is not satisfied to let the propaganda for government management be carried on solely by the Railroad Administration. It has just sent out to the press some material regarding the railroad problem which it calls "The Official Facts." It begins its presentation of "The Official Facts" by saying: "When the railroads of this country were taken under federal control they were suffering from the effects of a long period of various sorts of adversity. The measure of their recovery under government management has now been put into figures by Mr. McAdoo, the director general." The figures attributed to Mr. McAdoo do not seem, at first glance, to agree with those compiled by the Railroad Administration's own statistical bureau. For example, the Committee on Public Information says the number of tons hauled per train has increased 6.9 per cent. The increase in the first seven months of this year, over the same months of last year, according to the official statistics, was 2.6 and the increase in July over July, 1917, was only 5.7 per cent. The committee says the average carload has been increased 14.4 per cent. The increase in the first seven months of this year over the corresponding months of last year was only 7.9 per cent, and the increase in July over the same month of last year was only 10.3 per cent.

The truth is, however, that the committee's "Official Facts" are correct—that is, they are correct for the single month of April. Passing over all the other six months of government operation for which statistics are available, the Committee has just happened to use those of the one month which make altogether the best showing for government operation. But it says not a word to indicate that they are the figures for a single month! The committee says the eight-hour day has been granted to railroad employees. The eight-hour day has not been granted to a single class of railway employees, although the so-called eight-hour *basic* day has been granted in many cases.

The Railway Age found it necessary to point out in an editorial, entitled "Efficiency Under Government and Private Management" (issue for September 6), a large number of incorrect statements and deductions which had been made and distributed broadcast by Theodore H. Price, actuary of the Railroad Administration. Now comes the Committee on Public Information and distributes all over the country a lot of railroad statistics which, as used, are as misleading as was the article which Mr. Price wrote and circulated.

The Railway Age ventures to ask whether it is necessary as a means of winning the war for Oscar A. Price to carry on a propaganda among railway employees for permanent government operation of railways and for Theodore H. Price and the Committee on Public Information, in their official capacities to circulate misleading statistics all over the United States regarding the results of government operation. The Railroad Administration and the Committee on Public Information were created and are maintained by the public solely to help win the war. It is difficult to understand

how they can regard themselves as justified in carrying on propaganda for the obvious purpose of bolstering up the cause of permanent government operation when Congress in the Railroad Control law expressly provided first that the railways shall be returned to their owners 21 months after the declaration of peace, and second, that "this act is expressly declared to be emergency legislation enacted to meet conditions growing out of war, and nothing herein is to be construed as expressing or prejudicing the future policy of the federal government concerning the ownership, control or regulation of carriers."

The Big Problem of the Railroad Administration

IT IS GENERALLY ADMITTED that American railroads are a vital factor in the winning of the war. Conditions have been, and still are, such that but comparatively little can be secured for the railroads in the way of additional equipment and facilities. While government control has made it possible to pool facilities and thus secure greater use from them, it is evident that the transportation machine has been worked practically to the limit so far as these things are concerned in themselves.

The human factor still remains to be considered, however, and there are great possibilities of increased production if it is rightly handled. Under private management, with the smaller organizations and competitive conditions, there was a tendency for each road to try to give better service or make better records than its neighbor and this spirit of rivalry extended throughout the entire organization of many of the more important systems. This incentive is lacking under government control and unified operation. On the other hand strong appeals have been made on the grounds of patriotism and loyalty for greater co-operation and more effective work on the part of the employees — the term employees including, of course, both officers and men. It would appear, however, that much still remains to be done in building up a strong morale among railroad workers. The railroads are just as surely being used in the fight for democracy as the men in the trenches. So important is this question of morale in the army that General Pershing has estimated that a Y. M. C. A. secretary is equivalent to 10 fighting men. A high morale is just as vital on the railroads in the interest of the quick and successful winning of the war.

Supervision and leadership are tremendously important factors in any organization; but to be applied effectively they must be applied through the officers in direct contact with the men. There has been a tendency since the government took control of the railroads to discourage the officers and foremen. This has been far from the intention of those in authority, but it has been the result. Now, you can no more have a high state of morale on railways the officers of which, from federal manager down to foreman, are discouraged and dispirited than you can have morale in an army in which all officers from colonel down to corporal are dispirited and discouraged. One reason why the lower officers and the foremen have been discouraged has been that they have been relatively the worst paid men in the service and that the disparity between their compensation and that of many employees has been increased by recent wage advances in which many of the lower officers and foremen have not participated. Another reason has been a tendency on the part of the Railroad Administration to deal directly with the employees instead of dealing with them through their officers. No officer or foreman can get the best work out of men who are made to feel that they have little either to hope or to fear from him.

It is true that labor has been richly rewarded from the wage standpoint. It is true also that the loyalty of labor cannot be questioned; but nevertheless these men have watched the treatment of their superiors closely and the effect has been a breaking down in the morale that increased wages and other considerations cannot offset.

The situation is summed up by an officer of a road which for many years has been noted for the loyalty and efficiency of its employees.

In fact, since the new wage went into effect, the labor situation has improved greatly because of so many men returning to us. The morale, however, is greatly lowered, efficiency greatly lowered, and loyalty and pride gone. To those of us who had a part in the upbuilding of the road during the past — years, the change has been tragic.

Further evidence of this breakdown in morale is indicated by the following incident which was recently reported to one of the regional directors. (Unfortunately, while it may appear to be an extreme case, observation would indicate that it reflects a condition which is more or less general.)

The assistant roundhouse foreman was found in a semi-intoxicated condition. The general foreman took away from him a pint bottle which was half filled with whiskey. We found about seven men asleep, practically all of them laborers. In justice to the night roundhouse foreman, wish to say he discovered this condition and telephoned Mr. —, asking him to come down to the roundhouse.

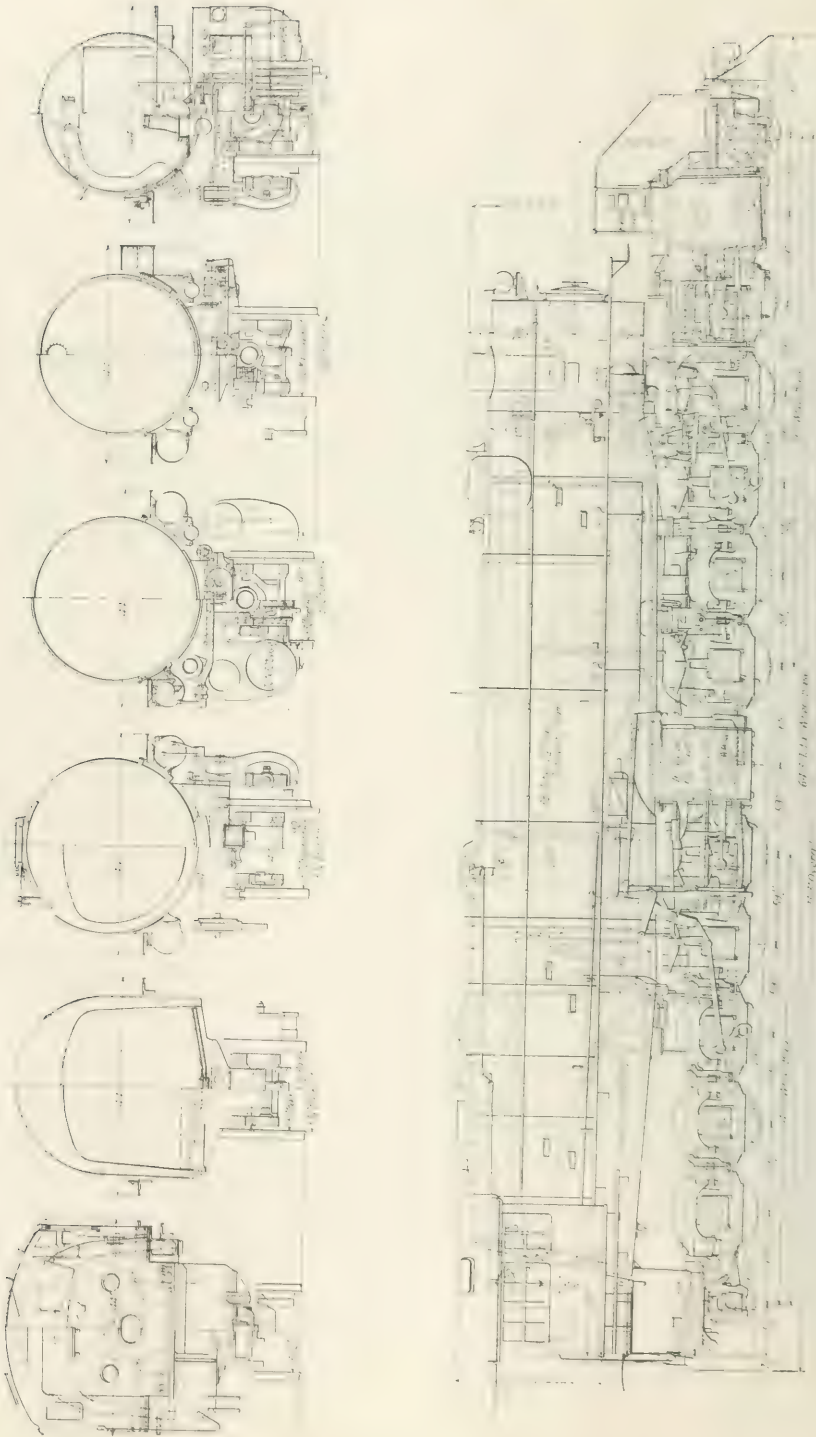
One machinist helper was found asleep on an engine standing on one of the circle tracks. This machinist helper was a young man, exempted from the draft and was being paid forty-five cents per hour. I suggested to Mr. — the advisability of turning this young man over to the draft board, advising them he was a shirker and we had no further use for him; also suggested to Mr. — and Mr. — to have a list prepared of all employees at — whom they had exempted and give them to understand that if there were any more of them shirking in this manner they would be turned over to the draft board.

I have cautioned our division officers about getting around a little more at night and know what is going on. I will also give this a little more personal attention.

Every railroad officer and employee, if he is a loyal American citizen, must do his full part in remedying this situation. It is something that cannot be done, however, by a mere issuing of orders, nor can it be accomplished without the development of a spirit of enthusiasm and morale that will require full co-operation and sympathy on the part of those highest in authority. The prime requisite is for an immediate and clear-cut recognition of the vital necessity of building up a high morale among the officers and men of our railroads. This is far more important than the comparatively meagre additions that can be made to facilities and equipment or to changes in methods and practices. It depends on giving a square deal to every officer and employee and of really encouraging each in his work and having a friendly interest in him. Secretary of Labor Wilson recently had occasion to summarize* the measures that are required in order to secure the highest efficiency from workmen. In closing this summary he said: "And more important than all of these is the spirit of co-operation of the man who believes he is being justly dealt with." The term "man" must include officers as well as workmen.

Develop this spirit of co-operation and then get the entire railroad organization interested in playing a game to see which section or department can make the best record in helping whip the Kaiser, and we shall not have to worry very much about the record of the railroads next winter. Unless this is done, however, America's participation in the great war may be seriously handicapped at the very time that the most will be expected from it.

* The American Railway Association, Bulletin No. 1, 1918, p. 1.



Elevation and Cross Sections of the Virginian 2-10-2 Type Locomotive

Heavy Mallet Locomotives for the Virginian

Built for Operation on Heavy Grades; Weight 684,000 lb.;

Tractive Effort, Compound, 147,200 lb.

TEN Mallet locomotives having a tractive effort of 147,200 lb. working compound and 176,600 lb. working simple, are now being delivered to the Virginian Railway by the American Locomotive Company.* These locomotives were built to meet the problem of handling a constantly increasing volume of traffic on an exceptionally difficult section of railroad.

The portion of the line between Elmore and Clark's Gap on the Deepwater division, a distance of about 14 miles, has a grade for the last 11½ miles of 2.07 per cent with maximum compensated curves of 12 deg. For the first two and one-half miles the grade is .5 per cent. This 14 miles is all single track and includes five tunnels, which compel the use of an absolute block system. It is the crucial part of the entire system, as all the eastbound tonnage of the Virginian passes over it.

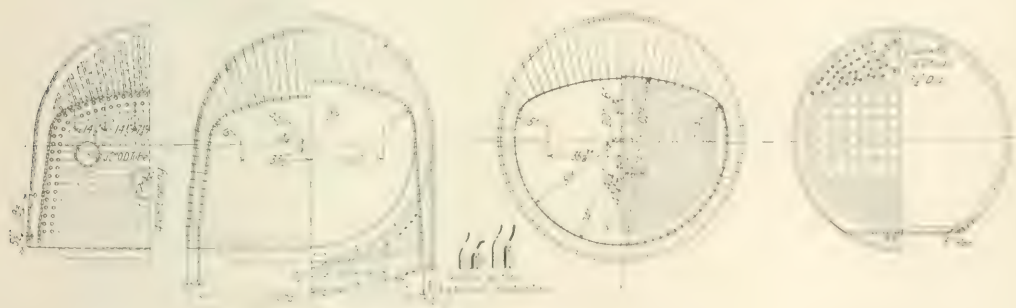
During the last 11 years Mallet locomotives have been employed in handling this traffic. The size and power of these locomotives have progressively advanced to keep pace with the growth in volume of traffic. The first installment consisted of four engines of the 2-6-6-0 type with tractive

posed of one of the 2-8-8-2 Mallet engines having a tractive effort of 115,000 lb., a head and two of the new 2-10-10-2 Mallet engines, each having a tractive effort of 147,200 lb., behind, giving a total tractive effort for the train of 409,400 lb. This train will have a weight of 5,850 tons, the equivalent of 78 cars having an average gross weight of 75 tons.

The 2-8-8-2 type Mallets which will be used on the head end of the train were built by the American Locomotive Company in 1912 and 1913. At that time these engines were the most powerful locomotives in the world. The following comparison shows the extent to which these engines are exceeded in the new 2-10-10-2 type:

	2-8-8-2 Type.	2-10-10-2 Type.	Per Cent Increase
Total weight of engine, lb.	341,000	684,000	100.6
Total weight, engine and tender, lb.	545,000	1,100,000	100.7
Heating surface, sq. ft.	6,909	8,606	24.5
Superheating surface, sq. ft.	115,000	147,200	28
Tractive effort, compound, lb.	115,000	147,200	28
Tractive effort, simple, lb.	138,000	176,600	28

Apart from the enormous weight and power of the locomotive as a whole, some of the dimensions of the boiler are



Sections Through the Boiler and Firebox

effort of 70,800 lb. Next in sequence were eight of the same wheel arrangement but with a tractive effort of 90,000 lb. The third installment consisted of one engine of the 2-8-8-2 type with a tractive effort of 100,800 lb. The fourth lot was six engines of the 2-8-8-2 type with a tractive effort of 115,000 lb.

At present, trains passing over the mountain section are operated by one 2-6-6-0 type Mallet road engine, with a tractive effort of 90,000 lb., at the head end and two 2-8-8-2 Mallet pusher engines, with a tractive effort of 115,000 lb. each, behind. The maximum tractive effort thus available is 320,000 lb. per train, which enables the handling of 4,500 tons in 60 cars having an average weight for car and load of 75 tons.

The traffic volume is still growing, and as the track is single, and as it is not desired to increase the number of engines on any train above three, it has been found necessary to put still larger locomotives into service. The unusually large locomotives under discussion were developed in order to accomplish this result.

Upon receipt of the new locomotives trains will be com-

pressive as showing the extent to which the usual limits were exceeded in its design and construction. At the first course it is 105½ in. in diameter outside, while the outside diameter of the largest course is 112¾ in. The barrel is fitted with 381 tubes 2¼ in. in diameter and 70 flues 5½ in. in diameter, 25 ft. long. A combustion chamber 36 in. long is included. The firebox is 181 1/16 in. long and 108¼ in. wide. The front portion of the firebox is included with the combustion chamber behind a Gaines fire-wall, so that the grate is about 144 in. long and has an area of 108.75 sq. ft. A total heating surface of 8,606 sq. ft. and a superheating surface of 2,120 sq. ft. are obtained.

The high pressure valves are of the piston type, 16 in. in diameter, while outside admission slide valves are used for the low pressure cylinders. Steam admission is controlled by the Chambers outside connected throttle and a Lewis reverse gear is used. Both the front and trailer trucks are of the Woodward type and the tender trucks are equalized. The design as a whole follows the builder's ordinary practice, differing from previous designs only in modifications made necessary by the increased size and capacity.

These engines were built at the Schenectady works and the contract called for delivery completely erected and

*The photograph of these locomotives appeared on page 623 of the October 4 issue of the *Railway Age*.

facturers, will effect an estimated saving of 17,312 freight cars per annum.

Financing of Equipment Purchases

Methods of financing the purchase of cars and locomotives ordered by the Railroad Administration and allocated to the various railroads were discussed with Director General McAdoo and other officers of the Railroad Administration on Monday by a committee representing the Railway Executives' Advisory Committee, including T. De Witt Cuyler, chairman of the committee; Howard Elliott, chairman of the Northern Pacific; Julius Kruttschnitt, chairman of the Southern Pacific; L. F. Loree, president of the Delaware & Hudson; and Alfred P. Thom, counsel for the committee. When the government placed orders for 100,000 freight cars and 1,315 locomotives it was understood to be the intention of the government to own them during the period of federal control and to make some arrangement for their acquisition by the railroads afterward, but it was later decided to require the railroad companies to pay for the equipment under the authority granted by the railroad control act. Under this plan cars have been allotted to railroads which are already furnishing cars to other lines and object to buying more to be used generally.

At the conference with the director general the committee of railway executives expressed reluctance on the part of the railroad companies to pay for this equipment, the cost of which on orders already placed amounts to \$76,873,355 for locomotives and \$289,460,000 for freight cars. They asked why the Railroad Administration could not pay for the cars from its revolving fund. The orders were placed at the very high figures caused by this year's prices for labor and materials and the railroad companies could not hope to derive any revenue from their use except interest on the cost during the period of federal control and it was stated that some companies would be unable to pay for the equipment allotted to them or in some cases even the initial 25 per cent payment under a car trust plan. There has also been objection on the part of some companies to the standard types of equipment as being unsuited to their requirements.

The federal control act appropriated the sum of \$500,000, which, together with funds available from any operating income of the carriers, may be used as a revolving fund "for the purpose of paying the expenses of the federal control, and so far as necessary, the amount of just compensation, and to provide terminals, motive power, cars and other necessary equipment, such terminals, motive power, cars and equipment to be used and accounted for as the President may direct and to be disposed of as Congress may hereafter by law provide." It also provides that the President "may make or order any carrier to make any additions, betterments or road extensions and to provide terminals, motive power, cars and other equipment necessary or desirable for war purposes or in the public interest or in connection with the property of any carrier; that it may from the revolving fund advance to such carrier all or any part of the expense of such additions, betterments or road extensions and to provide terminals, motive power, cars and other necessary equipment," such advances to be charged against such carrier and to bear interest at a rate and payable on such terms as may be determined by the President. The executives urged that the equipment be financed in accordance with the first of these provisions rather than the second, but Director General McAdoo indicated that the revolving fund was intended to be used more for extraordinary expenditures required for war purposes than for such ordinary expenditures as equipment. He finally requested the executives to confer with a committee of officers of the Railroad Administration, Walker D. Hines, Carl R. Gray, R. S. Lovett, John Skelton Williams and Henry Walters, in an effort to work out a practical plan of handling the matter.

Up to August 31, according to the monthly report of the division of capital expenditures, \$13,879,226 had been expended for locomotives ordered by the Railroad Administration, and \$24,152,476 for cars ordered by the administration.

Interpretation of Order Increasing Wages of Shop Employees

Director General McAdoo has issued the following interpretation No. 3 to General Order No. 27, and to Supplement No. 4, Addenda Nos. 1 and 2, Interpretation No. 1 and Amendment No. 1 thereto:

METHOD OF APPLYING INCREASES TO PIECEWORKERS.

ARTICLE I.

(a) The increases provided for in General Order No. 27 apply to each hour worked and not to piecework prices per item or operation.

(b) Overtime hours, prior to August 1, 1918, will be paid for at the rate in effect as of December 31, 1917, and up to and including July 31, 1918; from August 1, 1918, at the rate of one and one-half times the average straight time hourly piecework earnings for the current pay period, provided that the straight time piecework earnings plus one-half additional, equals the guaranteed minimum at the hourly rate of one and one-half time.

(c) Any increase in wages due to increased rates of compensation granted between January 1, 1916, and December 31, 1917, shall be deducted from the amount of increase provided for in General Order No. 27, but in no case shall such deduction operate to reduce earnings based on rates in effect as of December 31, 1917.

(d) In the absence of established standard hourly rates for any one or more of the seven classifications designated in Supplement No. 4, the going rate in each craft in accordance with the classification existing prior to the application of Supplement No. 4 for mechanics or helpers at each point on each of the several railroads, shall be used as the base rate to which will be added the increases provided for in Section C, Article II, General Order No. 27.

(e) Example 1.—Assume that in Yard B, 75 wood freight car builders or repairers are employed, the base hourly rates in December, 1915, were:

- 15 at 32 cents per hour.
- 31 at 33 cents per hour.
- 17 at 34½ cents per hour.
- 12 at 36 cents per hour.

Thirty-three cents thus becomes the going rate for the basis of computing the hourly increase for all wood freight car builders or repairers in Yard B. General Order No. 27, Article II, Section C, using the going rate of 33 cents, establishes a rate of 46.75 or 13.75 cents increase over the December, 1915, hourly rate. Between January 1, 1916, and December 31, 1917, increases amounting to 9 cents per hour had been put into effect. The net increase established by General Order No. 27 is therefore 4.75 cents per hour to hourly workers, and represents the total increase per hour to pieceworkers of the same class in Yard B. The same method of procedure will apply to each of the respective groups of employees, such as upholsterers, coach carpenters, cabinetmakers, passenger or freight steel car body builders or repairers, truck builders or repairers, coach painters, locomotive painters, locomotive carpenters, molders, coremakers, electricians, signal men and signal maintainers, tinners, pipe fitters, cooper-smiths, sheet metal workers, and all men classified and used as helpers.

(f) Where piecework rates or pieceworkers received no increase between January 1, 1916, and December 31, 1917, it is evident that the average earning rate was sufficiently in excess of the hourly rate to cover any increases that may have been granted hourly workers. In determining the increase to such pieceworkers, they shall receive the same increase per hour as accrues to the hourly worker under General Order No. 27, illustrated herein by example 1, paragraph e.

(g) The application of increases to machinists, boiler-makers and blacksmiths, who are on the piecework basis, shall be as above outlined (see example 2) except where the establishment of the minimum rate of 55 cents per hour is less than the increase provided for in Section C, Article II, General Order No. 27, in which case the greater increase will apply. (See example 1, paragraph e.)

(h) Example 2.—In December, 1915, machinists in Shop C were paid a going rate of 35 cents per hour. Section C, Article II, General Order No. 27, establishes a rate of 49.50 cents per hour. This would automatically go to the minimum rate of 55 cents per hour, or 20 cents increase over the December, 1915, hourly rate. Between January 1, 1916, and December 31, 1917, increases amounting to 9 cents per hour had been put into effect. The net increase established by General Order No. 27 is therefore 11 cents per hour to hourly workers and represents the total increase per hour to the machinists on piecework in Shop C.

(i) Example 3.—In December, 1915, machinists in Shop D were paid a going rate of 42 cents per hour. The new rate provided for in Section C, Article II of General Order No. 27, is 58.25 cents per hour, making an increase of 16.25 cents per hour over the December, 1915, hourly rate. Between January 1, 1916, and December 31, 1917, increases amounting to 9 cents per hour had been put into effect. The net increases established by General Order No. 27 is therefore 7.25 cents per hour to hourly workers, and represents the total increase per hour to the machinists on piecework in Shop D.

(j) If the increases for pieceworkers under General Order No. 27, added to their average hourly straight time piecework earnings, by pay period, do not equal the minimum hourly rates established for hourly workers of the same class, the back pay due such pieceworkers, by pay periods, January 1, 1918, to July 31, 1918, inclusive, will be computed on the basis of the minimum hourly rates applicable to the respective classes, as per Supplement No. 4.

(k) *Example 4.*—Pieceworker E, guaranteed a 58 cent minimum hourly rate by Supplement 4, worked 208 straight time hours in March, 1918; his average piecework earnings for this pay period were 55 cents per hour, including the increase under General Order No. 27. Pieceworker E therefore receives the minimum rate of 58 cents per hour for the March pay period.

(l) *Example 5.*—Pieceworker F, guaranteed a 58 cent minimum hourly rate by Supplement 4, worked 208 straight time hours in March, 1918; his average piecework earnings for this pay period equals 60 cents per hour, including the increase under General Order No. 27. Pieceworker F, having exceeded the minimum rate of 58 cents per hour for the March pay period, receives back pay at the 60 cent rate.

(m) *Example 6.*—Pieceworker G, guaranteed a 58 cent minimum hourly rate by Supplement 4, worked a total of 268 hours in August, 1918, divided as follows: 50 straight time hours on hourly work at 58 cent rate, 158 straight time hours on piecework, average earnings per hour 65 cents, 20 hours overtime on hourly work at the rate of one and one-half time, or 58 plus 29, equaling 87 cents per hour, and 40 hours overtime on piecework, or 65 plus 32.50, equaling 97.50 cents per hour (as per Art. II, Sec. A.) the total earnings for the August pay period are as follows:

50 hours at 58 cents per hour.....	\$29.00
158 hours at 65 cents per hour.....	102.70
20 hours at 87 cents per hour.....	17.40
40 hours at 97.50 cents per hour.....	39.00

Total\$188.10

GENERAL APPLICATION OF INCREASES, SUPPLEMENT 4 TO GENERAL ORDER 27.

ARTICLE II.

(a) The increases provided for in Supplement No. 4 to General Order No. 27 apply only to hourly, daily, weekly, or monthly rates, with the proviso that in no case shall a pieceworker be compensated for service rendered from January 1, 1918, to July 31, 1918, or thereafter, at a less rate per hour, for each straight time hour worked, than the minimum rate established for the hourly worker as per the respective classifications. Effective August 1, 1918, the one and one-half time overtime applies to pieceworkers as well as to hourly rated employees.

(b) Increase provided for in General Order No. 27 for hourly, daily, weekly and monthly rates, were cancelled with the issuance of Supplement No. 4, and in no manner refer to or affect the increases provided for in Supplement No. 4 to General Order No. 27.

(c) The hours of service and overtime provisions of Supplement 4, Article IV, Section 2, do not apply to supervisory forces on monthly salary, referred to in Supplement 4, Article III, Section 5.

(d) Monthly supervisory forces specified in Supplement 4, Article III, Section 5, assigned to inspect new equipment under construction by contract, shall receive the salary increase of \$40 per month.

(e) Excepting salaried supervisory forces and coach cleaners, employees coming within the classifications specified in Supplement No. 4 to General Order No. 27, shall be paid for overtime as provided in Section 2, Article IV, of Supplement No. 4.

(f) Employees voluntarily leaving the service.—The amount accruing under the provisions of Supplement 4 to General Order No. 27 will not accrue to those employees who left the service voluntarily to accept or secure employment at some other point on the same railroad or on another railroad, or elsewhere, because remaining in the service at the point employed, unless transferred, was the consideration upon which the promise to make the increases effective as of January 1, 1918, was based.

ARTICLE III.

RATES BASED UPON YEARS OF EXPERIENCE.

Supplement No. 4, Article II, Sections 2, 2-A and 2-B.

(a) Employees performing work recognized as mechanics' work in the respective trades, who by agreement with duly authorized committees representing the craft or crafts, have had their rates leveled up to that of the mechanic, shall receive the mechanics' rate as per Article II, Sections 1 and 1-A; otherwise Article II, Sections 2, 2-A and 2-B will apply. The period of experience on mechanics' work, in the trade employed, shall be cumulative.

Example 7.—Employee H worked:

- 12 months on machinist's work for railroad C.
- 6 months on machinist's work in navy yards D.
- 12 months on machinist's work in manufacturing plant E.
- 18 months on machinist's work for railroad by whom now employed.

Total. 4 years.

Such employees should be paid the machinists' rate.

(b) Nothing in the above section shall be construed to mean that mechanics of the respective trades who have qualified as such in other industries, shall be paid less than the minimum rates specified in Article II, Sections 1 and 1-A of Supplement No. 4, upon entering railroad service.

ARTICLE IV.

EXPENSE ALLOWANCE.

Sections 4 and 5, Article IV, Sup. No. 4 to General Order No. 27.

The allowance for expenses provided for in Section 4, Supplement No. 4 to General Order No. 27, is the same as shown in Section 5, and at the rate of \$2 per day for three meals and lodging; 50 cents per meal, 50 cents for lodging. It is not intended to make this feature retroactive prior to August 1, 1918.

ARTICLE V.

SUPERVISORY FORCES.

Section 4, Article III, Supplement 4 to General Order 27.

This section applies to minor supervisory forces who are held responsible for the work they do, have been so recognized, and who shall receive 5 cents per hour in excess of the minimum hourly rate established for the craft.

General Order 27, Supplement 4, Article I, Section 1 and 1-B.

(a) Employees boring and turning wheels, and turning axles in wheel shop, are classified as machinists by Section 1, Article I, of Supplement No. 4 to General Order No. 27.

(b) Employees pressing on and off wheels are classified as machinists' helpers by Section 1-B, Article I of Supplement No. 4 to General Order No. 27, and receive an increase of 13 cents per hour over rate in effect January 1, 1918, prior to application of General Order No. 27, with a minimum guaranteed rate of 45 cents per hour.

ARTICLE VII.

Supplement No. 4, Article I, Section 2 and 2-B.

(a) Flue work, boiler department, includes flue welders under boiler foremen.

(b) Heaters and helpers assisting welders shall be classed as boiler-maker helpers.

ARTICLE VIII.

RIVET HEATERS.

(a) Include rivet heaters in Supplement No. 4, Article I, Section 2-B. Rivet heaters under 18 years of age shall be paid 25 cents per hour until they reach the age of 18, and thereafter helpers' rates.

(b) Rivet heaters in Supplement No. 4, Article I, Section 2-B, under 18 years of age shall be paid 25 cents per hour until they reach the age of 18, and thereafter helpers' rates.

ARTICLE IX.

TESTING ASSISTANTS.

Supplement No. 4, Article I, Section 5 and 5-A.

It is not necessary for an electrical worker to be competent to perform all items of work specified. Employees skilled in any of this work shall be paid the rate established for the respective class.

ARTICLE X.

MATERIAL CARRIERS AND HELPERS.

(a) Material carriers in Supplement No. 4, Article I, Section 6-B, applies only to employees regularly engaged in selecting and distributing material to mechanics in car department.

(b) Laborers shall not be classified as helpers in the seven basic trades, unless they actually perform work recognized as helpers' work.

ARTICLE XI.

LOCOMOTIVE CRANE OPERATORS.

Section 6, Article I, Supplement No. 4 to General Order No. 27.

Locomotive crane operators, when employed in the car and locomotive shop yards, shall be considered under the same classification as "wrecking derrick engineer" in Section 6, Article I, Supplement No. 4 to General Order No. 27, and receive 13 cents per hour over the rate in effect January 1, 1918, prior to the application of General Order No. 27, with a guaranteed minimum of 58 cents per hour. (Where employed in other departments they shall be considered under the same classification as pile driver, ditching and hoisting engineers, in Article I, Section b of Supplement No. 8 to General Order No. 27.)

ARTICLE XII.

DERRIK ENGINEER.

Section 6, Article I, Supplement No. 4 to General Order No. 27. "Wrecking Derrick Engineer" covers the engineer operating a power-driven crane employed principally for clearing up wrecks.

ARTICLE XIII.

MOULDERS AND MOLDERS IN FOUNDRY DEPARTMENT.

Supplement No. 4, Article I, Sections 7 and 7-B.

(a) A cupola tender is interpreted to be one who supervises the cupola and prescribes the charge, the fuel to be used and drawing the melt.

(b) Cupola tender helpers shall receive an increase of 13 cents per hour over rates in effect as of January 1, 1918, prior to the application of General Order No. 27, with a guaranteed minimum rate of 45 cents per hour.

(c) Employees in charge of brass melting in foundry shall receive not less than the molder's minimum rate, and helpers the same as helpers in Section (b) of this Article.

ARTICLE XIV.

These interpretations shall apply to all addenda, amendments, and interpretations to Supplement No. 4 to General Order No. 27, from their respective effective dates.

Bills for Office Facilities

P. S. & A. Circular No. 31, issued on October 1, provides that, effective at once, no bills shall be made by a railroad under federal control for use of its office buildings, space for offices, proportion of expense of maintaining, repairing, heating, and lighting such offices, or for joint or proportionate use of telephones, telegraph facilities, office furniture, or other appliances on such premises when they are used by the United States Railroad Administration, regional or district directors, or other railroads under federal control which became users subsequent to December 31, 1917. Such arrangements as it is necessary to make for the use of the office facilities of a carrier by the Railroad Administration, re-

gional or district directors, or other railroads under federal control shall be made by or through the regional director in whose jurisdiction the offices are located.

Railroad Men and Politics

One of the first persons to be affected by the director general's order that all railroad men must abstain from political activity was Oscar A. Price, assistant to the director general, who was the owner of a democratic county organ published at Roncverte, W. Va. After the order was issued Mr. Price concluded that his connection with the paper was inconsistent with the spirit of the order and offered it for sale. When no buyers appeared Mr. Price announced that the paper would cease publication on November 1.

Report of Expenditures for Improvements

Expenditures of the Class I roads in connection with improvement work chargeable to capital account from January 1 to August 31 amounted to \$365,371,511, according to the monthly report of the Division of Capital Expenditures. Of this \$334,892,024 was charged to capital account and \$30,479,487 was charged to operating expenses; and the expenditures during the month of August amounted to \$66,000,000. The total authorization for improvements up to October 10 amounted to \$1,273,969,461, an increase of \$42,939,247 during the month.

The total expenditures during the month of August were

greater than those for July, shown in the previous report, which amounted to \$55,000,000. For the period from January 1 to June 30 the total expenditures amounted to \$244,401,179. The detailed report showing the authorizations to October 10 and the expenditures to August 31 is given in the table.

Revised Instructions for Budgets

R. S. Lovett, director of division of Capital Expenditures, has issued Supplement 1 to D. C. E. Circular No. 10, giving revised instructions as to the preparation of budgets.

Paragraphs "Second" and "Third" of D. C. E. Circular No. 10, dated August 23, 1918, relating to the preparation of a budget of capital expenditures for 1919, are revised so as to read as follows:

Instructions as the regional director may have given, shall have prepared his data with respect to projects which he recommends, the same should be carefully gone over by the regional director who should then decide upon the work to be included on or omitted from the budget; after which the final budget for submission to the director of the Division of Capital Expenditures and containing only work which the regional director is prepared to recommend, should be prepared on D. C. E. Form 9 for distribution in accordance with the next succeeding paragraph "Third" hereof. The federal manager (or general manager) and regional director should invite and carefully consider suggestions from, and should confer with, officers of the company owning the property to be improved, respecting any work contemplated in advance of or during the preparation of the budget, or at any time, but are to be governed by their own judgment, as to the work to be recommended—definite notice to the company of

AUTHORIZATIONS AND EXPENDITURES IN CONNECTION WITH WORK CHARGEABLE TO CAPITAL ACCOUNT AS OF OCTOBER 10, 1918

Class of work (1)	1918 budget (2)	to budget (3)	Specifically authorized to October 10, 1918 (4)		Expenditures from January 1, 1918 to August 31, 1918 (5)		Balance (6)	
			Operating expenses (4)	Capital account (5)	Operating expenses (5)	Capital account (6)	Operating expenses (6)	Capital account (7)
1. Additions and betterments (excluding equipment)								
2. Widening cuts and fills, filling trestles, etc.	\$5,097,989	\$711,127	\$2,950,607	\$6,802,989	\$838,648	\$2,813,712	\$1,111	\$3,989,277
3. Ballasting	9,379,271	270,061	3,216,499	10,423,308	1,074,519	2,730,354	2,141,980	7,692,954
4. Rops and other track material	3,185,921	958,974	42,421,512	28,883,542	7,356,018	10,266,663	3,065,494	18,615,879
5. Bridges, trestles and culverts	2,185,242	48,083	22,544,608	36,119,716	6,736,174	14,402,371	15,788,434	21,717,345
6. Tunnel and subway improvements	4,112,536		1,675,747	13,107,935	284,548	1,819,802	1,391,199	11,288,133
7. Track elevators or depressions	7,438,957	255,778	1,155,100	11,849,688		2,472,402	863,580	9,377,286
8. Elimination of grade crossings	631,082	56,355	155,330	1,362,825	78,160	746,421		616,404
9. Grade crossings and crossing signals			2,278,459	5,441,568	1,190,291	18,223,101	4,251,277	36,424,513
10. Additional yard tracks, sidings and industrial tracks	7,100,000	10,076,083	8,840,390	108,446,252	1,634,482	31,949,032	7,205,908	76,497,220
11. Changes of grade of alignment		294,448	2,875,006	8,756,553	480,349	2,292,606	2,397,747	6,463,947
12. Signals and interlocking plants	10,962,462	694,697	2,273,369	12,701,423	552,126	2,196,902	1,721,243	8,504,521
13. Telegraph and telephone lines	5,129,149	309,659	718,199	5,285,674	390,115	1,766,707	328,084	3,518,967
14. Roadway machinery and tools	955,857	180,355	82,412	1,523,142	12,625	925,157	69,787	597,985
15. Section houses and other roadway buildings	1,306,847	172,628	202,157	2,514,499	80,614	1,684,616	121,543	829,883
16. Fences and snow sheds	817,655	97,131	444,149	2,101,943		709,637	365,683	1,392,306
17. Freight and passenger stations, office buildings	20,138,359	2,020,706	3,484,479	28,061,795	864,172	12,495,470	2,620,307	15,566,325
18. Hotels and restaurants	199,282	195,564	23,639	553,233	2,272	233,315	21,367	319,923
19. Fuel stations and appurtenances	6,090,558	1,200,697	1,022,443	7,225,370	252,098	2,444,714	820,345	4,880,656
20. Water stations and appurtenances	15,430,047	798,013	1,754,964	9,372,759	488,582	3,866,785	1,266,382	5,506,974
21. Shop buildings, engine-houses, and appurtenances	13,430,407	4,090,312	5,997,435	48,345,262	1,3	12,128,594	4,604,030	36,216,668
22. Shop machinery and tools	9,444,188	2,222,178	1,261,234	18,398,689	77,141	4,882,415	995,110	13,516,274
23. Electric power plants, substations, etc.	1,111,111	1,732,585	2,039,297	20,493,428	287,218	4,843,313	2,008,833	16,347,890
24. Wharves and docks	7,024,937	2,315,165	469,340	4,542,773	268,387	2,777,434	379,905	2,543,587
25. Coal and ore wharves	2,914,202	91,973	426,104	2,639,761	79,372	1,759,731	346,783	880,030
26. Grain elevators and storage warehouses	3,309,141	17,181	17,922	7,502,487	1,368	537,334	16,354	33,153
27. Rail yards		235,167	58,440	1,720,586	33,618	1,011,403	24,822	776,183
28. Assessments for public improvements			284,183	6,123,802	157,831	2,583,251	246,786	3,540,551
29. All other improvements	27,889,552	51,690						
Total (excluding equipment)	\$433,731,488	\$32,937,152	\$113,347,989	\$462,511,601	\$25,792,546	\$147,649,136	\$87,555,443	\$314,862,465
Equipment								
30. Locomotives, steam, ordered by R.R. Administration				76,873,355		*13,879,226		62,994,129
31. Locomotives, other								423,258
32. Freight-train cars, ordered by R.R. Administration	212,858,464							32,260,262
33. Freight-train cars, other				389,460,000		*24,152,476		265,307,524
34. Passenger cars		85,197		1,356,044		2,911,122		2,554,132
35. Motor equipment	6,538,810	20,200		6,499,296		1,456,439		5,042,857
36. Electric equipment	5,323,337	75,000		587,853		58,547		529,306
37. Miscellaneous equipment	507,923	23,240		4,809,517		346,405		4,259,704
38. Improvements to existing equipment	35,807,654	1,299,528		36,037,016		15,275,575		20,761,441
Total equipment	\$486,979,925	\$2,684,653	\$18,639,549	\$640,772,819	\$4,694,017	\$174,792,199	\$13,945,532	\$465,980,620
39. Construction of extensions, branches and other lines	20,334,458	1,216,005	23,836			450,000	30,912	26,222,978
Total all work	\$941,041,902	\$36,840,830	\$132,011,374	\$1,141,958,087	\$30,479,487	\$334,892,024	\$101,531,887	\$807,066,063

*Expenditures to date.

"Unconditional Surrender"

the work actually to be undertaken being provided for in connection with D. C. E. Forms 3, 4 and 6. The suggestions and conference herein contemplated are not to comply with any legal requirement but to get the benefit of the judgment of the company officers and to provide additional opportunity for meeting the wishes of the company wherever reasonably practicable.

Third: When the recommendations shall have been decided upon they should be made on D. C. E. Form 9 in accordance with instructions given in paragraph "Fourth" of D. C. E. Circular No. 10. The original type-written copy and one carbon copy should be sent by the regional director to the director of the Division of Capital Expenditures at Washington; and in transmitting the same the regional director should make such general observations and add such information and suggestions with respect to particular projects as he may deem useful for the information and advice of the director of the Division of Capital Expenditures.

One copy should be sent to the president of the company owning or previously operating the line with respect to which the budget is submitted. Such copy is only for the information of the company.

The regional director and federal manager (or general manager) will retain such copies for their own files and use as may be necessary.

All copies should be mailed not later than December 31, 1918.

Regional directors, federal managers and all others concerned in the preparation of the budget are urged to appreciate and act upon the necessity of conserving capital, labor and material for war purposes and to realize that such of these as may be available for railroad improvements will be no more than sufficient to provide the transportation facilities absolutely essential to the country's business under war conditions.

In planning improvements chargeable to capital account

addition the output of the railroad shops for the first six months of the year was 4414. The number of freight cars on order and undelivered on August 31 was 106,172 for domestic service, and 55,835 for foreign service, the total for domestic service including the 100,000 cars ordered by the Railroad Administration, of which some 500 have since been delivered. The output of the carbuilders for the first six months was 48,656, of which 18,899 were for domestic service, 3,311 private cars, and 8,723 for the army and navy, not including tank cars, 661 were tank cars for railroads, 7,290 tank cars for private owners and 1,345 tank cars for the army and navy. In addition there were 8,290 cars for the Allied governments and 137 for neutral governments. A similar classification of the output for July and August is not available, but it includes 4,260 for domestic service and 9,223 for foreign service. The total number of freight cars on order on January 1 was 42,696 and only miscellaneous orders have been placed since for domestic service except the government order for 100,000 cars. Deliveries of the latter cars have been delayed in part by changes in the allocation of the cars to the various roads and the necessity of restencilling them because of changes.

The Railroad Administration has given out the following table showing locomotive deliveries during September, which brings the total for this year up to 1951:

LOCOMOTIVES SHIPPED DURING SEPTEMBER

For week September 1 to 7				For week September 8 to 14				For week September 15 to 21				For week September 22 to 28				For week September 29 to October 5			
Works	Road	No.	Type	Road	No.	Type		Road	No.	Type		Road	No.	Type		Road	No.	Type	
American	C.M.&St.P.	12	USRA Mik.	C.M.&St.P.	1	USRA Mik.		M.K.&T.	18	Mikado		U.P.	14	USRA Mik.		C.E.I.	4	USRA Mik.	
	C.E.I.	6	USRA Mik.	Me.C.	7	4-6-0		C.M.&St.P.	13	USRA Mik.		C.M.&St.P.	1	USRA Mik.		C.E.I.	4	USRA Mik.	
	Sou.	1	Santa Fe	M.K.&T.	1	Mikado		Ill.C.	3	Switch		T.&O.C.	4	USRA Swth		C.E.I.	5	USRA Mik.	
	Me.C.	1	Switcher	Pa.L.W.	1	Santa Fe		C.E.I.	5	USRA Mik.		C.R.O.	3	USRA Swth		Me.C.	1	Switcher	
	Ill.C.	3	Switcher	H.V.	5	Mallet		Ill.C.	3	Switch		S.A.L.	6	USRA Mik.		Pa.L.W.	1	Santa Fe	
	Vgn.	1	Mallet					U.P.	6	USRA Mik.		U.P.	1	Switcher					
	Pa.L.W.	1	Santa Fe					Me.C.	2	Switch		Me.C.	1	Switcher					
		25				27													
Baldwin	P.R.R.	1	Mallet	B.R.O.	5	USRA Mik.		Gt.N.	1	Mikado		I.E.&W.	6	USRA Mik.		P.R.R.	1	Mallet	
	B.R.O.	10	USRA Mik.	Gt.N.	2	Mikado		Gt.N.	1	Switch		C.B.&Q.	2	Mikado		P.R.R.	1	Cons.	
	Sou.	1	Mallet	Gt.N.	2	Switcher		I.&H.R.	4	USRA Mik.		P.R.R.	1	Mallet					
	A.C.L.	2	Mikado	A.T.&S.F.	1	Mikado		A.C.L.	1	Mikado		P.R.R.	1	Cons.					
	Gt.N.	2	Mikado	P.R.R.	1	Cons.		St.L.-S.F.	1	Santa Fe		P.&R.	1	Mikado					
	Sou.P.	2	Switcher	P.R.R.	1	Mallet		B.&O.	1	Mallet		Gt.N.	1	Switcher					
	C.R.&O.	1	Mikado	Sou.	1	Mallet		P.&W.Va.	3	USRA Mik.		Gt.N.	1	Mikado					
	U.P.	2	Mikado	U.P.	1	Mikado		I.E.&W.	7	USRA Mik.		Ill.C.	1	Mikado					
	A.T.&S.F.	1	Mikado	Pa.R.R.	1	Mikado		S.P.	1	Switcher		U.P.	1	Mikado					
	Ill.C.	1	Mikado					P.R.R.	1	Cons.									
	Pa.R.R.	1	Mikado																
	24				17														
Timothy	N.Y.C.	5	Mohawk	N.Y.C.	5	Mohawk		N.Y.C.	3	Mohawk		Ill.C.	7	Mikado					
									1	Mikado									
Total..... 54				47				78				64							
				Grand total..... 251								251							

In addition to the above, the American Locomotive Company shipped 15 miscellaneous domestic and completed 15 foreign, and the Baldwin Locomotive Works shipped one miscellaneous domestic and completed 198 foreign locomotives.

the first consideration should be reasonable safety in operations, and secondly, increased capacity where that is needed. Any improvement that is not required for either of these purposes should be deferred until after the war unless exceptional circumstances make it necessary at this time. Improvements designed to effect permanent economies should be left for the companies to make when prices and costs will be more normal, unless the economy is so great that substantially the entire cost will be saved during federal control.

Freight Car and Locomotive Output in 1918

The total addition to the freight car equipment of the country up to September 1 this year has been approximately 40,000, according to reports recently compiled. This includes private cars and tank cars. The total output of the car builders up to August 31 was 63,139, including 27,718 for the army and navy and foreign governments, and in

Claims Placed Under Jurisdiction of Legal Department

A circular issued by John Barton Payne, general counsel, announces that as there has heretofore been no uniformity as to the jurisdiction of loss and damage, freight and personal injury claims, it has been considered wise to place the responsibility of handling such claims directly upon the legal department. The general solicitor of each road will be held responsible for the results and is requested to take such steps as will bring the claim organization to the highest efficiency. In view of the economic conditions of the country generally, and particularly the operation of the railroads, attention is drawn in the circular to the enormous amount of money expended annually for loss and damage, freight and personal injury claims. The Claims and Property Protection Section reporting to the Division of Law was established to co-ordinate under one head the entire subject and to exercise supervisory jurisdiction, aiding to the

fullest extent those coming in direct contact with the subject. From time to time, orders through the office of the director general will be issued with reference to the uniform and economical settlement of both loss and damage, freight and personal injury claims. Full and hearty co-operation with this work is expected from all officers and employees. Claim agents are expected to co-operate to the fullest extent in connection with the prevention of claims as well as the settlement thereof.

Elimination of Loss and Damage

In connection with its campaign for the elimination of loss and damage to shipments of less than carload freight, the Railroad Administration has had printed posters signed by Director General McAdoo of suggestions for co-operation with carriers in eliminating loss and damage to freight in transportation, which are to be posted in freight stations and shipping rooms of manufacturers. The poster says:

A total of 27,541 small shipments offered were refused by railroads during four months on one middle western district recently because of faulty packing. Of these shipments 14,570 were repaired or recovered and finally accepted, but 12,971 were rejected entirely.

Be careful in the stowing and bracing of your carload shipments to avoid disarrangement or shifting of packages, which often causes loss and damage in the usual course of transportation. Do not use weak and fragile packages for commodities of excessive weight that will not stand the ordinary transportation.

Second-hand containers are undesirable, but when used should be carefully reinforced and all old marks obliterated.

Tariffs require that full name and address of consignee shall be marked on each and every piece of less-than-carload freight. To comply carefully with this rule, it is greatly to the interest of the owner of the freight to avoid mistakes in identity, bearing in mind that many losses are due to marks becoming detached or blurred so they can not be read. Your own name and address should appear on each package so that carriers may confer with you promptly if a package goes astray or is refused and unclaimed at destination.

Your co-operation in carrying out these suggestions not only helps to conserve the necessities for winning the war, but goes far in *eliminating the complaints of your patrons as well as the labor and annoyance of claims.*

Class Rates to Be Worked Out on Mileage Basis

Plans for bringing about a considerable degree of standardization and uniformity in freight rates on the basis of cost of service and mileage are being worked out in a preliminary way under the direction of the Division of Traffic, for gradual application to all parts of the country as far as class rates are concerned. The general scheme contemplates a number of graduated scales of rates on a mileage basis, ranging up to distances of 500 or 600 miles and related to each other on a percentage basis in accordance with the general variation in the cost of performing service in various parts of the country. A general scale of rates based on the cost of service for various distances will be taken to represent 100 per cent and the scales to be applied in other regions will be, for example, 80 per cent or 120 per cent, or other percentage of the standard scale, the rates being higher in the West than in the East. Commodity rates will not be affected. It is proposed to apply the scales thus worked out to both state and interstate traffic and for this reason it is proposed to work to some extent in co-operation with the state railroad commissions, many of which have already established distance scales for application in their own states. It is not the intention to confine the application of a scale to the boundaries of a single state but a given rate group may include several states. Many of the details will be worked out after conferences between the district and

regional freight traffic committees and the state commissions.

One of the first applications of the plan has been the establishment of a new scale of class rates between points in Oklahoma on both intrastate and interstate traffic which represents approximately an average of the rates in a number of southwestern states. The scale adopted is regarded as more or less temporary but further consideration is being given to a more comprehensive revision and equalization of conflicting schedules in the Southwest.

College Boys as Track Laborers

THE DRAIN OF THE WAR upon the the nation's man power has resulted in the extensive utilization of high school and college boys for manual labor and particularly for farm work. Last spring when the Chicago, Burlington & Quincy was in the market for track labor it occurred to Thomas E. Pratt, chief special agent, who is in charge of that work, that school boys might be used as advantageously by the railroads as by the farmers. Accordingly he visited the University of Chicago and presented to the young men there the advantages of spending their vacations in useful employment for the benefit of the country and, incidentally, to their own financial and physical advantage.

As a result of Mr. Pratt's efforts about 75 University of Chicago students spent the summer working as track laborers



Students Learn How to Use a Shovel

on the Burlington. The men were given free transportation in tourist sleeping cars from Chicago to the scene of work and return, as well as free meals enroute. Under the terms of the agreement effected with them their compensation was fixed at \$2.50 per day plus any increase that might later be authorized by the Railroad Administration. While at work they were given free lodging in repainted and refinished bunk cars. Each car contained eight bunks, one bunk to a man, supplied with mattresses and blankets and two cars were fitted with shower baths. A kitchen car in charge of an experienced chef provided board to the men at the rate of \$5.25 per week.

The majority of the students arrived at Alliance, Neb., on June 20, and commenced work under a track foreman of the road at Antioch, Neb., the following morning. Most of the men continued at the work for a period of 60 days and a few even longer. The route of the work train was from Alliance, Neb., northwest through Wyoming to Billings, Mont., and from Billings southwest through the Big Horn valley to Casper, Wyo.

The employment of these young men in this manner not only disclosed their adaptability to track work but the discipline and association with practical railroad men proved as beneficial to the boys as the strenuous physical training they underwent. In the course of their work they passed through a country where they had an opportunity to study life in the mountains, oil fields, mines and western ranches.



Lord Shaughnessy



Edward W. Beatty



Sir George Bury



Grant Hall

Important Changes on the Canadian Pacific

Lord Shaughnessy Retires From Presidency in Favor of
E. W. Beatty, But Remains Chairman

AFTER 20 YEARS MANAGEMENT of the Canadian Pacific, Lord Shaughnessy has resigned as president and Edward Wentworth Beatty has been elected to succeed him. Lord Shaughnessy remains as the chairman of the board. The change is not merely one of form. Mr. Beatty becomes actual head of the great Canadian Pacific system with its 13,388 miles of railroad and its 112 million dollars of assets, and Mr. Beatty is but 41 years old. With the election of Mr. Beatty and the retirement of Lord Shaughnessy, Sir George Bury has resigned as vice-president in charge of operation although it is understood that he has not entirely severed his connection with the company. Grant Hall, who has been general manager of the western lines, has been elected vice-president in charge of operation of the Canadian Pacific system.

There is to be no such division of executive duties between the chairman of the board of directors and the president of the company on the Canadian Pacific, as is sometimes the case with American railroads. Lord Shaughnessy will remain as adviser to the company and as one of the great financial figures, one of the great national assets of Canada, but Edward W. Beatty is now the executive head of the Canadian Pacific.

Mr. Beatty has been vice-president and general counsel of the Canadian Pacific; all of his life's work has been with that company. He was called to the bar in 1901 and a month later was made an assistant in the law department of the Canadian Pacific.

The first thought that naturally comes to a railroad man following this announcement is the fact that Mr. Beatty is not an operating man and is an extraordinarily young man to assume such vast responsibilities. The loss of Sir George Bury throws into even greater prominence this lack of operating experience on the part of the new president. As a matter of fact, however, Mr. Beatty has a grasp of operating details that is understandable only when the work he has been doing in the past few years is generally known. To the executives of many of the larger railroad systems of the United States, Mr. Beatty and his work are quite well known but to the great majority of American railroad men and Americans intimately interested in railroads, both the man and his work are quite unfamiliar. To the officers and even to the rank and file of the Canadian Pacific employees Mr. Beatty is

thoroughly well known. While the actual direction of operation has been left entirely in the hands of Sir George Bury during the time that he was vice-president in charge of operation, Mr. Beatty has been hardly less closely in touch with the property and the personnel of the organization than has Sir George.

Except Lord Shaughnessy himself, no one connected with the property has been so closely in touch with the public relations of the company as has Mr. Beatty. It would go without saying that he has the confidence and respect of the board of directors and more influential stockholders and it would be the ordinary and conventional thing to say that he also has the respect and confidence of the organization and of the Canadian government, but a conventional recitation of these words would not by any means do justice to the situation. The respect with which the organization regards the new president is not a conventional thing. It is an undeniable fact founded on the experience of invariably receiving a square deal from Mr. Beatty. Frankness, utter lack of ostentation, modesty combined with first-class fighting ability are the characteristics which impress both the railroad officers who come in contact with the new president only occasionally, and likewise with the men who are intimately associated with him day by day.

Unlike most American railroads—with the exception only of the Union Pacific—the Canadian Pacific is a vast business enterprise of which the operation of its miles of railroad is only a part. It is true that Lord Shaughnessy had had experience as an operating man before he became president, but it is equally true that Americans, both in the states and in Canada, and even more so Englishmen, think of him as the executive head of one of the greatest business enterprises in any country, rather than as a railroad man pure and simple. An operating man no matter how high he may stand in his own profession would not measure up to the requirements of the presidency of the Canadian Pacific under present circumstances. What is needed is rather a combination of business man, diplomat and statesman. At first meeting Mr. Beatty would not impress one as a diplomat, at least of the old school of diplomacy; he is far too frank, but his frankness is not of the kind that hurts. He is not a driver of men but rather a leader.

It is quite impossible to comment in any adequate way on

the work of Lord Shaughnessy. The Canadian Pacific is of course the great monument which has been built up by his work, but the development of Canada as a whole has been almost equally indebted to this man who was born in Milwaukee, but whose life work has been in Canada. The honors that have come to him have been many and varied, but of them all he is probably prouder of the spirit of loyalty which he has brought into being among the Canadian Pacific's employees and officers, than of any other achievement.

It is probably true that in his choice of a successor—for we may feel quite confident that the choice of the Canadian Pacific board of directors was very greatly influenced by Lord Shaughnessy's own personal opinion—one of the main factors was the belief that Mr. Beatty was a man who could sustain this spirit of loyalty insofar as it affected the company and attach it to himself as head of the business.

The Canadian railroad situation is less complicated than our own and in some ways is probably as closely tied up in the manner of its working out, with our own, as if it were actually within the United States, yet the management of the property in the next few years may mean the difference between private and public ownership in Canada. If the United States government should permanently take over the railroads now under the United States Administration, it might lead to government ownership and operation of the Canadian railroads, regardless of the inherent merits of the Canadian situation. On the other hand the Canadian Pacific is in a stronger position on the financial side, to resist and escape government ownership, than are the United States railroads. Furthermore, the Canadian Pacific's service to the public has been such that there is apparently no strong public sentiment for punishing private owners for either fancied or real misdeeds of the past.

Within the past year the Canadian government has taken over the Canadian Northern so that with the Intercolonial it now operates a railroad system of 11,224 miles; the Canadian Pacific competes to some extent with this government system. It competes also with the Grand Trunk, which is now under private ownership and management, but which is in a far weaker condition financially to resist government ownership than is the Canadian Pacific. Were the Grand Trunk to be taken over by the government we would have

the interesting situation of an immensely strong transcontinental privately owned and privately operated railroad competing with two less favorably situated and less economically managed government-owned transcontinental systems. To compete successfully, the Canadian Pacific would not only have to be exceedingly well operated, but would have to be managed throughout its affairs, and especially in its relations to the public and with the government, in such a way as to command the admiration and respect of both. It would have to be utterly above suspicion, almost above reproach or criticism. It is a huge task which has fallen upon the shoulders of a man of forty-one.

A word should be said, in discussing the Canadian Pacific situation, about Sir George Bury who has resigned. He is one of the best operating men that American railroading has produced. He brought the Canadian Pacific through the almost unbearably trying times of 1914-15 and has operated the property all during the war with a skill that has rarely if ever been equalled. He is a young man, although not as young as Mr. Beatty, and a man of quite extraordinarily strong opinions and personality. It is not surprising that, after the strain he has been through and the responsibilities which he has taken, he should feel that he did not care to continue in charge of operating the property under a new president. It is unquestionably a loss to the Canadian Pacific, but he leaves as his successor a man—Grant Hall—whom he himself picked out and advanced to the position of general manager of the western lines.

Grant Hall is a man of great physical strength and endurance, universally liked by his subordinates and a practical operating man of wide experience. He was born at Montreal, November 27, 1863, and was educated at Bishops College and School, Lennoxville, Que. He entered the service of the Grand Trunk as a machinist apprentice in 1883. From 1887 to 1893 he was locomotive foreman on the Canadian Pacific; and from 1893 to 1898 general locomotive foreman on the Intercolonial at Moncton, N. B. He returned to the Canadian Pacific in 1898 and was consecutively general foreman, master mechanic, assistant superintendent motive power eastern lines, superintendent motive power and car department western lines and assistant general manager of the western lines. He has been general manager of the western lines since January 1, 1918.



Photograph by Press Illustrating Service

A View of the Great Coal Center—Lens

"Unconditional Surrender"

Orders Issued by the Regional Directors

A Great Variety of Instructions Have Been Sent Out
During the Past Week

DAYLIGHT SAVINGS LAW.—The Eastern regional director, in Order No. 3000-420, dated October 11, transmits General Order No. 45 (noted in the *Railway Age*, October 11, page 860) and suggests that arrangements be made (and properly advertised) to start over-night passenger trains one hour late on schedule the night before, so as to avoid holding them an hour on the road.

Shipments of Grain to Gulf Ports.—In instructions issued October 10, the Central Western regional director states that U. S. war department transportation orders are required on all shipments of grain in bulk, or sacked, for account of the war department, when destined to gulf ports, whether for export or domestic use.

Budget for 1919.—In Circular 105, October 7, the Southwestern regional director sets forth detailed instructions to govern the preparation of budgets for the calendar year 1919. The budgets are to be prepared in time to reach the office of the regional director by December 1, 1918.

Record of Shipments of Distilled Spirits.—In Order 88, dated October 5, the Southwestern regional director requests railroads in his jurisdiction to keep a record at freight stations of the freight bills covering shipments of distilled spirits, with the names of the consignors and consignees, to assist the internal revenue officers in discovering violations of the law.

No Furloughs for Railroad Men in Army.—In Supplement 7 to Circular 30, dated October 11, and Supplement 9 to Circular 112, dated October 10, the Northwestern and Central Western regional directors, respectively, announce that the war department has ruled that no furloughs will be granted to men in military service for railway work. Previous instructions on this matter, abstracted on page 632 of the *Railway Age* of October 4, are hereby cancelled.

Coal for Heating Stoves.—In Supplement 8 to R. P. C. Circular 5, and Circular 106, dated October 9, issued by the Central Western regional purchasing committee and the Southwestern regional director respectively, recommend that lump coal be used to heat stations and signal buildings. The manager of the Fuel Conservation Section of the U. S. Fuel Administration states that certain roads furnish unscreened coal for the stoves in these buildings with the result that fine coal is left in the bin or thrown away by the men in charge of the fire.

Fire Protection During the Winter.—The regional director of the Pocatoinas region, in Circular No. 11, issued October 9, quotes Bulletin No. 3 of the Insurance and Fire Protection Section relating to precautions to be taken with reference to fire hazards as winter approaches. (Similar circular by Southwestern regional director noted on page 670 last week.)

Leasing Right-of-way for Mining Purposes.—In Circular 108, dated October 10, the Southwestern regional director states that a federal manager has no right to permit drilling for oil or mining on the right-of-way unless the railroad has fee simple title to the property and the corporation has approved of the arrangement. The Division of Law of the Railroad Administration regards mineral development on roads as a corporate matter except when it is essential to the operation of the line. For instance, in the case of oil or coal for fuel purposes.

Wage Schedules.—In Circular 182, dated October 12, the Central Western regional director announces that while for operating convenience individual railroads have in some cases been divided between two regions and have been placed

under the jurisdiction of two or more federal managers, this arrangement does not require the making of separate agreements with the train and enginemen upon these temporarily separated units.

Contractors' Bonds.—In Order 91, dated October 10, the Southwestern regional director quotes a letter from Walker D. Hines, assistant director-general, which states that General Order 24 was not intended to modify previous practice with respect to requiring contractors to give bonds at their expense for the performance of work. Such bonds should be required as heretofore. The Eastern regional director has issued a similar order, 401-5AIII.

Terminal Delivery of Pacific Export Traffic.—In Circular 180, dated October 12, the Central Western regional director states that certain shipments for export via the Pacific Coast ports have been diverted from the terminal lines specified, thereby causing confusion in clearing the freight at the port of exit. He asks that instructions be issued at once that such shipments must not be diverted from the terminal lines specified in the bill of lading and waybill except upon authority of that line.

Discontinuing Car Interchange Reports.—In Order 90, dated October 9, the Southwestern regional director asks that before any changes are made relative to discontinuing freight or passenger car interchange reports or records, consolidating or discontinuing car records, consolidating territory or changing the location of headquarters of car service officers or other similar changes affecting matters in which the Car Service Section is interested, the proposed arrangements be submitted to the office of the regional director so that they may be forwarded to the Car Service Section for its suggestions and approval.

Centralizing Questions of Service and Complaints Under One Head.—In Order 89, dated October 8, the Southwestern regional director announces that questions of service and complaints in connection therewith, particularly as regards the movement of live stock, perishables and other freight requiring special attention, will be handled through the Car Service Section in order to centralize the work under one responsible head. The Car Service Section will be kept informed regarding any instructions which may be issued to the roads in the Southwestern region affecting changes in service, packing instructions, etc.

Public Service Commission Laws.—The Eastern regional director, in Order 3000-419, dated October 7, advises that the Railroad Administration has received a complaint from the Public Service Commission of a state in the Eastern region that stops of a passenger train at a certain regular station have been discontinued by a railroad under federal control without first obtaining the consent of the commission, although the law of the state requires that such consent must be secured before regular stops of passenger trains may be discontinued. It should be understood by all concerned that carriers under federal control are subject to all laws and liabilities as common carriers, whether arising under state or federal laws, or at common law, except in so far as may be inconsistent with the provisions of the federal control act or with any orders issued by the director-general, to whom the powers conferred upon the President by the act have been delegated. If there should be any instances where it is thought that strict compliance with a federal or state law or an order issued by any duly authorized individual, commission or public body pursuant thereto will result in undue

loss of efficiency or will place unreasonable burdens upon the railroads under federal control, an effort should be made to obtain a satisfactory settlement of the propositions involved by dealing directly with the federal or state authorities; failing which the matter should be submitted to this office for a ruling before any arbitrary action is taken.

Movement of Oil.—In Supplement 3 to Circular 72, dated October 9, the Northwestern regional director states that while the handling of the oil traffic in train lots has been satisfactory, it is essential that an improvement be made in the movement of miscellaneous shipments to various destinations, and the return of empties, which cannot be included in train-lots. Delays to this class of shipments are due to holding cars in yards an unwarranted length of time before placing them for unloading, failure to move tank cars promptly after unloading and the use of tank cars as peddler cars in the distribution of oil to local stations. Corrective measures must be taken to avoid unnecessary delays and oil for railroad use must be given preferred attention.

Public Improvements.—In Circular 41, dated October 8, and Supplement 1 to Order 26, dated October 10, the Northwestern and Southwestern regional directors respectively, outline rules to be followed in handling public improvements contemplated by state, county, district or municipal authorities. When the cost chargeable to the railroad does not exceed \$500 the matter can be disposed of by the federal manager. When the cost is over \$500, but less than \$5,000, the federal manager will submit a report to the regional director with his recommendations and will sign no agreement regarding any improvement without the latter's approval. If the cost is \$5,000, or more, the federal manager will submit a report to the regional director which, when approved by the latter, will be forwarded to the director of the Division of Capital Expenditures for final approval.

Lumber Situation.—In Supplement 5 to R. P. C. Circular 26, dated October 11, the Central Western regional purchasing committee requests railroads in its jurisdiction to furnish information concerning the lumber which they have on hand and on order on a form prepared by the Forest Products section of the Central Advisory Purchasing Committee. The form inquires what percentage of the railroad's estimated requirements for the balance of 1918 is now on hand for maintenance of way and structures, including buildings and maintenance of equipment; what percentage of its estimated requirements for the year 1919 is now on hand for the same purposes, and what percentage of its estimated requirements for the balance of 1918, and for 1919, is ordered for those purposes.

Physical Examinations for Mechanics.—The Eastern regional director in Order 3000-421, dated October 11, quotes as follows from a communication received from the director, Division of Operation, under date of October 7, in regard to physical examinations required in the employment of the locomotive and car repair organizations:

"We are not to receive complaints of unreasonably high physical examination fees from the employment of the locomotive and car repair organizations. Your attention is again directed to the fact that in the letter addressed to Mr. Wharton by the director general under date of September 14, 1918, it was stated that the physical examination rule will be in effect as long as three-year apprentices or promoted helpers are employed at machine shops."

"Machine shops, however, for employment will not be denied the right to demand for any cause, just as much as ability to perform the work, the examination rule will be in effect as long as three-year apprentices or promoted helpers are employed at machine shops."

While I do not intend you to understand that physical examinations should be eliminated, it is clear that the requirements should be decidedly more liberal than in the past, and the fact that an employee cannot pass a satisfactory examination to enable him to participate in relief and benefit associations should not bar him from employment, provided he waives membership in such associations. I understand that men now are in some cases accepted for employment upon such waiver, but only for a period of six months.

Control of Export Freight via North Pacific Ports.—In a circular issued October 11, the Northwestern regional director announces the appointment of F. W. Robinson, chair-

man; F. D. Burroughs and W. D. Skinner, as members of the North Pacific Export Committee, with headquarters at Portland, Ore., to control the movement of exports made through all Puget Sound ports and through the ports of Portland, Ore., and Astoria. On the same date Mr. Robinson appointed a sub-committee consisting of F. A. Peil, chairman; F. J. Calkins and A. Tinning, with headquarters at Seattle, Wash., which will have immediate charge of the movement of export freight through Seattle, Tacoma and other Puget Sound ports.

In Circular 1, dated October 11, the North Pacific Export Committee outlines the rules which will govern the movement of export freight.

(1) Until further notice no shipment for exports to foreign countries through the North Pacific ports will be received for transportation until the agent at the point of shipment has been furnished with (a) a railroad shipping permit issued by the committee, (b) a federal export license issued by the War Trade Board when shipments include anything the export of which is subject to government permission.

(2) Railroad shipping permits will be issued only on satisfactory showing of definite space engagement with a steamship company which has met all requirements of the railroads in connection with the issue of through bills of lading.

(3) The railroad shipping receipt and way bill must show (a) the number of the government (War Trade Board) license when such license is required, (b) the railroad shipping permit number, (c) the name of the railroad which is to make the delivery to the ship.

(4) Shipments exceeding the quantity or weight provided in the railroad shipping permit must not be received, and when part lots are forwarded, full description must be endorsed on the permit and the date and place of forwarding.

(5) If a shipment is to be made from more than one point a separate permit will be required to cover the movement from each point. Likewise if a shipment from a given point is divided between two or more initial railroads a separate permit will be required for the shipment via each road.

(6) Railroad shipping permits are issued with a time limit. Shipments must not be accepted by the initial carrier after their expiration.

(7) Shipments heretofore authorized by permits issued by F. R. Hanlin, joint export agent, or J. H. O'Neill, terminal manager, Seattle, Wash., may be accepted prior to the date of the expiration shown in such permits.

The U. S. Railroad Administration is expected to place orders shortly for additional locomotives for 1919 delivery. It is reported that the American Locomotive Company will build 500.

The War Department, through the department of military railways, is placing orders for approximately 40,000 freight cars for service on military railways in France, some of which may be loaned to French government railways by General Pershing.

Revision of rules for the settlement of claims for loss and damage of grain in transit were the subject of a conference at Detroit, Mich., last week, continuing through several days and participated in by railroad agents and prominent shippers. The conference was called at the request of the Interstate Commerce Commission.

Indictments have been returned by the federal grand jury at Chicago at the instance of the Railroad Administration, against an employee of the Chicago & North Western, who, having in his possession annual passes over about 25 different railroads, had rented their use to a number of business men for extended trips throughout the West. Indictments were also returned against five men who had used the free transportation.

Severe forest fires raging in Northwestern Minnesota since Saturday, October 12, have burned to death hundreds of people, and only partial reports have yet come to hand. In the region west of Duluth about 100 miles and southwest about 75 miles, many villages have been destroyed, and at Duluth and Superior, the railroads suffered great losses. It is reported that in the Northern Pacific yards at Duluth, two hundred passenger cars were destroyed. State militia and railroad employees rescued thousands of villagers and farmers.



The São Paulo Station at São Paulo.

The Development of the Brazilian Railways

Brazil Presents an Important Potential Market for American Railway Supply Manufacturers

THAT BELGIUM was the largest exporter of railway supplies to Brazil is one of the interesting features in a report on the railways of Brazil recently prepared by the Latin American division of the Bureau of Foreign and Domestic Commerce. Brazil imported from Belgium in 1912 over \$8,000,000 worth of railway supplies, 30 per cent more than from the United States, which was second. Brazil secures almost all of its railway equipment from other countries. Since the beginning of the war it has imported but a very small proportion of the amount of railway material previously imported. Whereas in 1912 it imported from five leading countries \$22,500,000 worth of this material, in 1915 it imported only \$1,200,000 and in 1916 \$2,000,000, nearly all of these imports in the latter year being from the United States. The report thus emphasizes the importance of the market for railway supplies that will present itself in Brazil for the American railway supply manufacturers after the war.

An abstract of the report follows:

The war has vitally affected many aspects of the economic development of South America, but few of these aspects have been more directly concerned with the struggle than have the Brazilian railroads. The financial depression of 1914 and the swift decline of Brazilian exchange have materially decreased the net earnings of the various companies, especially of those with large foreign obligations to meet. The cutting off of the usual supply of imported fuel has forced the companies to resort to native wood and coal, the latter being inferior in quality and hard to obtain. At present, too, the railroads are hampered by lack of capital and the impossibility of importing equipment. Fortunately, however, there are also redeeming features to the present situation. The extraordinary diversification of industries now

going on in the republic and the departure from concentration upon coffee and rubber is certain to result ultimately in the rapid expansion of the railroad systems into regions hitherto untapped which are rich in raw materials.

Furthermore, the management of Brazilian railways should be a matter of timely concern to American railway interests because of the long experience of the Brazilian Republic with such problems as federal control and operation, the guaranty of interest on railway investments, etc.

Mileage in Operation, Under Construction, and Plans Approved

With an area of over 8,000,000 square kilometers or more than 45 per cent of the total area of South America, Brazil now has less than 27,000 kilometers of railroad mileage in operation. With an area and population nearly three times as great as that of Argentina, Brazil has only about three-fourths of the latter's railroad mileage. The following table taken from the *Retrospecto Commercial do Journal do Commercio*, Rio de Janeiro, presents the actual and projected railroad construction as of January 1, 1916:

	In operation Kilometers	Under con- struction Kilometers	Plans approved by government Kilometers	Total Kilometers
Owned by government:				
Leased to private companies...	9,174	1,503	3,820	14,497
Operated under government concessions:				
With guaranties	3,623	390	1,879	5,892
Without guaranties	2,227	14	416	2,657
With state concessions.....	6,786	428	293	7,507
Total	26,646	4,134	7,509	38,289

Factors in Development of Country

The present population of Brazil is a mere fringe extending from one end of the long seacoast to the other, but a

fringe which is slowly widening as the development of the country penetrates beyond the mountain barrier farther and farther toward the interior of the more productive coastal states. The important part which railroad construction has already played in the promotion of the settlement and industrial development of the country is strikingly revealed by an examination of the map of the republic. Especially is this true around Rio de Janeiro and São Paulo, where five of the seven lines through the coastwise barrier of the Serra do Mar are located. Within a very limited area surrounding these two important cities, a section which comprises perhaps a twentieth of the total area of the country, live nearly a fourth of the Brazilian people. A very large percentage of the total railway mileage of the country is confined within this same small district, while the undeveloped interior of the country, with its great mineral wealth, its pastoral possibilities, and its vast forests of rubber, medicinal plants, dyewoods, and hardwoods is accessible from the coast only by means of a few spurs of rail lines and by navigable rivers. The important northern coastal states of Bahia, Pernambuco, Ceara, and Para, though served by minor local railways, have no rail connections with each other or with the south and are dependent upon coastwise shipping for interstate trade. In fact, the ports of the two latter states are in normal times almost as accessible from New York as they are from Rio—a fact which vitally affects the trade organization of the country.

Classification by Location

Classified according to location the railroads of Brazil naturally group themselves into the following five divisions:

- (1) Short, isolated lines, extending inland from various



The Alto da Serra Station of the Sao Paulo Railway

ports north of Rio de Janeiro: (a) From Bahia to Joazeiro, on the River São Francisco, serving a cacao and tobacco region; (b) from São Felix due west about halfway across State of Bahia; (c) network about Pernambuco serving sugar, cotton, and cattle region; (d) short lines extending inland from other northern ports.

(2) Railroads radiating from Rio de Janeiro, chief port of Brazil: (a) Northeast through coffee and sugar country to port of Victoria; (b) north and northwest across the Serra de Mar into manganese region of State of Minas Geraes; (c) southwest to São Paulo.

(3) Railroads radiating from São Paulo, center of coffee trade: (a) Well-equipped, double-tracked line southeast across Serra do Mar to port of Santos; (b) lines tapping coffee sections throughout State of São Paulo; (c) line south from São Paulo to town of Uruguayana, on Argentine border,

and to Santa Anna do Livramento, on Uruguayan border, whence connections are made for Montevideo.

(4) Railroads connecting more important Southern ports with main line from São Paula to Uruguay: (a) From port of Paranagua Curitiba, furnishing outlet for herva matte from forests of Parana; (b) from São Francisco inland, tapping lumber region; (c) from Porto Alegre inland



On the Madeira-Mamore Railway

through farming district which makes specialty of hog raising; (d) from Rio Grande do Sul inland.

(5) Interior railroads: (a) Short line around rapids in the Madeira and Mamore Rivers from Porto Velho to Guajara Mirim; (b) from Bauru, in the State of São Paulo, westward across the sparsely populated State of Matto Grosso toward the Bolivian border; (c) a line in the State of Rio Grande do Sul extending from São Borja, on the Argentine

border, south along the Uruguay River to Quarahim, on the Uruguayan border, a recently completed bridge across the Quarahim River furnishing connection with the Uruguayan system; (d) a short line in the State of Maranhao joining towns of Caxias and Cajazeiras. Caxias is on Rio Itapicuru, which is navigable from this point to the ocean; Cajazeiras is on Rio Parnahyba, navigable both up and down stream from this point.

Classification by Ownership

Brazilian railroads may be classified according to ownership under the following seven headings. (See mileage table given in this report.)

(1) Lines owned and operated by the federal government.

(2) Lines owned by the federal government and leased

to private companies. These lease contracts usually extend over a period of 60 years, at the conclusion of which the system reverts to the government without payment. Provisional clauses of the contract provide for reversion with certain payments at end of 30 years or sooner should public interest so require. Work on uncompleted links and branches is usually done by the companies on the account of the government, and sections so constructed are incorporated in the system.

(3) Lines conceded by federal government with guaranty of interest. These railroads have privilege zones, usually reserved for them for 90 years. They also have a 6 per cent guaranty, gold or paper, on recognized capital, fixed usually at a certain amount per kilometer. These roads may be expropriated by government under certain conditions.

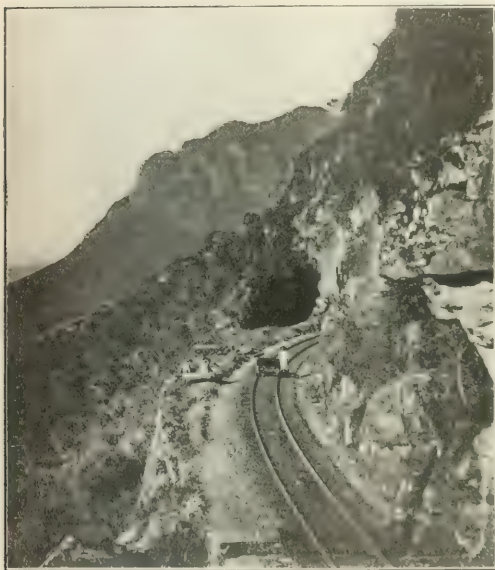
(4) Lines conceded by the federal government without guaranty of interest.

(5) Railroads owned and worked by states, which the latter may under certain conditions build or authorize within their borders.

(6) Railroads owned by states and leased to private companies.

(7) Railroads conceded by states.

In many instances a private company operates a portion of its system under a federal or a state concession and an-



A Scene on the Paraná Railway

other part under a lease either from the government or a private company holding a government concession or lease.

Considerable confusion arises from the fact that federal railways are sometimes referred to as "State" railways.

Government Expenditures

The federal government has taken a keen interest in railroad development for many years. Formerly, concessions were freely granted, and promoters were given heavy guaranties on their capital, but as a result of this policy the country has been forced to finance these lines until the sections through which they penetrated should become sufficiently developed to allow a return upon the capital expenditure.

Some 15 years ago the government formulated a plan

whereby, through a system of loans, it began the purchase of these roads, most of which have been acquired.

(In the report there follows a detailed survey of the principal railways but lack of space prevents the inclusion of the survey in the *Railway Age*, although much information of interest is given concerning the location of these railroads, their capitalization, dividends, business, mileage and equipment.)

Imports of Railroad Equipment

Practically all railroad equipment must be imported into Brazil. The following table shows the material decrease in the quantities of these imports between 1912, a normal pre-war year, and two war years. The quantities are given in metric tons:

Articles and nature of goods	Tons	Value	%
Rails, fishplates and railway accessories total	234,718	1,416	1,000
Germany	1,054	3,519	
United States	1,359	48	
France	5		
Great Britain			
Other countries			
Axes, wheels and accessories for cars, total	14,094	1,340	1,000
Germany	5,000	883	
United States	2,000		
France	1,000		
Great Britain	1,000		
Other countries			
Cars, total	62,859		
Germany	17,285		
United States	17,285		
France	1,000		
Great Britain	1,000		
Other countries			

Note: No statistics giving the number of cars imported during 1915 and 1916 are available.

For a clearer perception of the effects of the war on Brazilian imports of railway material, the above table is supplemented by the following one, which shows the values in United States currency of the total imports of these commodities from the countries supplying the largest quantities:

Country of origin	1912	1915	1916
United States	\$2,516,000	\$2,427,150	\$2,234,056
Great Britain	2,516,000	427,150	234,056
Germany			
Belgium			
France	2,265,455	1,154	1,020

A fact which may be surprising to those who have not studied this trade minutely is that in 1912 Belgium was apparently safely ensconced as the leader in the field, with over \$8,000,000 of exports to Brazil, nearly \$2,000,000 ahead of the United States, which was second. The next nearest competitor was Germany, followed closely by France and Great Britain. With 1915 came the practical extinction of imports from Belgium and the dropping of the values of those from the United States from \$6,000,000 to \$700,000. In 1916 the American imports increased by \$1,000,000, while others decreased. As far as the imports of railway materials are concerned, therefore, the Brazilian market is in a suspended condition. Speculations as to the possibilities for after-the-war competition are suggested by the 1912 figures.

Imports from United States

While the above tables were compiled from Brazilian statistics, covering calendar years, the following figures of Brazilian imports from the United States were taken from

official United States statistics for the fiscal years ending June 30. Apparent discrepancies are due to this fact.

Year	Locomotives		Rails		Cars and freight	Spikes and track material
	Number	Value	Length	Value		
1915	1	\$1,183	46,730	\$1,177.46	31,427	\$1,777
1916	11	177,294	4,097	137,092	51,296	179,589
1917	42	1,066,732	1,876	86,122	190,192	264,281
1918	11	325,076	418	26,454		176,618

(a) Not specified.

Since 1912 there has been, with the exception of the 42 locomotives shipped in 1917, which are said to have been used for the hauling of manganese ore desired by the United States, a decreasing stream of supplies and repair material, falling to a comparatively unimportant quantity in 1918.

Late News from Washington

THE COMMITTEE on standards for cars and locomotives has aroused a controversy with a number of roads by proposing to abolish all distinctive lettering and colors for passenger cars and that all cars be painted standard Pullman color and lettered uniformly. The Pennsylvania particularly objects to having its red cars painted another color.

Purchasing Committee to Organize Stores Department

E. J. Roth, purchasing agent of the Chicago, Indianapolis & Louisville, is to be appointed manager of a stores section being organized by the Central Advisory Purchasing Committee of the Railroad Administration to exercise jurisdiction over the storekeeping departments of the railroads, some of which are now under the jurisdiction of the purchasing department, but some of which are under the jurisdiction of the operating department. It is proposed to organize a staff of storekeeping officials, one for each region reporting to Mr. Roth and to work out uniform plans for handling this department.

Train Service Employees Ask Further Increases in Wages and Time and One Half for Overtime

The wage increases granted by Director General McAdoo's General Order No. 27 are not sufficient to satisfy the organizations of train and yard service employees. The Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Engineers, the Order of Railway Conductors, the Brotherhood of Railroad Trainmen and the Switchmen's Union of North America, have all filed requests for additional increases with the Board of Wages and Working Conditions. The requests, which include a proposition for time and one-half for overtime, were presented to the board at a hearing during the first week of this month and after consideration the board will make its recommendations to Director General McAdoo. The request of the yard employees also includes a proposition for time and one-half for work on Sundays and holidays. That of the other organizations provides for overtime in passenger service on a basis of a day of 100 miles or five hours, or a speed basis of 25 miles per hour, and in freight service a day of eight hours, or 100 miles, or a speed basis of 12 miles an hour. This proposition formed an important part of the demands which led to the enactment of the Adamson law, but was withdrawn during the negotiations with President Wilson and repeated at the time the brotherhoods made their presentation before the Railroad Wage Commission. Director General McAdoo, in his General Order No. 27, granted the basic eight-hour day, but declined to grant the request for time and one-half for overtime.

The presentation before the Board of Wages and Working Conditions was made by A. B. Garretson for the conductors, W. S. Stone for the engineers, Timothy Shea for the firemen, W. G. Lee for the trainmen and S. E. Heberling for the switchmen's union. Mr. Heberling asked for an increase sufficient to make the rates for foremen and helpers 50 per

cent over the rates in effect on January 1. He also presented a request for the yardmasters and assistant yardmasters, saying that they did not desire to be classed as officials. W. G. Lee was prepared to submit a request for yardmasters, but was told that they had been classified by Director General McAdoo as officials and their rates of pay would be handled by him. Mr. Lee objected because the regional directors had negotiated with the yardmasters direct instead of through the organization.

The brotherhood officials each presented a series of demands designed to preserve relationships which had formerly existed between the various classes of train employees and which they said had been thrown out of line by the general wage order, and they also wished to standardize upward to remove the discrepancies which resulted from the application of the general order to varying rates of pay on the different roads. They made various comparisons between the wages received by various classes of employees with those received by other classes. Mr. Stone, for example, pointed out instances where comparatively inexperienced foremen are receiving higher pay than experienced engineers and he made several comparisons between the wages of engineers and the comparatively unskilled classes of shop employees. He said the engineers do not receive enough pay and their requests were not given the consideration they should have been in the previous investigations of wage schedules.

Mr. Shea, for the firemen, presented a schedule of rates requested, ranging from \$4.50 to \$6.82 per day in place of rates granted under General Order No. 27 ranging from \$2.46 to \$5.47. He said this does not provide for a general standardization, but minimum standards of wages. The brotherhood leaders generally declared that the general wage order had given only very small increases to many of the employees and that the increases in general were not sufficient to meet the increased cost of living. Mr. Stone also charged that no attention is being paid by railroad operating officials now to the hours of service law nor to getting trains over the road expeditiously.

It was also brought out in the discussion that the brotherhood leaders two or three months ago filed a request with Director General McAdoo asking him to do away with the age limit and other restrictions as to physical condition governing the employment of train employees. Mr. Lee said that the purpose of this was to release the younger men for railroad service in France, where 65,000 railroad men are now employed and where he said the war department required 120,000 men by next June.

Contract Negotiations

The execution of contracts between the Railroad Administration and the railroad corporations for the use of their property during federal control is being delayed by the time necessary to consider the applications for special compensation above the standard return which have been made by about 80 of the companies. The amounts claimed as special compensation range from small sums up to as high as \$15,000,000, although in most cases the amounts have not been definitely stated, but in the oral arguments that have been made and the briefs filed on behalf of individual companies the conditions which are taken as the basis of the claims have been fully outlined. Counsel and executives of the various railroads are in constant conference with the representatives of the law department of the Railroad Administration in connection with these matters and other details in connection with the contract. While several companies have accepted the standard clauses for the contract as offered by Director General McAdoo on September 5, and some companies which have not made claims for special compensation have approved the contracts, none of them have yet been signed by the director general and recently some changes in the standard contract have been allowed.

Bridge and Building Men Have Live Convention

Committee Reports and Papers Create Much Interest at the Meeting Held This Week in Chicago

THE TWENTY-EIGHTH ANNUAL CONVENTION of the American Railway Bridge and Building Association was held at the Hotel Sherman, Chicago, on Tuesday, Wednesday and Thursday of this week. A large part of the papers and committee reports presented were of particular application to the problems now confronting the railway men of the country in doing their part toward the effective prosecution of the war.

The officers of the association during the past year were: President, S. C. Tanner, master carpenter, Baltimore & Ohio, Baltimore, Md.; first vice-president, Lee Jutton, division engineer, Chicago & North Western, Chicago; second vice-president, F. E. Weise, chief clerk, engineering department, Chicago, Milwaukee & St. Paul, Chicago; third vice-president, W. F. Strouse, assistant engineer, Baltimore & Ohio, Baltimore; fourth vice-president, C. R. Knowles, superintendent, water service, Illinois Central, Chicago; secretary and treasurer, C. A. Lichty, inspector, purchasing department, Chicago & North Western, Chicago.

The convention was called to order at 10 o'clock Tuesday morning with over 100 members present. The opening exercises were confined to the presentation of reports of officers and standing committees. The report of the treasurer showed a surplus for the year of over \$100 and a balance in the treasury of \$1,044.

Repairing and Strengthening Old Masonry

It has been deemed advisable to refer, in more or less detail, to the report submitted by the masonry committee of the American Railway Engineering Association in 1911, in which the more common causes of masonry failure are given. While this deals particularly with concrete construction, it is applicable in its essential features, to all classes of masonry. The following causes are mentioned:

- (1) Faulty design. (a) Where masonry is placed in a collage above the water line, or where the water level is lowered after construction, causing the grillage to rot and allowing the masonry to settle. (b) Where the grillage rests on piles and where the designer used too high a stress for timbers in compression. (c) Where the wing walls of abutments were built too light. (d) Where the designer used too high a bearing pressure on the earth, or foundation piles. (e) Settlement of the body of a structure causing cracks to appear where the wings leave the main portion of the structure or, in the case of arches, at points back of the parapets. (f) Lack of proper drainage.
- (2) Poor material or poor workmanship.
- (3) Temperature cracks.
- (4) Disintegration of the masonry. (a) On account of the alternate freezing and thawing of exposed surfaces. (b) On account of exposure to salt water, alkalis, acids or heat.
- (5) Improper filling.
- (6) Scour caused by (a) freshets, (b) driftwood, wagon bridges, etc., lodging against the masonry, (c) ice gorges or (d) inadequate waterway.
- (7) Sliding material.

FAULTY DESIGN.—If settlement resulting from faulty design, cases (a), (b) and (d), is not uniform in large structures, they will probably crack unless reinforced to prevent settlement cracks. The abutment could be divided into sections by vertical planes and prevent unsightly cracks.

In the case of arches (f) under high fills and supported on ordinary soils it is difficult to prevent cracking of the abutments and ring unless reinforcement is used, on account of the pressure on the foundation in the center of the arch being much greater than at the ends of the wing walls.

POOR MATERIAL OR WORKMANSHIP.—Failures from these causes can be avoided by proper care. Portland cement, as now placed upon the market, is very reliable and few failures can be traced to this important ingredient. The use of dirty sand or a poor grade of stone generally rests with the engi-

neer. Workmanship cannot be controlled as readily where inefficient or unskilled labor is employed. However, a competent inspector can generally get satisfactory results.

TEMPERATURE CRACKS.—Temperature cracks will usually occur in long walls, although some railroads report uncracked abutments built of plain concrete in lengths of 60 to 100 ft., and of reinforced concrete in lengths of 150 ft. Expansion joints are generally introduced at intervals of from 40 to 50 ft.

DISINTEGRATION OF THE MASONRY.—Disintegration, case (a), can be prevented in arches and to a great extent in abutments and retaining walls by proper waterproofing. Very little protection to exposed surfaces, however, can be provided beyond the use of the most durable material available, placed in a thoroughly workmanlike manner.

IMPROPER FILLING.—A properly designed monolithic structure will resist failure, due to careless or improper filling better than a structure built in sections. This is another instance where proper inspection and supervision can be exercised to good advantage.

SCOUR.—In designing structures over streams the size of openings should be such as to take care of the maximum amount of water that is likely to come to the opening. Should the scour extend below the foundations, the structure is liable to settle forward or bodily downward. A monolithic structure will resist failure better than one built in sections, but cracks are liable to occur in either event. Complete failure in many instances can be prevented by relieving the pressure at the back or by placing struts across the opening.

SLIDING MATERIAL.—A properly designed monolithic structure will resist failure due to sliding material better than a structure built in sections.

It is a fact that many masonry failures are not due to any of the seven causes mentioned, but to overloading the structures. Very positive proof of this assertion can be found upon looking into the history of two of the oldest masonry structures on the Baltimore & Ohio.*

The second bridge, while not quite as old, is of greater historical value. It is known as the Thomas viaduct, and crosses the Patapsco river at Relay, Md., about eight miles west of Baltimore. It is a double-track structure consisting of a series of eight semi-circular arches, each having a span of 58 ft., at the springing line, the total length being 612 ft., with a height of 59 ft.

To the writer the most remarkable feature surrounding these old bridges, is the fact, that they were designed when the equipment in use was undoubtedly lighter than the present day automobile truck. Notwithstanding this fact, they are today carrying as heavy traffic as any bridges in the country, and bid fair to continue to meet growing demands for many years to come. They stand as monuments to the engineers in whose minds they were conceived.

J. P. Canty, division engineer of the Boston & Maine, advised that the practice on that road in repairing old stone masonry has been confined almost wholly to raking out the joints and pinning and pointing them, or in some cases simply pointing. When the masonry was in such condition that this method will not be effective and economical it was torn down and rebuilt, although in some cases structures have been saved by buttressing and reinforcing bulging or otherwise defective masonry with iron or concrete or both.

Discussion

This report brought out considerable discussion, particularly regarding the serviceability of old masonry, the consensus of opinion being that structures are frequently condemned when they could be carried over with minor repairs.

L. D. Hadwen (C., M. & St. P.) emphasized the fact that prevention is better than cure and stated that masonry does not receive as careful inspection as steel structures. Steel bridges are strengthened as soon as deficiencies occur but masonry which is being overloaded or which is showing signs of failure is not relieved as promptly. One common source of trouble with masonry structures is deficient drainage in the embankments back of the structures. He urged special consideration of this problem and the adoption of such measures as may be necessary to insure the prompt escape of water.

A. Montzheimer (E. J. & E.) described the reinforcement of a center pier on a double track drawbridge across the Grand Calumet river at South Chicago. This pier was supported on piles cut off well below the water line but extending several feet above the bed of the river. With this form of construction there was serious vibration. To provide a more stable structure a cofferdam of steel sheet piling was driven around the pier. Additional piers were driven inside the cofferdam after which it was filled with concrete deposited under water. This form of construction removed the difficulty.

Essential Work

By C. A. Morse

Assistant Director, Division of Operation, United States Railroad Administration

We have a condition before us that we have to meet; that is, the scarcity of labor and of material with a heavy business on our railroads. Our problem is to determine how are we going to take care of this business safely under these conditions.

We all know that it is possible to extend the life of pile and timber trestle bridges indefinitely, by replacing the separate items that go to make up the structure from year to year, also in ordinary times it has been considered wise to renew a structure completely when it has reached a certain stage, using the salvage for repairs that would otherwise require the purchase of new material. Now with both labor and material obtainable only in limited quantities, and knowing that we can carry a structure over with perfect safety only by making partial renewals it is up to us to do so. Again we are using, or have been using, large quantities of treated material, especially creosoted materials, in the past 10 years. Today it is impossible to get creosote in sufficient quantities to fill our requirements, while to renew bridges completely with untreated material, means a comparatively short-lived structure. Therefore in repairing structures to extend their life from one to five years, we should use untreated material as it is much easier to secure this than the treated timber.

A few years ago, railroads could borrow money to take care of additions and betterments for 4 per cent and under those conditions it was not economical to spend over 4 per cent of the cost of renewal in repairs that would extend the life of the structure one year. As labor and material were costing much less then than now, this did not permit of very extensive repairs being made. Today, money for additions and betterments expenditures is costing from 7 to 10 per cent. and labor and material, when they can be had at all, are from 50 to 200 per cent higher than they were a few years ago. These conditions are due to the war which we all hope and believe cannot last over one or two years longer at the

most, and they will then be changed. Therefore, we are warranted in making large expenditures for repairs at this time, especially for repairs that will extend the life of the structure until after the war, when renewals can be made for probably 25 per cent and possibly 50 per cent less than they can be made for at this time.

It behooves us, therefore, to make a careful inspection and study of each structure, and if we can repair it, so as to make it good for say, four years, for 40 or 50 per cent of what it would cost to renew it in full, we should make the repairs. If we can make repairs that will extend the life of the structure one year for say, 7 per cent, two years for 8 per cent per year, or three years at 9 per cent per year on the cost of renewal, such repairs should be made. It will be seen that if this policy is carefully carried out, we will be able to get through 1919, with few if any full renewals of pile and trestle bridges, and in doing so, there will be a very great saving made in both labor and material, especially in the latter.

The same careful inspection and study should be made of our steel structures. In the first place, they should be kept well painted as nothing gives added life to a steel bridge for so little money as this. Many structures that are a little light can be taken care of by strengthening if on important main lines, and by reducing speed of trains on less important lines.

We are all ambitious to improve the class of structures on the territory under our jurisdiction. We must put such work on the shelf, and bend our efforts toward holding to what we have, leaving such things to be done when we are not fully occupied in the one great task of winning the war. We can afford to stop the wheels of progress temporarily, as, if we do not win the war, there will be nothing to make progress for.

We all have cases where we have waterways that are not large enough for the area drained. Many of these have been in this condition for years. We naturally are trying to remedy them a little at a time, and rebuild some each year. We should not do any of that class of work during these times, unless at a point where washouts have occurred recently, and then only if we find that there have been previous washouts at these same places within the last two or three years. We can afford to take a chance where this is the only washout at that point for 6 to 10 years.

On building work, the question of replacing old depots is usually up to the management and as there is little chance of state or local authorities making demands for better depots at this time, repairs to present structures are about all that you have on that class of structures.

While you cannot do much new building work, you should endeavor to keep the present structures painted, both for looks and to extend their life. This applies not only to structures, but to roadway signs. In keeping the latter well painted you add to the safety of operation. Signs are erected for a purpose; in order to serve that purpose they must be seen, and a well painted sign is more readily seen, and attracts attention quicker than an unpainted, weather-stained sign, that looks as though it was obsolete, and was there only because some one had neglected to take it down. The actual cost of painting roadway signs is small, and there is nothing on a railroad that makes it look more alive and up to date than well-painted roadway signs.

There is one thing in connection with buildings where you have it in your power to make a great saving; that is in connection with the heating. It is surprising to see how little attention is paid to keeping depots and mechanical buildings like shops and roundhouses tight so as to keep out the cold, and keep in the heat. Good work can also be done in keeping steam, water and air pipes and valves tight and preventing leakage, which means fuel for pumping water

and air, and making steam; there is no comparatively small maintenance matter where so much can be saved as this. Steam pipes should be lagged, windows and doors should have weather strips, floors should be kept tight, and the bottoms of buildings where cold can get under the floors should be boarded or banked up, broken window panes should be replaced promptly, and every effort should be made to save fuel. In many cases in the northern climates, double windows and storm doors should be provided.

In many sections of the country, and probably on nearly every railroad, there still remain some wooden platforms at depots. As these require renewal, they should be replaced with stone screenings, gravel, cinders or something of that class, (on earth filling if required) and eliminate the use of wood in these platforms. This applies to small stations where it is not planned eventually to put in brick or concrete platforms.

I always associate a master carpenter with the old time freighter, who had on the back of his wagon a "Jockey Box," in which could be found anything from baling wire to a wagon-hammer. If anything happened on the road, he could always find something in his jockey box with which to repair it. A master carpenter's headquarters shop together with outlying buildings is usually a big "jockey box" from which he can dig up something with which to do any ordinary job without waiting for the material ordered on his requisition to show up. If you have not already found it necessary to do so, I would suggest that you clean out the box, and get all of this material into use; it is no time now to have material lying around idle, with the idea that it will come in someday; now is the time when it should be used.

Among the things that accumulate on a bridge and building foreman's hands are packing, O. G. washers and chords, and sway brace bolts, especially where wooden bridges are constantly being replaced with concrete structures or pipe. I have noticed that it was hard to separate a foreman from this class of material but all surplus material of this kind and all metal scrap should be shipped in to the storekeeper now, while they are both so valuable.

I want to say a word to bridge engineers regarding their second-hand material yards or their jockey boxes. They should be inspected carefully; material that can be useful for strengthening bridges should be kept; girders and I-beams that can be doubled up, should be listed and used as soon as possible and the balance scrapped.

It has been customary to save a lot of light girders and pony trusses for possible future public road crossing use. I believe we are warranted at present prices in scrapping all such as we will probably be able to buy new spans, designed purposely for road crossings, by the time we would use these, and get them for less or at least no more than we can get for these at this time.

There is always an accumulation of odd sizes of timber which is not standard. Now is the time when bridge engineers, architects and master carpenters should get a list of this material, and, regardless of standard plan buildings and odd structures so as to use it up. By this means we will get rid of a lot of dead stock and turn it in at an extremely high price.

There is usually an accumulation of window frames and sash, door frames and doors, window weights, etc., that should be used. Glass, like everything else, is high, and by getting after this matter, we can use it at this time, and by so doing, clean up the odds and ends. The same process should be applied to anything that the store department has on hand that is not being called for because it is not standard on that particular road for the time being. Material is too scarce, and costs too much money in these times to be finicky about standards.

The Material Situation

Following the presentation of Mr. Morse's paper there was a discussion of the material situation. Dr. Hermann Von Schrenk described the conditions existing in the lumber industry and outlined the increasing scarcity of bridge and building timbers owing to the large demands of the army and the shipping board. He emphasized the importance of salt boxes on untreated timber piling and other expedients to increase the service secured from timber. He also reviewed the situation existing in the timber treating industry and emphasized the necessity of conserving preservatives for the most essential needs. He also emphasized the necessity of using native timbers to reduce the demand for transportation and stated that it is now necessary to use timbers which in many cases have not been considered desirable before. He also called attention to the necessity of giving more attention to the protection of timber bridges from fire because of the increasing age of these structures.

The Steel Situation

Conditions in the steel market were described by T. C. Powell, member of Priorities committee of the War Industries Board in a written communication. In this report Mr. Powell described the work of the Priorities division, stating that it is divided into two divisions; one supervising construction which is immediately connected with the prosecution of the war, and the other, the construction which is non-war.

The division in charge of non-war construction not only controls the amount of steel necessary for such construction, but also carries out the plan under which no construction costing above a certain sum can be started without a permit. This division has also undertaken to secure a report from the entire country listing all the building now in progress, including private residences as well as manufacturing plants.

It is recognized that in certain types of construction steel is an essential material, but the Facilities division does not accept the mere statement that the style of construction decided upon necessarily requires steel, but goes further into the projects to develop whether or not the type of construction cannot be changed without incurring additional expenses and by substituting other available materials, the use of which will conserve steel.

The same program is carried out in connection with railroad construction, and in many cases the plans of the railroads or of the contractors working for the railroads, have been modified, substituting concrete for steel, and in some cases, substituting wood for steel.

In the case of bridge construction, the railroad submitting plans for a new bridge, or the replacement of an old one, is asked to limit the use of steel to the minimum. In the case of shop buildings, the steel is limited to those parts of the building for which it is proved that no other type of construction is possible. Water tanks and fuel oil tanks are being constructed of concrete.

Sources of Railway Water Supply

The water supply of any region except the deep underground waters from porous beds which are supplied from a source perhaps many miles away, is abundant or deficient according to the character of the rainfall. Of the water falling as rain, a part of the precipitation flows into the lakes and streams and to the sea, a part is held by the vegetation and soil and is evaporated by the sun directly, or through plant growth, and a third portion is absorbed by the earth and penetrates the pores and fissures in the rocks, loose sands and clays below the surface, accumulating in the porous strata from which it is secured by sinking wells.

The normal annual rainfall throughout the country has

been estimated at 29 in., and the area is divided in this respect into the following classifications: Deserts, or arid lands 10 in.; semi-arid, or light rains, 10 to 25 in.; moderate, 25 to 50 in., copious, 50 to 75 in., and excessive above 75 in. According to the latest record, less than 6 per cent of the area of the United States is in the excessive rainfall class, exceeding 75 in. annually, 16 per cent ranges from 50 to 75 in., 25 per cent from 25 to 50 in., 30 per cent from 16 to 25 in. and 20 per cent less than 10 in. The difficulty in providing an ample supply at all seasons from many of the streams and other surface supplies lies in the fact that the rainfall is not equally distributed throughout the year.

Streams and Lakes

Small streams, if sufficient in quantity, present but few difficulties in establishing a pumping station. On rivers and the larger streams, where the stage of water varies beyond the limits of ordinary suction lift the proper location of pumps with reference to the varying stage of water is essential to satisfactory operation. Streams usually carry considerable matter in suspension and the problem of protecting the intake lines from mud, sand, leaves, etc., is quite important. The matter carried in suspension by the water of streams may be removed readily by settling basins or filtration, and the water is usually of a good quality except where the streams are polluted by sewerage or industrial wastes. Smaller streams are often affected by organic and vegetable matter, especially after a prolonged dry period followed by light rains. This condition accounts for a great deal of the trouble experienced from foaming and pitting, by water that is usually considered good boiler water.

The smaller lakes and ponds usually offer the most favorable conditions for establishing pumping stations, both as to construction and quality of water. They are affected but little by storms, and difficulties from the effects of currents common with the larger lakes are not encountered. While the quality of the water of the large lakes is uniformly good the effects of currents and storms sometimes cause a great deal of trouble from turbidity and sewerage pollution, as well as stoppage of intakes, if they are located near the shore.

Reservoirs

Impounding reservoirs are frequently found necessary for the storage of water when a suitable supply is not available from other sources. Where the reservoir is dependent either on a stream or water shed for supply, the storage should be sufficient to provide for the evaporation and absorption that will take place in addition to the normal consumption. The factors to be considered are, the humidity, area of reservoir, depth of water, temperature, proximity of forests and other local conditions. The absorption will depend entirely on the character of the surface and sub-strata, and unbroken sub-strata of clay or hard pan form the best possible bed for a reservoir as the absorption through a formation of this kind is less than through any other than an impervious rock. The rainfall will have to be considered carefully in connection with the watershed to determine the catchment area required. The size of spillway will depend on the rainfall and catchment area and should be large enough to take care of the maximum run off over the entire catchment area.

The successful operation of a railroad using steam as a motive power requires that the supply of water be equal to the demand at all times. The consumption will vary greatly and the available supply should be sufficient for the maximum requirements with a safe factor to provide for future increased consumption. Provision should also be made for water for other than locomotive supply at terminals and other points where such water is required. The immediate supply should be sufficient for a demand at least 50 per cent over the normal requirements to provide for fluctuations in consumption and extraordinary movements of trains following

temporary obstruction of traffic or other reasons. In considering a source of supply, accessibility is secondary to the quality of the water. An ideal water for locomotives is one that will not form scale or cause corrosion, pitting or foaming.

The dam is perhaps the most important feature in connection with an impounding reservoir and too much attention can not be given to its construction. The foundation must be sufficiently firm to prevent settlement. The connection between the foundation and the dam must be of the best to prevent leakage and shifting, or sliding. Earth dams are most commonly used on account of their cheaper construction, and when properly built are quite as satisfactory as any other construction.

Wells

A deep well is not always the most satisfactory method of securing water, as, where the head is far below the surface, the cost of raising the water is excessive, but surface conditions are often such that the only available water supply is that secured in this way. Well waters, as a rule, are pure and clear, although many are very hard. A hard water is not objectionable for drinking purposes, but is unsatisfactory for boiler use. The majority of well waters respond readily to treatment and as a well is usually drilled only when all other possible water sources have failed, there is no choice other than to use the water in its natural state or resort to treatment.

An intelligent knowledge of the presence of underground water can be secured only by a careful examination of the locality in which the well is desired and of existing wells in the vicinity. From the existing wells and local geology, it is often possible to determine the exact depth of the water-bearing strata and the quantity as well as the quality of water it is possible to secure. The ground water level has lowered decidedly in certain sections of the country. While this decline has not been confined to any particular section, it has been marked in Indiana, Southern Michigan, the Great Plains and in Southern California.

C. R. Knowles, superintendent, water service, Illinois Central, Chicago, chairman.

Wooden Tanks

By C. R. Knowles

Superintendent Water Service, Illinois Central, Chicago

The subject of wooden tanks appears to be a timely one in view of the present steel situation and the fact that the concrete tank has not been developed to such an extent that it can replace either steel or wood entirely in tank construction. Within the past few years steel tank construction had largely supplanted that of wooden tanks on railroads on account of the low cost of production, improvements in design and the increasing scarcity of suitable timber. A surprising feature of the situation has been the fact that the manufacturers of wooden tanks do not appear to be alive to the situation and the opportunity to push their product. In spite of this apparent apathy on the part of the wooden tank manufacturers there has been a decided increase in wooden tank construction on railroads which has been further augmented by the ruling of the Railroad Administration prohibiting the use of steel plates for the construction of water or oil tanks, except in high tanks where it is essential.

The subject of timber suitable for wooden tanks will be dealt with lightly here as the committee report on railway water tanks in the 1915 proceedings of the association goes into the question of tank timber extensively and but little can be added at this time. At the time the 1915 report was written cypress predominated as a tank material, while at the present time redwood probably predominates with Douglas fir a close second, although cypress is still being used to

a large extent, but at a greatly increased cost. Heart red cypress, of course, leads all available timbers in tank construction for long life although the scarcity of this admirable timber is growing more apparent year by year. Redwood is beyond a doubt second only in permanency to cypress. Douglas fir and southern heart pine are about of equal value as tank material with a life of approximately 10 years.

There has been but little change in the design of circular wooden tanks since their first construction, as it is obvious that this type of tank will permit of but slight modifications, although there has been a wide variation in size, the capacity increasing with the greater demand for water and the necessity for additional storage. The only marked change in wooden tank construction from the earliest form to the present type has been that of eliminating the taper of the staves. The sectional hoop with lugs and bolts has now replaced the solid hoop as it was found more satisfactory, especially for the larger tanks. Consequently the necessity for tapering tanks has been eliminated.

When the fibers of the wood comprising a tank are thoroughly saturated with water, decay is practically impossible; on the other hand if the wood was perfectly dry there would be little likelihood of decay. In water tanks, however, there is always an intermediate condition of moisture in which the wood is dry on the outside and wet on the inside, thus promoting rapid decay unless the timber has been carefully selected and has a relatively long life.

It is difficult to point out any portion of the tank more susceptible to decay than another, although the tops of the staves probably decay more quickly than any other part of the tank. If this is true it is very likely caused by a wider variation in the degree of saturation owing to the tank being filled and emptied. One of the arguments put forth in favor of roofs on tanks is the protection given the tops of staves. The advantage of a roof in the prevention of decay in the staves is extremely doubtful, as the only function it can perform is to keep them dry, which is obviously impossible in a tank used for the storage of water. Poor inspection of timber is responsible for much of the decay in wooden tanks. A few poor staves in a tank will cause trouble even if the remainder of the staves are perfect.

Creosoted Tanks

The Illinois Central has recently started to use creosoted timber in the construction of its wooden water tanks. Nine of these tanks constructed during the past year proved so successful that this road is now building more and has practically made the creosoted tank its standard. Creosoted tanks were resorted to on account of the high price and great demand for steel for other purposes than tank construction, and the scarcity and cost of timber that would be suitable for use without treatment.

The creosoted tanks built by the Illinois Central are of their standard sizes, of 100,000 gal. capacity with a 20-ft. stave and 30-ft. bottom, and 50,000 gal. capacity having a 16-ft. stave and a 24-ft. bottom, no change having been made in the plans formerly used for the construction of untreated wood tanks. The timber used is loblolly pine, coming under the general specifications for tank timber except that no restrictions are made as to heart or sap. The timber is air seasoned and should be permitted to season for three months in favorable weather. The method of treatment employed is the Rueping process, using about 5 lbs. of oil per cu. ft. of timber. The oil used is a coal tar creosote, coming within American Railway Engineering Association No. 1 specifications. The tank towers, constructed of 12-in. by 12-in. posts and 6-in. by 8-in. braces, roof, frost box, ladder and all timber entering into the complete structure is creosoted. A very important feature in the construction of these tanks is that all timber more than one inch in thickness is framed before treatment so that it is rarely necessary even to bore a hole in

the treated timber during the field erection of the tank.

When one discusses creosoted tanks for the storage of water the question is immediately raised as to the effect of the creosote on the water. The Bureau of Industrial Research of the University of Washington conducted extensive tests of creosote wood stave pipe to determine its effect upon water for domestic and irrigation purposes, and the conclusions were that there was no detrimental effect of the creosote on the water. These conclusions were borne out fully by the results on the Illinois Central where the creosoted tank has proven an unqualified success.

Frost Proofing

A wooden tank is in itself a certain protection against frost. No frost proofing is required for the tank proper throughout the greater portion of the country and in few cases is any required even where the most severe cold weather prevails, providing the consumption of water each 24 hr. equals the capacity of the tank. This, of course, applies only to the tank, as the inlet and outlet pipes will have to be protected against frost where a freezing temperature exists. The most effective frost box is one constructed with one or more air spaces. These are lined with building paper to make them as nearly air tight as possible. More frost protection is always required where surface water is used than with water from wells, as the temperature of well water is usually above 50 deg. F., while the temperature of surface water is often only slightly above the freezing point.

No set rules may be applied to frost protection, as weather and other conditions vary so widely throughout the country that uniform practice is out of the question. The factors governing are: (1) source of supply and initial temperature of water; (2) minimum temperature prevailing and duration of temperature below freezing, always remembering that a temperature of 20 deg. below zero maintained for two weeks offers a far more serious problem in frost proofing than 40 deg. below for two days; (3) size of inlet and outlet pipes, and whether flow of water is continuous or intermittent; (4) consumption of water in relation to the storage capacity of tank. Wherever possible artificial heat should be dispensed with as stoves are responsible for more than 50 per cent of the tank losses from fire.

Discussion

In answer to a question concerning the use of creosoted tanks by other roads, Mr. Knowles stated that he understood that they had been used to limited extent by the Louisville & Nashville and by the Cleveland, Cincinnati, Chicago & St. Louis. As to the effect of the creosote on water he stated that a slight taste was noticeable at first but that this soon disappeared. J. P. O'Neil (N. Y. C.) asked if the creosote affected the hands, face or eyes of the workmen when erecting the tanks and Mr. Knowles stated that he had heard of no difficulty of this kind.

There was also considerable discussion on the durability of tanks built of untreated material and Mr. Knowles called attention to the fact that the proper selection of materials was of the greatest importance. He cited the cases of three cypress tanks built in 1904, 1907 and 1911 respectively. The one first built proved to be in better condition than the others and after being reconstructed following a life of 4 to 10 years, the use of specially selected material gave better tanks than at the time originally built.

W. A. Alexander (Bangor & Aroostook) described his experience with tanks of untreated material and cited instances of long life obtained with them. He emphasized the superiority of wrought iron hoops as compared with steel and stated that he frequently reinforced tanks having flat hoops by putting round hoops between the flat ones. In discussing the proofing of tanks he mentioned the tendency to decay

produced by enclosing the tank retaining the moisture forming on the outside. He discouraged the use of large kerosene lamps as dangerous and preferred the use of stoves. J. P. Wood (P. M.) described the installation of steam coils in frost boxes and steam pipe pits where steam pumping plants were in operation. He also reported having used asbestos covering over water pipes with satisfactory results.

Carrying Bridges Over

By C. F. Loweth

Chief Engineer, Chicago, Milwaukee & St. Paul, Chicago

This paper outlined the general considerations to be observed in studying bridges and described the "classification" of old bridges as conducted on the Chicago, Milwaukee & St. Paul. This involves the determination of the load-carrying capacity of the structures in terms of the arbitrary "Cooper" locomotive loadings, together with the like classification of all locomotives owned by the road as well as any others that may be operated or transported over any part of the lines. With this information available it is possible to determine very quickly and accurately whether or not a given bridge can carry a certain engine safely.

Practical considerations of speed restrictions, loading schedules, and common sources of limitations on the capacity of bridges were also discussed. An abstract of this paper will be published in the next issue.

Discussion

This report created much discussion. E. T. Howson (*Railway Age*) called attention to the fact that roads are now justified in making heavier expenditures to carry bridges over than in previous years because of the abnormal cost of new work. L. D. Hadwen (C., M. & St. P.) emphasized the necessity of giving more than the usual consideration to bridge inspectors' recommendations for the renewal of bridges as these inspectors are inclined to play safe. J. S. Robinson (C. & N. W.) urged the more frequent inspection of old bridges as a means of carrying them over without danger. L. Jutton (C. & N. W.) called attention to the fact that many minor repairs are made by local foremen with little supervision and that the old standards under which these men are working should be revised because of present conditions. A. S. Markley (C. & E. I.) urged close attention to the removal of decayed timber in pile bridges in order to eliminate the fire hazard, urging that sap rot be cut off promptly. F. E. Schall (L. V.) emphasized the importance of closer supervision and instruction of foremen than in previous years in order that they may adopt all reasonable measures without endangering traffic.

Shipping Company Material Economically

The government has placed orders for 100,000 cars, but we need at least 150,000 cars for replacements alone this year. The cars on order will add only 4.3 per cent to our car equipment while the wear and tear of ordinary service depletes our supply 4 per cent. To help meet this condition every one of us must endeavor to contrive the quickest and most economical way to handle material, and release cars with greater despatch and with the least possible labor.

The first thing to be considered is loading properly and to car capacity. In this the user must keep in close touch with the storekeeper. On one road, what is known as a supply train is run. This train has a regular schedule and all parties in need of supplies must have their orders in at least six days before the train leaves the division storehouse. Light supplies are loaded in box cars and heavy supplies in gondolas in order that they can be unloaded by air unloaders.

This supply train gathers up surplus materials and scrap along the line at the same time and in the same manner as it unloads it. This method is economical and successful. Where there is a quantity of light material for various points on different divisions car loads of this kind of material can be handled by loading the cars to a transfer point where the lading is transferred to cars which can be loaded to capacity for that point direct. In handling our supply trains all parties interested in receiving materials are advised of the day of their arrival and as nearly as possible the time so that they will be on hand to receive and help to unload their supplies, thereby avoiding delays. In handling bridge materials which are not too heavy single-end air unloaders are a valuable help. These unloaders can be built very economically and cost about \$1,000 in addition to an old flat car properly strengthened.

To insure safety and promptness in handling materials and the quick release of cars there must be harmonious co-operation on the part of all concerned. Also if the division car service man would send a statement each month to each person on his division responsible for the prompt release of cars, showing the time cars were received for unloading and the time released and returned and classified in order as to standing in promptness in releasing cars, an incentive would be created that would result in much good to the car service. In planning work it may be classified under the following heads: (1) emergent. (2) urgent. (3) routine. Emergency work includes that which demands immediate attention and supersedes all other work. Urgent work is that by which the greatest good to the service can be obtained through the release of cars. Routine work is that which follows in its turn as orders are received.

Z. T. Brantner, shop superintendent, Baltimore & Ohio, Martinsburg, W. Va., chairman.

This paper created considerable discussion, several members urging the importance of closer co-operation with the supply department in the handling of company materials and in unloading cars promptly. It was the consensus of opinion that although progress has been made in this direction further improvements can be effected.

Labor Saving Equipment

The committee on labor saving equipment, F. E. Weise (C., M. & St. P.), chairman, presented a report directing attention to the necessity for using all devices which conserve labor; the committee mentioned several well-known devices which are deserving of more general use.

Bridge Decks and Guards

The committee was impressed with the practical agreement as to the use of T-rails for inner guards on the various roads. Generally second hand and scrap rails removed from running tracks or from stock are used. An old frog point, or a point casting, is used where facing the traffic and in a few cases also where trailing the traffic.

Points are of course used at each end of a single track bridge, the distance from bridge ends varying from 30 ft. to 90 ft. The distance between the heads of running rails and guard rails is found to vary between 8 in. and 10 in. However, 8-in. and 9-in. spacings predominate. It is not clear in some cases whether the inner guard rail is spiked to every tie or every other tie.

The decks of timber bridges have been covered in previous reports. It is noted, however, that 8-in. ties, 10 to 12 ft. long seem to be the most popular for decks of timber trestles, with 6-in. by 8-in. outer guard timbers generally in use.

For open floors in steel bridges, the general practice seems to be as follows: Every second or third tie is bolted to steel

stringers or girders, outer guard rails are generally bolted to every third or fourth tie by means of machine bolts or lag screws, and inner guard rails are usually spiked to every second tie, and in a number of cases to every tie. Most of the information received did not indicate whether tie plates were used under running rails on ties or bridges. We assume that railroads using tie plates under rails on ordinary ballasted tracks on roadway would likewise use them on bridges. One road reports the use of tie plates also under the inner guard rail.

It is suggested that railroads working up new standards of practice should be governed by the following principles, so far as steel spans are concerned: A constant distance should be maintained from center to center of stringers, and of girders up to considerable span length; no change in size of tie will then be found necessary. The width of deck and the distance "in to in" of outer guard rails may thus be kept uniform, which will give a good appearance, and also reduce the number of sizes of sheets of galvanized iron required to be held in stock where it is the practice to fire-proof decks with sheet iron.

H. A. Gerst, assistant engineer, bridge department, Great Northern, St. Paul, Minn., chairman.

Discussion

This report created considerable discussion particularly with reference to anchoring rails on bridges, the consensus of opinion opposing this practice.

Small Versus Large Gangs for Maintenance Work

The committee on this subject, J. P. Wood (Pere Marquette) chairman, made a report in which it discussed the merits of both large and small gangs and advocated gangs of five to seven men as the most economical under ordinary maintenance conditions.

R. H. Reid (N. Y. C.) favored small gangs for ordinary repair work but believed that a good-sized gang was absolutely essential for larger work and that adequate progress could not be made without it.

C. A. Lichty (C. & N. W.) called attention to the fact that emergency work required an adequate force to clean up the work quickly. Attention was also directed to the increase in overhead expenses for the small gang because of the necessity for a cook for the smaller units as well as the larger ones. Winter time work also introduced a factor in the difficulty of keeping the men properly employed but it is the duty of the man in charge to arrange the work so that there is an adequate amount to be done in the winter.

Other Business

On Tuesday evening George F. Porter, engineer of construction of the St. Lawrence Bridge Company, Montreal, gave an illustrated talk on the erection of the Quebec bridge, accompanied by slides and moving pictures.

R. H. Aishton, regional director, Northwestern region, United States Railroad Administration, made an address on Wednesday morning. He paid tribute to the loyal support of bridge and building men in the present time of stress and commended the idea of a war council which characterized the convention. He said that the problem confronting all railway men is to do more than they have ever done before while they have less to do with. He emphasized particularly the importance of watching the shipment of company materials in order that no car may be used unnecessarily, for every car thus used is depriving our military forces of the supplies which it would carry.

W. H. Finley, president of the Chicago & North Western, commended the association at the Wednesday afternoon session for its work in advancing the practical phases of

railroading and in bringing together practical and theoretical knowledge of bridge construction.

On Wednesday evening the annual dinner of the Association was held at the Sherman hotel. Moving pictures of levee and flood protection work on the Mississippi river were shown, followed by slides of convention groups at previous meetings. Following adjournment on Thursday afternoon the members visited the plant of the Universal Portland Cement Company at Buffington, Ind.

At the closing session on Wednesday the following officers were selected for next year: President, L. Jutton, Chicago & North Western, Chicago; first vice-president, Fred Weise, Chicago, Milwaukee & St. Paul, Chicago; second vice-president, W. F. Strouse, Baltimore & Ohio, Baltimore; third vice-president, C. R. Knowles, Illinois Central, Chicago; fourth vice-president, Arthur Ridgway, Denver & Rio Grande, Denver, Colo.; secretary-treasurer, C. A. Lichty, Chicago & North Western, Chicago; new members of the executive committee are E. T. Howson, *Railway Age*, Chicago, and C. W. Wright, Long Island Railroad, Jamaica, N. Y.

Cleveland was selected as the location for the next meeting.

The Supply Exhibit

The Bridge and Building Supply Men's Association presented an exhibit of devices used in the bridge, building and water service departments in a room adjoining the convention hall, the exhibits consisting principally of models, samples and literature covering these products and devices.

The officers who have been in charge of this Association for the past year are as follows: President, L. D. Mitchell, Detroit Graphite Company, Chicago; vice-president, P. C. Jacobs, H. W. Johns-Manville Company, Chicago; treasurer, Tom Lehon, The Lehon Company, Chicago; secretary, C. E. Ward, U. S. Wind Engine & Pump Company, Batavia, Ill.; members executive committee, W. H. Pratt, Heath & Milligan Manufacturing Company, Chicago; M. J. Trees, Chicago Bridge & Iron Works, Chicago; C. F. Massey, C. F. Massey Company, Chicago; C. L. Cockerell, Philip Carey Company; E. T. Howson, *Railway Age*, Chicago; and E. J. Caldwell, Barrett Company, New York.

The following is a list of companies exhibiting and their representatives:

American Hose & Pipe Co., St. Louis, Mo. Represented by J. J. Johnson and W. O. Walcott.
American Valve & Meter Co., Cincinnati, Ohio. Represented by J. T. McGarry and Dan T. Higgins.
American Tar Products Co., Chicago. Represented by F. H. Fields and F. E. Walter.
Barrett Company, The, New York. Represented by E. J. Caldwell, G. R. McVay, A. J. Ross, F. W. Freeman and K. C. Barth.
Bird & Son, Inc., East Walpole, Mass. Represented by M. L. Caton and H. A. Inwood.
Carey Co., Philip, Cincinnati, Ohio. Represented by C. L. Cockerell and E. L. Schenly.
Chicago Bridge & Iron Works, Chicago. Represented by M. J. Trees.
H. C. Brown, C. M. Ladd and C. H. Scheman.
Chicago Pneumatic Tool Co., Chicago. Represented by E. J. Allen and F. F. De Garmo.
Detroit Graphite Co., Detroit, Mich. Represented by J. J. Hogan, L. D. Mitchell and W. O. Walcott.
Dickinson Co., Paul, Chicago. Represented by A. J. Filkins.
Dixon Crucible Co., Joseph, Jersey City, N. J. Represented by H. A. Nealley, J. E. Simpson and Neal Cameron.
Duff Manufacturing Co., The, Chicago. Represented by C. N. Thulin and E. A. Johnson.
Fairbanks, Morse & Co., Chicago. Represented by E. C. Golladay, F. M. Condit, L. H. Mathews, A. A. Taylor and C. D. Skelton.
International Filter Co., Chicago. Represented by M. P. Robinson.
Kelly-Derby Co., Chicago. Represented by C. W. Kelly, W. B. Holcomb, G. W. Harnbrook and O. K. Fisher.
Johns-Manville Co., H. W., Chicago. Represented by P. C. Jacobs, D. L. Jennings, W. H. Lawrence, C. E. Murphy, W. D. Otter, J. H. Trent, E. H. Willard and J. C. Younglove.
Lehon Co., The, Chicago. Represented by Tom Lehon and D. B. Wright.
Massey Co., C. F., Chicago. Represented by C. F. Massey, Paul Kircher, R. G. Phil, J. E. Moody and E. C. Alexander.
Mudge & Company, Chicago. Represented by Burton W. Mudge and Herbert Deeming.
Nichols & Bro., Geo. P., Chicago. Represented by Geo. L. Nichols.
Patent Vulcanite Roofing Co., Chicago. Represented by A. J. Van Page and J. P. Woolsey.

O. & C. Company, Inc., New York. Represented by B. L. Barber and J. A. Wesscott.
 Railway Age and Railway Maintenance Engineer, Chicago. Represented by E. T. Howson, H. H. Simmons, W. S. Lacher and L. B. Sherman.
 Railway Review, Chicago. Represented by Willard A. Smith, Harold A. Smith, Chas. I. Bates and T. H. Lopez.
 Snow Construction Co., J. W. Chicago. Represented by T. W. Stead and R. E. Gurley.
 Standard Asphalt & Refining Co., Chicago. Represented by R. H. Trumbull.
 Texas Company, The Houston, Texas. Represented by J. J. Flinn, W. L. Gibbs and F. E. Sheehan.
 U. S. Graphite Co., Saginaw, Mich. Represented by James G. Draught and H. E. Borland.
 Volkhardt Company, Inc., New York and Chicago, represented by Wm. Volkhardt, Chas. Cogswell and Willis Squires.

Railroad Subscriptions \$109,000,000

THE RAILROAD EMPLOYEES of the United States topped the \$100,000,000 mark in the Fourth Liberty Loan before the end of last week. They are now pushing their total of subscriptions still higher and the thousands of Liberty Loan committees are leaving nothing undone to reach the 100 per cent subscribers' goal before the end of the campaign.

On Tuesday of this week Director General McAdoo addressed to the regional directors the following telegram:

"I wish you would say to the railroadmen in your region, officers and employees alike, how earnestly I hope that they will subscribe to the limit of their ability to the Fourth Liberty Loan. Lending their money to Uncle Sam is the finest use they can make of it, not only because it is a safe investment for themselves, but it will help their country win the war. The fact that the Kaiser is already making offers of peace should make us more eager to put this Loan over and keep our fighting pressure at the maximum until we actually get peace. Now is the time for every man in the fighting army in Europe and in the industrial and financial army at home to go the limit to make the great victories our soldiers have already won absolutely complete and final. I hope that when the returns come in next Saturday it will be shown that the railroadmen in your region were one hundred per cent. I hope that no railroadman will fail to do his full part."

Several railroads have already reached 100 per cent subscribers. The Delaware, Lackawanna & Western was able to announce early in the week that every one of its 22,162 employees had subscribed. A big sign hanging over the concourse of its Hoboken, N. J., terminal put up last week started with a percentage of 99.3. This soon became 99.4, then 99.6, then 99.9 and finally 100; whereupon in big letters it was announced that 22,162 employees had subscribed over \$2,000,000 for "Unconditional Surrender."

Regional Totals

At the close of business October 11, railroad employees of the nation had subscribed \$109,638,100 to the Fourth Liberty Loan. The details follow:

	Number subscribers	Per- centage	Amount subscriptions \$1,152,300	Amount per employee
Southern Region	1,147,602	80.1	1,152,300	100.0
Northwestern Region	1,147,602	80.1	1,152,300	100.0
Pacifi-cent Region	31,100	63.21	2,419,050	77.8
Allegheny Region	194,136	63.21	14,429,700	74.34
Eastern Region	324,200	62	27,386,300	84
Central Western Region	72	72	2,721,120	92
Southern Region	...	...	7,319,250	...
			\$109,638,100	

The 43 railroads under the jurisdiction of A. H. Smith, regional director Eastern Territory, which number a total of 533,784 employees, have since reported that 389,512 individuals, or 70.34 per cent of all, already have subscribed to the Fourth Liberty Loan. The aggregate of all subscriptions is \$32,593,000, or an average of \$91.38.

Reports to the Eastern Regional Director up to Wednesday night showed 21 of the 43 roads in the Eastern region as having over 90 per cent of all employees subscribed.

Two railroads—the Lackawanna and the Lehigh & Hudson—are 100 per cent subscribed, and are now engaged in a thorough second canvass to get second subscriptions.

A particularly large proportion of office employees are subscribers, this department exceeding that of the train service or any other department.

The average amount per subscription is running higher than for the Third loan. In this the Grand Rapids & Indiana leads the Eastern region, with \$136 per subscriber average; the Lehigh & Hudson is second, with \$131 and the Central Indiana third, with \$120.

Subscriptions by some of the big roads in this region are as follows: (the figures are as of October 15.)

Road	Amount subscribed	Average subscription	Per cent of employees subscribing
Boston & Maine	\$1,231,450	55	70
Baltimore & Ohio West	1,477,000	76	46
C. & O. St. Louis	1,767,000	83	78
Delaware, Lackawanna & Western	56,401	93	100
Erie	2,354,350	77	98
Lehigh Valley	1,594,500	79	98
New Haven	1,100,000	66	76
New York Central	5,384,800	89	78
Penn Lines West	6,250,900	89	88

Keen Regional Rivalry in West

The Liberty Loan campaign in the Northwestern and Central Western regions has resolved itself into a race between the two railroad operating districts. Both regions expect to secure bond subscriptions from every employee and officer on their payrolls before the conclusion of the campaign and both hope to achieve this end first. At 7 a. m. October 14 the total subscriptions reported by Central Western railroads amounted to \$23,632,800, or a little more than a million in excess of the total for the Northwestern region, which was \$22,484,000. The Northwestern roads, however, reported that 80.19 per cent of their officers and employees had subscribed, as compared with 78 per cent in the Central Western region. The Northwestern region likewise led in the average subscription per subscriber, which was \$103.09 as compared with \$93 in the other region. The two regions were practically even as regards the number of 100 per cent roads, the Northwestern reporting nine and the Central Western reporting eight. The largest road in this class in the Northwestern region was the Chicago, St. Paul, Minneapolis & Omaha, which reported that every one of its 8,861 employees had subscribed. The largest line in the Central Western district in the 100 per cent class was the Chicago, Rock Island & Pacific with 26,253 employees and officers listed as bondholders. The Chicago & North Western reported the largest total of subscriptions in either region, with \$15,516,350. The largest total in the Central Western region was reported by the Southern Pacific, with \$4,028,300.

The Southwestern region reported total subscriptions amounting to \$16,229,300 by 95 per cent of the employees in the territory for the period ended on midnight October 13. The average subscription reported per employee was \$103. The roads under the jurisdiction of A. Robertson, federal manager, led in the total amount subscribed, with \$5,341,550, and in the average amount subscribed, with \$141. All of the 13,161 employees of the Rock Island Lines in the region have taken bonds, thereby equalling the record of the employees of the Rock Island in the Central Western region. The regional officers and the Southwestern Tariff Bureau, at St. Louis, also report records of 100 per cent.

Corporation Subscriptions

The railroad corporations are also subscribing heavily for the Fourth Liberty Loan. The Southern Pacific Company has taken \$5,000,000; the New York Central \$2,500,000; the New Haven \$1,000,000; the Rock Island \$1,000,000, etc.

The director general last week addressed the following communication to the presidents of all the Class I roads:

"I hope the railroad corporations of the country generally

may feel justified in subscribing as liberally as practicable to the Fourth Liberty Loan, and may be able to provide the necessary funds for this purpose otherwise than through the utilization of any portion of their standard return for the current year, all of which will be needed, so far as most of the railroads of the country are concerned, to provide for interest, dividends, much needed improvements, betterments and equipments. I can see no reason why railroad companies should not in anticipation of income to which they may be entitled from investments or otherwise in the ensuing year, subscribe now to Liberty Bonds through the banks, which, I am sure will, if desired, gladly grant them temporary loans in anticipation of their receipts coming in during the next year. Let me express my cordial appreciation of the excellent support which the railroad companies gave to the First, Second and Third Liberty Bonds issues, and I trust that they will now do their utmost in every way to insure the success of our Fourth Liberty Loan."

The subscriptions by the corporations include among others the following:

Southern Pacific	\$5,000,000
New York Central (including \$500,000 for Western Transit Company)	2,500,000
Chicago, Rock Island & Pacific	1,000,000
New York, New Haven & Hartford	1,000,000
Pennsylvania	5,000,000
Atchison, Topeka & Santa Fe	5,000,000
Union Pacific	2,900,000

The Baldwin Locomotive Works, which first subscribed \$1,000,000, has since increased that subscription to \$2,500,000, of which a considerable proportion is apportioned to the Standard Steel Works Company.

The Work of the Fuel Supervisor

By F. P. Roesch

Regional Supervisor, Northwestern Region

IT SEEMS HARD for some people to understand exactly what the United States Fuel Administration is after. They seem to be laboring under the impression that we are trying to save money when we are saving coal. We are not thinking about money; we are thinking about coal and coal only. Last year the railroads burned about 166,000,000 tons of coal. We are now threatened with a shortage of 75,000,000 tons of coal; as a matter of fact the supply on the docks at the head of the lakes is 2,000,000 tons short today. Just get this point—we are now short almost half of the total fuel consumed last year by the railroads. Just think what might happen if, on account of this shortage, we closed down practically half of the railroads in the United States. That is the reason that we are talking about saving coal—that and nothing else.

In former times if a railroad saw a possibility of saving \$2 worth of coal at an expenditure of \$1.90, they figured the margin of profit was a little bit too close. Now what we want to impress on everybody, from the man at the bottom to the man at the top is that all we want is to save every pound of coal in every possible manner. We realize that we cannot make any radical changes in our equipment or in our methods of operation at the present time. We must do the best we can with what we have at hand. We would like to put on lots of refinements, but we are just as short of men as we are of coal, and just as short of material as we are of men.

Without the aid of fuel we cannot take munitions and supplies from their point of origin and deliver them to the boys in France and unless we do keep them supplied we stand a mighty slim chance of winning the war. That is why we want to impress on you the necessity of saving fuel. Eighty-seven per cent of all fuel burned on railroads is burned in the locomotives. The greater part of that passes through the hands of the firemen, so naturally we look to the firemen to

effect the greater saving. Some firemen can take the same engine and same train over the same division on two or three tons of coal less than the average fireman. Other men burn from two to three tons more than the average fireman. Now those are the things we want to correct. The firemen that are shoveling more than the other fellow, are not shoveling the coal for fun, the only reason is because they don't know any better and have not been taught any better. It isn't their fault; it is our fault. After the fireman is shown how and doesn't do the business, then we have some excuse for criticizing him; but at the present time we have absolutely no excuse for blaming a fireman when he doesn't know any better.

Go into any machine shop and you will see an apprentice instructor standing by the apprentice showing him how to cut a thread on a 3/8 in. bolt, worth probably 10 cents a thousand. That instruction is carried on for four years in order to make a skilled mechanic out of the boy. How do we make firemen? We go out and catch some likely looking fellow and lead him to a doctor. If after a careful examination it is found this boy has two arms, two legs and can see and hear, he is put on an engine to get him engine broke. After he is engine broke he is put on the deck and shown \$40 or \$50 worth of coal and told "That is a scoop and here is the hole. Hop to it." He is told that when the gage shoots around to 200 he is doing a good job. All we ask him to do is to keep up steam. We don't care if it takes 100 lb. or 2,000 lb. of coal, it is steam we are after and that is all. We hand this boy fireman \$50 worth of stuff without any instructions and then blame him because he shovels more coal than he should. The only reason we have never put on instructors for the firemen and engineers was because we couldn't see or point out definitely where the loss came in. If the machinist apprentice spoiled a 3/8-in. bolt it was there to show for itself, but if the fireman put in two tons more of coal than necessary there wasn't even any smoke to show for it, and our records were so inaccurate that we had absolutely no way of proving whether they were doing right or doing wrong.

Speaking about little things, you can go through your roundhouse and see steam leaks which would only take a minute to tighten up. Go through your rip tracks, and you see leaky air hose, or water going to waste, and you let it go. The sum of all those things amounts to a whole lot. With steam at 200 lb. pressure, a hole you could stop up with a match will waste a little over two tons of coal a month. In making up trains the train men don't always tighten up the air leaks. They will say that isn't their job and leave it for the other fellow to do. Shutting box car doors is neglected for the same reason. You think an open box car door doesn't make much difference when it comes to the coal pile. Wind blowing into a box car through an open door offers resistance to the movement of that train, so when you find box car doors open close them even though the car inspector did forget it.

In going through the various roundhouses, etc., you will notice steam lines not covered. We are following that closely for the reason that you can get such big returns for a small investment. Every 2 3/4 sq. ft., of exposed steam pipe carrying a pressure of about 80 lb. will lose through radiation one ton of coal a year. Practically all railroads have most of the wrapper sheets on the locomotives exposed. The radiation losses due to exposed wrapper or side sheets are equal to one ton for every 2.12 sq. ft. If you only have 100 locomotives on a railroad fired up half the time you have a loss of 700 tons of coal a year. I give you these examples to illustrate the losses due to little things; things we can all correct. All we ask you to do is to get the right view point. Uncle Sam is asking you to save a lump of coal wherever you can. You see fuel losses everywhere and wonder why the other fellow doesn't get in the game. Get in the game yourself. Give us your co-operation to help the bunch over yonder to win the war.

General News Department

The ten-million-bushel grain elevator recently built by the Chicago & North Western in Chicago was the subject of a paper by W. H. Finley, president of that company, before the Western Society of Engineers, Chicago, on Monday evening, October 14.

The Railway Fire Protection Association's annual meeting, which was scheduled to be held at Chicago this week, has been postponed. This action was taken on account of the epidemic of Spanish influenza and also because of the urgency of the Fourth Liberty Loan campaign.

The Wisconsin & Michigan, a 98-mile road located in northern Michigan, has decided to discontinue operation and is now trying to locate its freight cars now scattered all over the country; 26 box, nine refrigerator, 12 gondola and 214 flat cars. The Railroad Administration is assisting the company in the search.

The Short Line railroads have come to an understanding with the Railroad Administration. An informal agreement has practically been reached, between the representatives of the Short Lines and Mr. McAdoo, on a form of contract by which the road would be taken under government control, without compensation. The proposed contract is, however, to be discussed by Mr. McAdoo with President Wilson before final government approval.

New York Central night trains making long-distance passenger runs, and beginning their trips on Saturday evening, October 26, will be started one hour behind time, with certain exceptions. For example the Twentieth Century Limited Express, due to leave New York for Chicago at 2:45 p. m., will start at 3:45 p. m. This arrangement is adopted so as to avoid the necessity of holding the trains an hour at some way station on account of the setting back of clocks at 2 a. m. on Sunday. Regional Director A. H. Smith has recommended this course of action to all of the roads in Eastern territory. The New York Central's exceptions to the rule are in such cases, for example, as that of Train 11, the Southwestern Limited, leaving New York at 4:50 p. m., and Train 23, the Western express, leaving at 6 p. m., which make a number of stops. These will leave on time. Train 11 will be held at Rochester (12:30 a. m.) for the clock to catch up with it, and Train 23 at Utica (1:20 a. m.).

The Consolidated ticket office of the Railroad Administration at Milwaukee, Wis., was opened on October 10. The Chicago, Milwaukee & St. Paul, the Chicago & North Western and the Minneapolis, St. Paul & Sault Ste. Marie have quarters in this office. The Railroad Administration expects to open the union ticket office in Chicago, on October 28. This office will occupy practically the whole ground floor of the Insurance Exchange building on the corner of Wells street and Jackson boulevard. At New York City it was announced on Monday of this week that all of the new consolidated ticket offices had been opened. They are at 64 Broadway, 57 Chambers street (280 Broadway), 31 West 32d street, near Broadway, and 114 West 42d street, between Broadway and Sixth avenue. All four have the same telephone number, 6700 Bryant. Each office sells all forms of railroad and coastwise steamship tickets to all points, over all lines, and will give advice regarding freight shipments.

Western Railway Club Meeting

The Western Railway Club will hold its monthly meeting at the Hotel Sherman, Chicago, on Monday evening, October 21. Edmund Burke, of Crane & Co., will present a paper on The Efficient Use of Power Plants; Locating and Stopping Leaks and Waste. A dinner will be served in the Italian room at 6:30 p. m., and the meeting will be held in the Louis XVI room at eight o'clock.

No Labor Slackers Here

Although many industries seem to have considerable difficulty in combatting a marked spirit of laxness among their employees, the American Brake Company, St. Louis, believes that it has no labor slackers on its payroll. For the purpose of impressing both officers and employees with the duty to perform an honest day's work, which each owes to his country and to the armed forces of the nation, a voluntary pledge was prepared, which was signed by every man and woman in the service of the company, high and low. The pledge reads as follows:

We, the undersigned employees of the American Brake Company, do hereby solemnly pledge

To keep constantly in our minds, during the hours of work as well as during those of rest, that the greatest and most terrible of wars is being fought by our own sons and brothers, to safeguard the honor and liberty of all Americans and of the entire civilized world. We realize the vital importance of whole-hearted and constant co-operation between us and the fighting men, without which no victory and consequently no peace can ever be won, and therefore

We will stand by them at all times and until the very end, and if they do not relax their fighting we will never relax our work.

We further solemnly declare that we will not indulge in unreasonable, useless waste of time, money or food, or anything beyond normal and necessary recreation.

WE SHALL LIVE AND WORK AS EARNESTLY AND AS FULL OF PURPOSE HERE AS OUR BOYS FIGHT AND DIE OVER THERE.

Classification of Small Ties

At a conference between a number of tie producers and L. S. Carroll and F. A. Bushnell, of the regional purchasing committee for the Northwestern region, which was held in Chicago recently, the question of the disposition of ties which do not comply with present specifications, but which formerly had been accepted by the individual roads was considered. For instance, it was stated that the new specifications require the making of ties from timber not less than 9 in. to 9½ in. in diameter at the small end, whereas formerly ties were accepted that had been made from timber as small as 8 and 8½ in. at the small end. The regional purchasing agents have advised that the individual buyers of the various roads have authority to purchase these rejected ties at a price considerably in advance of that for culls, which is 34 cents, but not within 10 cents of the lowest price authorized for ties complying with the specifications. It was stated that the price to be paid is a matter for negotiation between the individual roads and the tie producers.

Engineer Material Shipped Abroad

The following list of materials shipped from this country up to August 31 by the corps of engineers for the use of our armies abroad has been given out by the acting secretary of war, Benedict Crowell:

Rails and accessories—standard gage track.....	213,000 tons
Rails and accessories—narrow gage track.....	64,000 "
Structural steel.....	45,000 "
Coated iron.....	7,000 "
Barbed wire.....	16,000 "
Lumber, including ties, stringers and piles.....	57,000 "
Building materials:	
Well-bored.....	2,000 "
Expanded metal.....	5,000 "
Nails.....	10,000 "
Camouflage materials:	
Wire netting.....	2,000,000 sq. yd.
Paint.....	1,000 tons
Rope.....	3,000,000 sq. yd.
Tarpaulins.....	1,500,000 "
Tack netting.....	2,000,000 sq. ft.
Steel warehouse sheds (100) covering.....	2,000,000 sq. ft.

Personnel equipment, Indian equipment for three divisions has been shipped overseas, and the equipment for 36 additional divisions is now being freighted.

In addition, large quantities of engineering materials have been bought in England, France and Switzerland, including 8,015 tons of machinery, 5,117 tons of materials for locomotives and cars, and 114,628 tons of materials for track and ties.

A New Office

Frederick D. Underwood, president of the Erie Railroad, has been appointed icebreaker of the Port of New York. In making this appointment the War Department has co-operated with the United States Fuel Administration and the New York State Fuel Administration to clear the way for coal should the bay and river become ice-bound.

Mr. Underwood is a veteran icebreaker. When in charge of the Soo Line he devoted much of his time in winter to keeping the Straits of Mackinac open for car ferries. The Federal government, through the shipping control committee, is to see to the furnishing of vessels suitable for breaking ice in New York waters.

Daylight Saving

A bill to continue indefinitely the present arrangement for daylight saving, instead of turning the clock hands back on October 27, as the law now provides, has been introduced in Congress by Senator Calder, of New York, and was favorably reported by the Senate Committee on Interstate Commerce on October 10. Passage of the bill in the Lower House will be opposed by numerous interests. The Philadelphia Bourse has entered a protest, declaring that continuance of the present arrangement throughout the winter months will defeat the purposes for which the plan was adopted. During the late autumn and winter months when the sun rises later, there is no unused daylight in the morning. To require the performance of early morning household tasks and the starting of work in factories during a period when artificial light will be required and when the vitality of workers is low, with no commensurate saving in the afternoon, would be very unwise. This country would be at variance with Canada, which uses the plan only during the summer months.

The attorney general of New York has called attention to the disturbance which the Calder bill would make in the opening and closing of the polls in New York state on election day. When the daylight saving plan was made effective the laws of New York were amended to provide for the change up to the last Sunday in October. On that day it will be incumbent upon courts and public officers to conform to the provisions of the state law, and if the federal "daylight extension" bill is passed it will create a conflict between the state and federal time, which cannot be remedied until the Legislature meets in January.

National Association of Railway Commissioners

The thirtieth annual convention of the National Association of Railway and Utilities Commissioners will be held at the Interstate Commerce building, Washington, D. C., beginning on Tuesday, November 12, and continuing probably four or five days. The association will be welcomed to Washington by Chairman W. M. Daniels of the Interstate Commerce Commission, and Mr. McAdoo, director general of railroads, has accepted an invitation to address the convention, subject to his possible absence by reason of his public duties.

The call for the convention, issued by James B. Walker, secretary, 49 Lafayette street, New York City, calls special attention to the importance of this meeting of the association. It says in part:

"Never before have the members been confronted with so many pressing problems. The railroad business of the country is now conducted under government control, freight and passenger rates have been advanced and the effects of the changes are felt in every State, bringing to each regulating commission a series of new problems. Government control has been extended to express, telephone and telegraph companies.

"The relations of the State Commissions to the National Government, their ability to promote the success of governmental operation and their undoubted desire to co-operate to the greatest extent during the war, so as to strengthen the arm of the nation in its mighty struggle, demand most serious consideration.

"The State Commissions should begin a study of future conditions. After the war the continuation of government

control or the return of railroads to private ownership no doubt will be the subject of controversy. No one will be more competent to speak upon this question than the regulating commissions. The subject probably will be considered at this convention, and therefore it would be well for the several state commissions to be prepared to give the results of government operation in their respective states.

"Reports of standing committees will be taken up, as nearly as the convenience of the convention will permit, in the order in which they appear in the list of committees given below. The Executive Committee may, for good reasons, vary the sequence of reports after the convention meets. The special war committee, appointed at the last meeting, will present a report which probably will be the most important feature of the convention. The chairman of this committee, Mr. Thelen, of California, having resigned, the chairmanship is now held by J. B. Eastman, of Massachusetts. This committee has held numerous conferences with officers of the government at Washington, and has kept in touch with the National Railroad Administration."

President Niles having resigned, Charles E. Elmuquist, of Minnesota, first vice-president, has become acting president of the association. Following are the committees from which reports are expected:

Special War Committee, J. B. Eastman (Mass.), chairman.
Public Ownership and Operation, Frank Irvine (N. Y.), chairman.

Safety of Railroad Operation, C. C. McChord (I. C. C.), chairman.

Safety of Operation of Public Utility Companies, F. J. H. Kracke (N. Y.), chairman.

Railroad service, accommodations and claims, C. S. Cunningham (Mich.), chairman.

Service of Public Utility Companies, W. D. B. Ainey (Pa.), chairman.

Railroad Rates, D. N. Lewis (Iowa), chairman.

Public Utility Rates, E. F. Morgan (W. Va.), chairman.

Car Service and Demurrage, O. B. P. Jacobson (Minn.), chairman.

Express and Other Contract Carriers by Rail, R. C. Dunn (Fla.), chairman.

Statistics and Accounts of Railroad Companies, C. B. Aitchison (I. C. C.), chairman.

Statistics and Accounts of Public Utility Companies, E. J. Bean (Miss.), chairman.

Grade Crossings and Trespassing on Railroads. (Chairmanship vacant.)

Valuation Committee, W. A. Shaw (Ill.), Chairman.

Capitalization and Intercorporate Relations, W. B. Skelton (Me.), chairman.

State and Federal Legislation, L. B. Finn (Ky.), chairman.

Publication of Commissions' Decisions, J. R. Barhite (N. Y.), chairman.

Maintenance Painters' Convention

The fifteenth annual convention of the Maintenance of Way Master Painters' Association of the United States and Canada, was held at the Hotel La Salle, Chicago, on Tuesday, Wednesday and Thursday of this week. The first session was called to order by President H. E. Conrad, master painter of the Pennsylvania Railroad, on Tuesday morning, 42 members and visitors being in attendance. A large part of the program was devoted to a discussion of matters of particular concern to the maintenance painter under the prevailing conditions. A report of the proceedings including abstracts of those papers of general interest, will appear in a future issue.

Passenger Traffic Officers

The annual convention of the American Association of Passenger Traffic Officers which was to have been held at Baltimore on October 23 and 24 has been indefinitely postponed because of the prohibition against public assemblies on account of the influenza epidemic. It had been planned to hold the opening session of the convention at Washington for an address by Director General McAdoo and to hold the following sessions at Baltimore.

Traffic News

Grain in Chicago elevators on September 28, 1918, amounted to 31,794,000 bushels, as compared with 4,171,000 bushels on September 29, 1917.

A code of uniform baggage rules and regulations has been promulgated by the Railroad Administration, to be put into effect December 1. It embodies a single joint tariff for all railroads under government control. The new rules have been formulated by a special baggage committee. While they contain no radical changes they are expected to be of advantage to the traveling public by doing away with many variations in rules that have existed in various parts of the country. The railroads have been working for years toward standardized baggage rules and have attained a considerable degree of uniformity, but there were many local exceptions.

Readjustment of Freight Rates on

St. Louis-East St. Louis Traffic

The application of General Order 28 as interpreted by the Terminal Railroad Association of St. Louis, and published in Supplement 23 to its freight tariff, 23-H, resulted in several inequalities in commodity rates. As a result the chairman of the St. Louis District freight traffic committee was directed to arrange for a conference with the commercial interests and a representative of the Terminal Railroad Association, with the result that a modified tariff was drafted and the Railroad Administration at Washington was asked for authority to make the changes. This action resulted in the issuance of Freight Rate Authority 968, on September 14, by the chairman of the Western freight traffic committee. This authority ordered the removal of the class rates on carload business entirely, and provided a general rate of two cents per 100 lb., with a minimum of \$12 per car, on all traffic not carried in the Terminal tariffs' list of commodities. The commodity rates were also equalized substantially and the minimum reduced from \$15 to \$12 a car. The amended rates were published in the reissue of the Terminal tariff, 23-I., I. C. C. No. 110, and made effective September 25.

Coal Production

The output of bituminous coal during the week ended October 5 is estimated at 12,585,000 net tons, a decrease of 3.6 per cent compared with the week preceding, but an increase of approximately 16 per cent over the corresponding week of 1917. Production of anthracite during the week is estimated at 2,052,000 net tons, the same as during the corresponding week of last year. The percentage of full time output lost on account of car shortage during the week ending September 28 was reported by bituminous operators as 5½ per cent.

Loading of bituminous coal on the railroads in the Eastern region from January 1, 1918, to October 1, shows an increase of 11.7 per cent over the record for the same period in 1917. The shipments by the different roads are reported as below:

Road	Tons	Per cent Inc. or Dec. over 1917
Baltimore & Ohio.....	115,985	31.0
Buffalo, Rochester & Pittsburgh.....	183,271	9.0
Central Indiana.....	2,757	70.0
Chicago, Indianapolis & Louisville.....	31,433	28.0
Cincinnati, Indianapolis & Western.....	5,094	67.0
C. C. C. & St. Louis.....	185,331	4.0
Detroit, Tol. & L. E. Ry.....	8,359	1.6
Erie.....	24,537	1.0
Hocking Valley.....	167,642	11.0
Kanawha & Michigan.....	8,479	3.7
New York Central.....	188,287	2.8 D
Pennsylvania Lines West.....	463,276	21.0
Pere Marquette.....	8,633	5.0
Pittsburgh & Shawmut.....	43,567	3.0 D
Toledo & O. C. Ry.....	87,271	18.0
Tol., St. L. & W.....	13,341	...
Wabash.....	52,298	12.0 D
Pitts., Char. & Y.....	11,935	5.0
Wheeling & Lake Erie.....	70,492	29.0

Commission and Court News

Interstate Commerce Commission

The commission has postponed the effective date of its order in the private car case from October 15 to November 15.

The commission has issued an order authorizing railroads not under federal control to put into effect the changes in demurrage rules affecting private cars which were put into effect by the Railroad Administration on October 15. The changes are to conform to the commission's decision in the private car case.

Court News

Assaults of Intoxicated Passengers

The Missouri Supreme Court holds that the state statute of 1909, making it unlawful for any person to enter a passenger train while intoxicated, but excepting therefrom dining and private cars, is in violation of the Fourteenth Amendment to the United States Constitution, and also of the State Constitution, in that it does not operate equally and alike upon all similarly situated.—*Lage v. C. B. & Q. (Mo.)*, 204 S. W. 508. Decided July 5, 1918.

Special Railroad Charter Upheld

In a decision rendered on September 23, Judge John S. McDonald of the Kent circuit court, Grand Rapids, Mich., held that the special charter of the Detroit, Grand Haven & Milwaukee is unassailable and the reports of the company on the amount of capital stock paid in, upon which its taxes are computed, are correct. The special charter which was granted to this company provides that the company shall pay an annual tax of one per cent on the capital stock paid in. This charter was first attacked in 1884 in what is known as the Joy case (55 Michigan 94) in which the legality of the organization of the company was upheld by the court. In 1901 the state changed its method of assessing railroads, passing the so-called ad valorem tax law. The constitutionality of this law was attacked by the railroad companies of the state in suits entered in the federal courts. The suits were finally decided in the United States supreme court in 1906 and all the railroad companies in the state except the Detroit, Grand Haven & Milwaukee, were brought under the ad valorem law. The charter of the latter company, which is perpetual, was held to constitute a binding contract. The state then began suits in its own courts with the object of annulling the charter. These suits were decided in 1909, by the state supreme court, in favor of the company, the court holding that the decisions in the former cases had settled the matter. Up to that time the state had never questioned the correctness of the amounts reported by the company as constituting its capital stock paid in. In 1910, however, it began a suit in the Kent circuit court at Grand Rapids, setting up that the reports annually filed by the company were incorrect, that the company was taxable upon the aggregate amount of its capital investment, meaning the total amount invested in the road, equipment, etc., and that it should pay taxes to the state on the correct amount for the 55 years since 1855; and for the future on that basis. The lowest amount which the state representatives claimed constituted the capital stock paid in was \$7,000,000 which would mean that the company was liable for the difference between \$70,000 in taxes annually and \$25,171.40, or for the 55-year period approximately \$2,475,000, not including interest. In the opinion handed down by Judge McDonald on September 23, it is held that the long practical construction of the tax basis by the state officers and the company is conclusive. It is expected that the case will be appealed to the state supreme court.—*Michigan vs. the Detroit, Grand Haven & Milwaukee*.

Equipment and Supplies

64 Locomotives Delivered in Week Ending October 5

A total of 64 locomotives were shipped by the builders to railroads under federal control during the week ending October 5. Forty were delivered by the American Locomotive Company, 9 by the Lima Locomotive Corporation and 15 by the Baldwin Locomotive Works. Of the total, 40 were of the U. S. R. A. standard types of Mikado and switching locomotives and the others, locomotives previously ordered by individual railroads.

The detailed figures follow:

Builder	Road	Number	Type
American	S. A. L.	4	1 SRA Mikado
	C. M. & St. P.	1	USRA Mikado
	P. & O. C.	15	USRA Mikado
	P. M. & Y.	19	USRA Mikado
	T. & O. C.	1	USRA switch
	Portland Ter.	2	Switch
	W. & A.	1	USRA switch
	Penn. W. L.	1	Santa Fe
	Virginian	1	Mallet
	L. & N.	1	USRA Mikado
Lima	A. & W. P.	1	USRA switch
	Erie	1	USRA switch
	C. & O.	1	Mallet
	Ill. Cent.	6	Mikado
	Southern	2	Mallet
Baldwin	P. & R.	1	Cons.
	Ill. Cent.	1	Mikado
	L. E. & W.	2	USRA Mikado
	A. T. & S. F.	1	Mikado
	P. E.	1	Mikado
	Great N.	1	Mikado
	Canton	1	Switch
	P. R. R.	1	Mikado
	C. C. & St. L.	3	USRA Mikado
	A. C. L.	1	Mikado
Grand Total		64	

American Locomotive Company Signs Italian Contract

Following the annual meeting of the American Locomotive Company, Tuesday, President W. A. Fletcher said that the company had just closed a contract with the Italian Government for 150 locomotives. The engines will be used on the Italian State Railways and will cost in excess of \$5,000,000.

The 150 locomotives are of the consolidation type. They will have a total weight in working order of 147,000 lb., 21¼ by 27½ in. cylinders, and will be equipped with superheaters.

"Business is very good," said Mr. Fletcher, "and we are highly optimistic over the situation. At present we have orders on our books which are sufficient to carry us well into 1919."

Freight Cars

THE CARNEGIE STEEL COMPANY is inquiring for eight self-clearing hopper cars.

THE BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa., is inquiring for 25 gondola cars.

THE INLAND STEEL COMPANY, Indiana Harbor, Ind., is inquiring for seven scale car trucks.

THE BIDDLE PURCHASING COMPANY, Chicago, is inquiring for 100 standard-gage, four-wheel trucks.

THE MARK MANUFACTURING COMPANY, Chicago, is inquiring for six all-steel, 50-ton, hopper-bottom gondola cars and two all-steel, 50-ton, two-way side dump cars.

Iron and Steel

THE GREAT NORTHERN has ordered 675 tons of steel for deck and through girder spans from the Milwaukee Bridge Company.

Supply Trade News

M. M. Auerbach, assistant secretary and assistant treasurer of the National Railway Devices Company of Chicago, died at his home in that city on October 9.

H. G. Elfborg, consulting engineer and director of the Ajax Forge Company, has severed his connection with that concern. Mr. Elfborg has been connected with that company for the past 23 years.

A. E. Brown, formerly general agent of the Chicago & Alton, at Detroit, Mich., has been appointed manager of the railroad department of the Truscon Steel Company, with headquarters at Chicago.

Albert H. Noyes, secretary and treasurer of the Ayer & Lord Tie Company, Chicago, has resigned to engage in active service with the American Red Cross in France and sailed for overseas duty on September 27.

Robert M. Dixon, president of the Safety Car Heating & Lighting Company and of the Pintsch Compressing Company, died at his home in East Orange, N. J., October 16, of heart disease.

John R. Edmonds, traveling representative of the Schroeder Headlight & Generator Company, Evansville, Ind., has entered the Engineers (Ry.), U. S. Army, at Ft. Benjamin, Harrison, Ind. Mr. Edmonds is attached to an operating railway regiment which is being organized to assist in the operation of the U. S. Military Railways in France.

M. V. Bailliere, whose resignation as mechanical engineer of the New York Central lines west of Buffalo, with headquarters at Cleveland, Ohio, was announced in the *Railway*



M. V. Bailliere

Age of August 16, has become associated with the Roberts & Schaefer Company, at Chicago, as contracting engineer of that company, succeeding **Clyde C. Ross**, who has been promoted to contracting manager. In his new position, Mr. Bailliere will be engaged in the designing, contracting and erection of locomotive coaling plants, "R and S" gravity sand plants and cinder handling plants. He is a graduate of the mechanical engineering school at Cornell University. After completing his work at Cornell he went to

the Helena Power Transmission Company, at Butte, Mont., where he remained for approximately a year and a half, following which he entered the service of the New York Central as a draftsman in the engineering department at Cleveland, Ohio. Subsequently he became assistant engineer and mechanical engineer, resigning from the latter position to go to the Roberts & Schaefer Company, as mentioned above.

William Allis, chairman of the board of directors of the Allis-Chalmers Company, at Milwaukee, Wis., died on October 10. Mr. Allis succeeded his father as president of E. T. Allis & Company and continued in that position until the formation of the Allis-Chalmers Company, at which time he became chairman of the board of directors.

Lauren J. Drake, president of the Standard Oil Company, of Indiana, died at his home in Chicago on October 10. Mr. Drake was born at Buffalo, N. Y., on January 29, 1846. For years he was a director of the Standard Oil Company of

New Jersey, vice president and director of the Galena Signal Oil Company and active in other Standard oil properties.

Paul G. Cheatham, sales representative of the Baldwin Locomotive Works and the Standard Steel Works at St. Louis, Mo., has been transferred to the Chicago office, succeeding **A. S. Goble**, whose appointment as southwestern district representative, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of July 5. Mr. Cheatham's transfer was effective October 1.

William C. Curd, contracting engineer in the railroad department of Layne & Bowler Company, Memphis, Tenn., has resigned to enter the service of the William Graver Tank Works in its railroad department, with headquarters at Chicago. Mr. Curd was born at Somerset, Ky., on May 28, 1880. He was educated at Purdue University, and after completing his junior year in 1902, he entered the service of the Cincinnati, New Orleans & Texas Pacific, now a part of the Southern, with which road he was engaged on construction work. Later he was engaged on similar work on the Louisville & Nashville and the Union Pacific. In 1905 he was appointed engineer maintenance of way on the Macon, Dublin & Savannah, at Macon, Ga. The following year he went with the Missouri Pacific as assistant engineer on maintenance work, with headquarters at St. Louis, Mo., and subsequently became drainage engineer in charge of water supply, water treatment and flood and river protection. He remained in the employ of the Missouri Pacific until 1917, when he resigned to go with the Layne & Bowler Company, as contracting engineer, at Memphis, Tenn.



W. C. Curd

Trade Publications

HYDRATED LIME IN CONCRETE.—The Hydrated Lime Bureau of the National Lime Manufacturers' Association, Pittsburgh, Pa., has issued a four-page leaflet of information on the use of hydrated lime in concrete. This includes a statement of its physical properties, the manner of handling and storing, the quantities to be used, the method of incorporating, etc.

TRACK WORK.—The Morden Frog & Crossing Company, Chicago, has issued a new general catalogue of 231 pages assembled on the loose leaf system. This contains full page illustrations of all the various designs of frogs, switches, crossings, switch stands, compromise joints, etc., manufactured by this company for use on steam roads, electric railways, elevated and subway lines and narrow gage industrial railways. The last 10 pages are devoted to tables of data used by engineers in switch work and to a table of dimensions for tee-rails of all sections now in use between the weights of 56 and 136 lb. per yd.

PIPE CORROSION.—A paper entitled *The Preservation of Hot Water Supply Pipe in Theory and Practice*, presented by F. N. Speller and R. G. Knowlands at the annual meeting of the American Society of Heating and Ventilating Engineers and published in the journal of that society, has been reprinted in a 24-page booklet by the National Tube Company, Pittsburgh, Pa. This is a treatise on the subject of pipe corrosion and of the factors controlling it, and the broad, simple principles applying to every case of corrosion are briefly discussed, with particular reference to hot water supply systems. The discussion of the paper at the meeting is included, and the text is illustrated with several sketches and photographs.

Railway Financial News

ALABAMA, TENNESSEE & NORTHERN.—Incorporation and charter papers were filed in the probate court of Mobile county, Ala., on October 12, organizing the Alabama, Tennessee & Northern Railroad Corporation. The new company, which has a capitalization of \$2,500,000 in common stock and \$1,700,000 in preferred stock, will take over the property of the Alabama, Tennessee & Northern Railway, which has been in the hands of receivers. The incorporators of the new company are: John T. Cochrane, Mobile, Ala.; George C. Van Tuyl, Jr., president of the Metropolitan Trust Company, New York; Louis V. Bright, president of the Lawyers Title & Trust Company, New York; H. A. Smith, president of the National Insurance Company, Hartford, Conn., and K. R. Guthrie, J. A. Caviezel and E. A. Carstens of Mobile. These were men also selected directors of the company. John T. Cochrane, who has been receiver and chief operating officer, was elected president; Louis V. Bright was elected vice-president; E. A. Carstens, secretary, and K. R. Guthrie, who has been assistant to the receiver and treasurer under the receivership, was elected treasurer and appointed assistant to the president. Practically all of the other officers under the old organization have been retained. The new corporation has taken over about 200 miles of railroad and extensive terminal properties in Mobile owned by the old company. The company has been in the hands of receivers since November 22, 1915.

ARKANSAS, OKLAHOMA & WESTERN.—See *Kansas City & Memphis*.

BALTIMORE & OHIO.—The \$22,500,000 three-month notes of this company which matured October 1 have been extended for four months. See item under *Doings of the United States Railroad Administration* in our last week's issue, page 659.

BOSTON & MAINE.—President Hudson is sending the following circular to the stockholders. "My attention has been called by several stockholders to a printed circular, dated September 28, 1918, addressed to the stockholders and appearing to be issued by Edward Brown, president of the Minority Stockholders' Protective Association, and asking stockholders to send to that association \$1 a share on their holdings of stock to facilitate the financing by the United States Government of a reorganization of the railroad. The wording of the circular is such that some stockholders have assumed that it was issued by authority or with the knowledge and acquiescence of the officers of the Boston & Maine. Such is not the fact. No officer of this road is in any way responsible for this circular. On the contrary, they do not consider that the proposed reorganization, which has been handled, not by the Minority Stockholders' Protective Association, but by the reorganization committee appointed by the Boston & Maine and its largest leased lines, will be facilitated in any way by the contribution asked for in this circular, nor do they regard any such contribution by the stockholders as at all necessary for the protection of their interests."

CINCINNATI, FINDLAY & FORT WAYNE.—Judge Hollister in the United States District Court at Cincinnati, O., has ordered the foreclosure of a mortgage of the New York Trust Company of New York against this road and sale of the property at Findlay, O., on or about November 15.

KANSAS CITY & MEMPHIS.—This road was sold for \$275,000 at public sale to the bondholders' protective committee of the Arkansas, Oklahoma & Western Railroad, who hold first lien on the property, amounting to \$375,000. The Kansas City & Memphis, which operates 56 miles of line between Rogers, Ark., and Monte, Nev., has been in the hands of receivers since July 18, 1914.

EXPORTS OF MERCHANDISE from the port of New York during the month of July, 1918, included steam locomotives valued at \$1,485,375, and steel rails valued at \$340,815.—*Bulletin of the National City Bank*, Nov. 1, 1918.

Railway Officers

Railroad Administration

Federal and General Managers

W. L. Seddon, general manager of the Seaboard Air Line, has been appointed also general manager of the Macon, Dublin & Savannah, with office at Norfolk, Va.

W. G. Biedr, federal manager of the Chicago & Alton, the Peoria & Pekin Union and the Peoria Railway Terminal has had his jurisdiction extended over the Joliet Union Depot, effective October 11.

The jurisdiction of **J. M. Hannaford**, federal manager of the Northern Pacific and the Camas Prairie, has been extended over the Big Fork & International Falls, and the Minnesota & International, effective October 10.

R. V. Taylor, federal manager of the Mobile & Ohio, the Southern Railway in Mississippi, and the Delta Southern, has been appointed federal manager also of the Meridian & Memphis, with office at Mobile, Ala.

E. F. Blomeyer, vice-president and general manager of the Ann Arbor, with headquarters at Toledo, Ohio, has been appointed general manager in charge of operation, with the same headquarters, effective October 1.

C. E. Johnston, general manager of the Kansas City Southern, with headquarters at Kansas City, Mo., has had his jurisdiction extended over the Missouri & North Arkansas, with the same headquarters, effective October 1.

W. J. Harahan, federal manager of the Seaboard Air Line, the Macon, Dublin & Savannah, and the Durham & Southern, has been appointed federal manager also of the Georgia, Florida & Alabama, and the Bennettsville & Cheraw, with office at Norfolk, Va.

C. M. Kittle, federal manager of the Illinois Central, the Yazoo & Mississippi Valley, the Gulf & Ship Island, the Mississippi Central, the New Orleans Great Northern, the St. Charles Air Line, and the Helena Terminal (at Helena, Ark.), has been appointed federal manager also of the Chicago, Memphis & Gulf, with office at Chicago.

A. Robertson, federal manager of the Missouri Pacific, the St. Louis-Southwestern, lines north of Texas, the Louisiana & Arkansas, the Southern Illinois & Missouri Bridge, and the Arkansas Central, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Natchez & Southern and the Natchez & Louisiana Railroad Transfer, effective October 3.

Operating

W. W. Varney, trainmaster on the Pennsylvania Railroad, western lines, with headquarters at Zanesville, Ohio, has been appointed inspector of transportation, with the same headquarters.

J. A. Streyer, superintendent of the Seaboard Air Line, and general manager of the Macon, Dublin & Savannah, is now superintendent of the Seaboard Air Line and assistant general manager of the Macon, Dublin & Savannah.

J. C. Grisinger, inspector of transportation on the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed superintendent of the Sterling division, with headquarters at Sterling, Colo., succeeding **J. T. McShane**, resigned, effective October 9.

L. B. McDonald, superintendent of the El Paso division of the Southern Pacific, Texas lines, with headquarters at El Paso, Tex., has been transferred to the Houston division, with headquarters at San Antonio, Tex., succeeding **R. C. Watkins**, assigned to other duties. **E. A. O'Donnell**, superintendent of the Houston Terminals, with headquarters at Houston, Tex., succeeds Mr. McDonald. **A. L. Kuykendall**,

assistant superintendent at Jacksonville, Tex., has been appointed superintendent of the Houston Terminals, succeeding Mr. O'Donnell.

Lewis K. Marr, trainmaster of the New York Terminal of the Pennsylvania Railroad, has been appointed assistant superintendent of the Philadelphia Terminal division, with



L. K. Marr

headquarters at Philadelphia, Pa. He was born on September 2, 1869, at Rising Sun, Md., and was educated in the common country schools. In September, 1887, he entered the service of the Pennsylvania Railroad as a telegraph operator on the Central division, and in April, 1891, left that service. On March 13, 1893, he returned to the service of the Pennsylvania as a telegraph operator on the Philadelphia division. The following year he was appointed leverman on the D. E. & K. division, and in February, 1896, was appointed assistant train director of the Philadelphia Terminal division. In January, 1903, he was promoted to train director and subsequently served consecutively as yard master and general yard master on the same division. On November 27, 1910, he was transferred as general yard master to the New York Terminal and since November, 1911, served as trainmaster on the same division until his recent appointment as assistant superintendent of the Philadelphia Terminal division as above noted.

Financial, Legal and Accounting

The title of **Joseph W. Cox**, general auditor of the Norfolk & Western, with office at Roanoke, Va., has been changed to federal auditor.

E. Marvin Underwood, general solicitor of the Seaboard Air Line, has been appointed also general solicitor of the Macon, Dublin & Savannah, with office at Norfolk, Va.

J. R. Frink, secretary, treasurer and purchasing agent of the Macon, Dublin & Savannah, with office at Macon, Ga., has been appointed acting federal treasurer and purchasing agent, with office at Macon.

L. O. Heintz, auditor of freight and passenger accounts of the Missouri & North Arkansas, has been appointed auditor and **R. E. Dunn**, cashier, has been appointed acting federal treasurer, with headquarters at Harrison, Ark.

S. W. Moore, general solicitor, and **L. J. Hensley**, general auditor of the Kansas City Southern, with headquarters at Kansas City, Mo., have had their jurisdiction extended over the Missouri & North Arkansas, with the same headquarters, effective October 1.

W. J. Turck, assistant auditor of the Boston & Albany, with office at Boston, Mass., has been appointed auditor, in place of **W. S. Trowbridge**, resigned to accept service elsewhere, and **L. H. Hilton** has been appointed assistant auditor, in place of Mr. Turck.

J. O. Talbott, acting federal auditor of the Pere Marquette, the Ann Arbor, the Detroit & Toledo Shore Line, the Fort Street Union Depot Railroad, the Lake Michigan Car Ferry Association, the Grand Trunk Western Lines, the Detroit & Mackinac, the Detroit, Bay City & Western, the Port Huron Southern, and the Port Huron & Detroit, has been appointed federal auditor of the same roads, with office at Detroit, Mich.

Traffic

M. V. Mahoney, general freight and passenger agent of the Wrightsville & Tennille, has been appointed freight and passenger service agent, with office at Dublin, Ga.

H. A. Jordan has been appointed freight and passenger service agent of the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, with office at Wadley, Ga.

E. B. Carson, general baggage agent of the Southern Pacific at San Francisco, Cal., has had his jurisdiction extended over the Western Pacific, the Tidewater Southern and the Deep Creek, with the same headquarters.

J. F. Holden, traffic manager of the Kansas City Southern and the Kansas City, Mexico & Orient, with headquarters at Kansas City, Mo., has had his jurisdiction extended over the Missouri & North Arkansas, with the same headquarters, effective October 1.

F. J. Robinson, general passenger agent of the Central of Georgia, with office at Savannah, Ga., has assumed jurisdiction over the passenger traffic departments of the Louisville & Wadley, the Sylvania Central, the Wadley Southern, and the Wrightsville & Tennille.

F. E. Batturs, general passenger agent of the Southern Pacific, at San Francisco, Cal., has been appointed assistant passenger traffic manager of that road south of Ashland, Ore., the Western Pacific, the Tidewater Southern and the Deep Creek, with the same headquarters.

C. H. Jasper, assistant agent at the San Francisco (Cal.) freight station of the Southern Pacific, has been appointed division freight and passenger agent on the Southern Pacific, lines south of Ashland, Ore., with headquarters at Fresno, Cal., succeeding **C. L. McPaul**, assigned to other duties.

George R. Angell, commercial agent of the Chicago, Rock Island & Gulf, with office at Dallas, Texas, has been appointed division freight agent, with headquarters at Dallas, and **B. D. Shropshire, Jr.**, commercial agent at Fort Worth, has been appointed division freight agent, with headquarters at Fort Worth.

O. A. Constans, freight traffic manager of the Baltimore & Ohio, western lines, with headquarters at Chicago, has been appointed assistant freight traffic manager. **S. T. McLaughlin**, assistant freight traffic manager, at Cincinnati, Ohio, has been appointed assistant to the traffic manager, and **Edward Hart, Jr.**, western general freight agent at St. Louis, Mo., has been appointed assistant general freight agent.

H. K. Faye, traffic manager of the Western Pacific, with headquarters at San Francisco, Cal., has been appointed general freight and passenger agent of that road, the Tidewater Southern and the Deep Creek. **Bode K. Smith**, general passenger agent of the Western Pacific, has been appointed assistant general passenger agent of that road, the Tidewater Southern and the Deep Creek, with headquarters at San Francisco, Cal.

The following officers of the Southern Railroad System have had their authority extended over the Baltimore & Ohio (segregated line between Harrisburg and Lexington, Va.); **W. H. Tayloe**, assistant traffic manager-passenger, with headquarters at Washington, D. C.; **H. F. Cary**, general passenger agent, with headquarters at Washington; **W. H. Paxton**, general freight agent, with office at Atlanta, Ga., and **J. H. Drake**, general freight agent, with office at Richmond, Va.

The jurisdiction of the following officers of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City Railroad and the Port Reading Railroad has been extended over the Staten Island Rapid Transit Railroad, the Staten Island Railroad, the Baltimore & New York, and the Baltimore & Ohio properties and piers on Manhattan Island: **J. F. Auch**, freight traffic manager; **W. C. Hope**, passenger traffic manager; **A. B. Bierck**, general auditor; **J. S. Sneyd**, federal treasurer; **W. L. Kinter**, general solicitor; **C. B. Williams**, purchasing agent; all with headquarters at Philadelphia, Pa., except **W. C. Hope**, who is at New York.

Engineering and Rolling Stock

R. E. Jones has been appointed fuel and oil supervisor of the Duluth & Iron Range and the Duluth, Missabe & Northern.

G. F. McCormack has been appointed assistant division engineer of the Sacramento division of the Southern Pacific lines south of Ashland, with headquarters at Sacramento, Cal.

A. A. Miller, engineer maintenance of way on the Missouri Pacific, at Little Rock, Ark., has been appointed district engineer, succeeding **J. R. Leighty** at Kansas City, Mo., and the title of engineer maintenance of way has been changed to district engineer; **J. A. Lahmer**, drainage engineer at St. Louis, Mo., succeeds Mr. Miller as district engineer at Little Rock; **W. M. Neptune**, assistant engineer at St. Louis, has been appointed principal assistant engineer, succeeding Mr. Lahmer; Mr. Neptune will have charge of water service drainage, flood and river protection, with headquarters at St. Louis.

E. Hanson, signal supervisor on the Atchison, Topeka & Santa Fe and the Gulf, Colorado & Santa Fe, with office at Galveston, Texas, has been appointed signal engineer of the Gulf, Colorado & Santa Fe, the St. Louis, San Francisco & Texas, the Fort Worth & Rio Grande, the Brownwood North & South, the Texas Midland, the International & Great Northern (from Spring to Ft. Worth & Madisonville branch), the Fort Worth Belt Railroad, the Houston Belt & Terminal Railroad, the Missouri, Kansas & Texas of Texas, the Wichita Falls & Northwestern, the Fort Worth & Denver City, the Wichita Valley, the Houston & Texas Central, the Abilene & Southern, the Fort Worth Union Passenger Station, and the Union Terminal of Dallas, with headquarters at Galveston.

Corporate

Executive, Financial, Legal and Accounting

D. R. Carpenter has been appointed claim agent and secretary, of the Tennessee Central, succeeding **H. C. Lassing**, claim agent at Nashville, Tenn.

G. R. Martin, vice-president of the Great Northern, at St. Paul, Minn., has been elected also president of the Lake Superior Terminal & Transfer Railway Company.

Arthur T. Foss, controller of the Maine Central and the Portland Terminal Company, has been elected treasurer of these roads and controller and treasurer of the Rangeley Lake and the Bridgton & Saco River, with headquarters at Portland, Me.

C. S. Smith has been elected secretary and treasurer of the Alabama & Vicksburg and the Vicksburg, Shreveport & Pacific, with headquarters at New Orleans, succeeding **Udolpho Wolfe**, who is now local treasurer of these roads under federal control.

J. C. Otteson, vice-president, secretary and assistant treasurer of the Wabash, with headquarters at New York has also been elected treasurer, succeeding **F. L. O'Leary**, whose headquarters were at St. Louis, Mo. **O. Brewer** has been appointed assistant secretary and **H. Rogers Winthrop** has been elected vice-president.

W. G. Brantley has been elected president and general counsel of the Atlanta, Birmingham & Atlantic, with headquarters at Washington, D. C. **E. T. Lamb**, former president, is now federal manager. **J. M. Caldwell** has been elected secretary and treasurer, with headquarters at Atlanta, Ga., succeeding **Floyd K. Mays**, now assistant federal manager.

Louis C. Fritch, formerly general manager of the Seaboard Air Line, with office at Norfolk, Va., and more recently a consulting engineer, with office in the Peoples' Gas building, Chicago, has been elected vice-president and corporate engineer for both the Chicago, Rock Island & Pacific, and the Minneapolis & St. Louis, with headquarters at Chicago.

John T. Cochrane, receiver and chief operating officer of the Alabama, Tennessee & Northern, with headquarters at Mobile, Ala., has been elected president. **Louis V. Bright** has been elected vice-president, and **E. A. Carstens**, secretary, with headquarters at Mobile. **K. R. Guthrie**, assistant to the receiver and treasurer, has been elected treasurer and ap-

pointed assistant to the president and chief engineer at Mobile.

Blewett Lee, general solicitor of the Illinois Central at New Orleans, La., has been appointed general counsel, with headquarters at New York, and **L. A. Harkness**, assistant controller at Chicago, has been appointed controller, with the same headquarters, succeeding **W. D. Beymer**, now federal auditor.

L. F. Loree, chairman of the board of directors of the Kansas City Southern, with headquarters at New York, has been elected president, succeeding **J. A. Edson**, now federal manager. **G. C. Hand**, vice-president and secretary has also been elected treasurer, succeeding **H. Visscher**, who is now local treasurer; **D. W. Leitch** has been appointed transfer agent and assistant secretary. **J. J. Weiss** has been appointed assistant treasurer, succeeding **I. C. McGee**, who is now assistant treasurer under federal control. **A. H. Barnes** has been appointed auditor, succeeding **L. J. Hensley**, who is now general auditor under federal control. **J. M. Souby** has been appointed solicitor and assistant secretary, and **H. H. Hoar** has been appointed assistant treasurer. Messrs. Barnes, Souby and Hoar will have their headquarters at Kansas City, Mo. The other officers mentioned have their headquarters at New York City.

F. H. Davis, vice-president and treasurer of the Chicago & Alton and the Minneapolis & St. Louis, with headquarters at New York, has also been elected vice-president of the Chesapeake & Ohio, the Chesapeake & Ohio of Indiana and the Hocking Valley. **A. Trevvett**, assistant secretary, at Richmond, Va., has been elected secretary of these roads, succeeding **Carl Remington**, who has been appointed assistant secretary. **H. F. Lohmeyer** has also been appointed assistant secretary. **A. C. Rearick**, general attorney of the Chesapeake & Ohio and the Chesapeake & Ohio of Indiana, has been appointed general counsel of these roads and general attorney of the Hocking Valley, succeeding **H. T. Wickham**, formerly vice-president and general counsel of the Chesapeake & Ohio, the Chesapeake & Ohio of Indiana, and the Hocking Valley. The above officers have their headquarters at New York. **W. S. Bronson**, assistant general counsel, has also been appointed assistant secretary of the Chesapeake & Ohio, and the Chesapeake & Ohio of Indiana and assistant general attorney of the Hocking Valley, with headquarters at Richmond, Va. **W. N. Cott**, assistant secretary and assistant treasurer of the Hocking Valley, has been appointed assistant secretary of that road, with headquarters at Columbus, Ohio.

Engineering and Rolling Stock

J. R. Leighty, whose appointment as corporate chief engineer of the Missouri Pacific, was announced in the *Railway Age* of October 4, was born at Spencerville, Ind., on September 16, 1870. He graduated from Rose Polytechnic Institute in 1891 and then entered the service of the Wisconsin Central, now a part of the Minneapolis, St. Paul & Sault Ste. Marie, as a freight bill clerk. A few months later he went with the Chicago & North Western as a rodman, and subsequently became instrument man and assistant engineer. As assistant engineer, Mr. Leighty had charge of construction work in the Wood street (Chicago) yard and of the track work in connection with track elevation on the Rockwell street branch to 43rd street, Chicago. Later he became roadmaster at Sparta, Wis., and at Carroll, Iowa. In 1889, he went to the Union Pacific



J. R. Leighty

and was assigned to duties in connection with track reconstruction and ballasting work in Wyoming. The following year he entered the service of the Baltimore & Ohio, as an assistant engineer in division engineer's office at Newark, Ohio. Later he served in the same capacity at Winchester, Va., Parkersburg, W. Va., and Cumberland, Md. In 1907 he was appointed engineer maintenance of way on the Western District of the Missouri Pacific with office at Kansas City, Mo., which position he held until his appointment as chief engineer of the corporation, as mentioned above.

D. J. Brumley, valuation engineer of the Illinois Central at Chicago, has been appointed chief corporate engineer.

Railway Officers in Government Service

Frank E. Webster, assistant general freight agent on the Chicago & Eastern Illinois, with headquarters at Chicago, has been appointed assistant traffic director, Inland Traffic Service, Forage Branch, with the same headquarters.

Obituary

Daniel D. Schenck, president of the Toledo & Indiana, with headquarters at Toledo, Ohio, died on October 12.

J. C. Nelson, engineer maintenance of way of the Seaboard Air Line, with office at Norfolk, Va., died on October 6 of pneumonia, at Norfolk, Va.

Lieutenant Hurst V. Campbell, in military service, died at Baltimore, Md., on October 7. Mr. Campbell was formerly traveling freight agent of the Missouri, Kansas & Texas, at Detroit, Mich.

Randall Clifton, chairman of the southern freight traffic committee, with headquarters at Atlanta, Ga., and traffic manager of the Southern Railway, died on October 12, in that city.

Hiram W. Belnap, manager of the safety section of the division of operation, United States Railroad Administration, and formerly for seven years chief of the Bureau of Safety of the Interstate Commerce Commission, died at his home in Washington on October 12, of pneumonia, following an attack of the Spanish influenza. Mr. Belnap was 51 years of age and had been connected with the Interstate Commerce Commission for 15 years. For eight years he was an inspector of safety appliances for the commission and in 1911 he was made chief inspector of safety appliances, his title having been changed later to chief of the Bureau of Safety. Previous to his connection with the commission he had 14 years of experience in various capacities in practical railroad service in train operation. He was appointed manager of the safety section under the Railroad Administration last February and for a time continued to exercise his usual functions with the Interstate Commerce Commission, but on July 1 he resigned his office with the commission to devote his entire time to the new work, in which he has been engaged in supervising and organizing the safety departments of the railroads in accordance with a uniform plan designed to provide centralized supervision, not only to insure proper practices, but in order that each railroad might promptly secure the advantage of experience which other roads have had in the development of safety work.



H. W. Belnap

EDITORIAL

Railway Age

EDITORIAL

The most outstanding figures in the August statistics of railway earnings and expenses are those showing the increase in operating expenses and the decline of net operating income as compared with those reported for July, 1918. In commenting (issue of September 27) on the July statistics, we remarked that

Railway Earnings and Expenses in August

while they showed an apparent increase of only \$79,000,000 in operating expenses over July, 1917, the real increase was much greater, since not all the advances in wages which had been authorized had been charged with the July accounts. The statistics for August come much nearer disclosing the true situation. The increase of total earnings in July (as compared with July, 1917) was \$120,000,000; the increase of operating expenses (as reported) \$79,000,000; and the increase of net operating income, \$40,000,000. The increase of total earnings in August (over August, 1917) was \$136,500,000; the increase of operating expenses \$112,000,000 (or \$33,000,000 greater than the increase reported for July), and the increase of net operating income only \$26,000,000 (or \$14,000,000 less than in July). To summarize, while the increase of total earnings in August was \$16,500,000 greater than in July, the increase of net operating income was \$14,000,000 less than in July, chiefly because more of the wage advances were taken account of in August than in July. While the increase of operating expenses reported for August was \$112,000,000, everybody familiar with the underlying facts knows that further increases of expenses are still to be expected. As things are now going, it is but a matter of months until the increases of expenses will completely absorb the increases of revenues caused by the advances in freight and passenger rates. We see no reason for withdrawing the remark with which we concluded our comments on the July statistics, viz: "It would appear that one of the main things now needed on the railways is a tremendous drive to keep down operating expenses."

At a meeting of the New York Railroad Club last week, Frank McManamy, assistant director, Division of Operation,

Pay for Supervision and You Will Get It

United States Railroad Administration, presented a paper on supervision problem in the mechanical department, which is abstracted elsewhere in this issue. Mr. McManamy directed attention to the great need for increased and improved supervision. He said nothing about the salaries that should be paid the supervising officers, but without doubt that is the key to the whole situation. The Railroad Administration has been very generous with the workmen, both in the car and locomotive departments, but apparently has failed to recognize the importance of keeping the supervising forces satisfied as well as the workmen. Many cases have been reported of gross inequalities between the compensation received by foremen and other supervising officers of higher standing and the men that work under them. In many instances these men have been kept from returning to the ranks where they could earn more money, by appeals to their patriotism, but it is unfair to ask them to sacrifice while their subordinates are enjoying the high wages. With the removal of the incentive for production by the reduction in piecework, it is necessary for these supervising officers

to double their efforts in getting output. It is no exaggeration to state that the output per man, in the car department particularly, has decreased 25 per cent since the incentive for production by piece work has been removed, and that under the 58 cent hourly rate the men are getting from 65 per cent to 70 per cent more for the work actually performed than before the new scale of wages went into effect. The work of the supervising forces has also been increased, as pointed out by Mr. McManamy, due to the dilution of labor. The new employees, many of them inefficient, joining the mechanical department forces of the railroad must be educated in the work before their production will be satisfactory. This requires greater efforts from the supervising forces. It is within the power of the Railroad Administration to obtain this necessary increase in supervision. Treat these men fairly; treat them as the workmen have been treated, and the greatest co-operation will result. Make the position of a supervising officer attractive to the thousands of able men in the ranks and there will be no trouble in obtaining competent men for this work.

Never in the history of American railroads was the necessity for continuing old bridges in service as imperative as it is at present. New bridges are to be had only through the commandeering of material and labor sorely needed by other essential undertakings, while the disturbances to train operation incident to

Investigating Old Bridges

reconstruction constitute an ill-timed interference with war traffic. For this reason the investigation of any bridge for increased train loading should be so accurate that no wasteful factor of uncertainty need be introduced in making the final decision. Such analyses, if carefully made, are tedious and as a rule, require more time than is generally available when a hurried call is made for a ruling on some new locomotive. In view of the importance of this matter at the present time, when questions as to new loadings come up from day to day, the presentation on another page of this issue of a method of investigating old bridges is most opportune. Briefly the process provides that the load-carrying capacity of the bridge and the bridge-stressing capacity of the locomotive or train are each to be expressed in terms of some common standard of train loading such as the well known Cooper series. With both the structure and the load thus "classified," a ruling as to the operation of the load over the structure is a matter of simple comparison. The advantage of this system is that the tedious stress calculations for the structure are made but once—for the purpose of determining its "classification"—whereupon the results of these calculations are immediately available for the consideration of any locomotive loading. For the same reason the detailed moment and shear computations for the locomotive, once made, can be applied to all bridges. The computations for the bridge may be made at any time when the press of more urgent matters permits and, as explained in this paper, the manipulations by which these computations are used in making comparisons with given locomotive loadings, or in considering modified stresses, reduced speeds or other variations, are a matter of simple formulae requiring only a limited time. Notwithstanding this, the same degree of accuracy is assured as if a complete independent investiga-

tion had been made of the special load in question. The method is far from new, having been put to practical use for over ten years. In view of the present importance of this matter, its more extended application is a subject worthy of serious study.

Patriotism as an Aid to Production

TO JUDGE the average output of a class of workers from statistics is a difficult matter. Men who are able to make reliable estimates seem generally to hold the opinion that the production per man has decreased very markedly during the past three years and has even fallen off to a noticeable extent since this country entered the war. The reduction of output has affected railroads as well as manufacturing industries and foremen and officers have found it a hard matter to remedy.

Among the methods suggested for overcoming this labor slacking is the placing of returned soldiers in the shops. Whether this is practicable or not remains to be seen. It is certain, however, that the idea back of the suggestion is worth considering. Surely there is no class of workers that would call a strike at this time, if by so doing they would impede the flow of the stream of munitions and supplies moving to our boys in France. The individual worker evades the responsibility which the class of workers cannot escape. If the individual could be made to realize that unless he works every day and produces to his utmost, he is not doing his part in helping out the boys in khaki, there would be less shirkers and fewer habitual absentees.

In this connection, it is interesting to note the results of a voluntary movement among the railroad employees at Centralia, Ill. Some time ago the employees at this point formed an organization which was named the Illinois Central Employees Patriotic Association. In purpose it was purely a patriotic organization. The officers were all elected from the ranks of the employees and the expenses were borne by individual subscriptions. In August the association held a rally and flag raising to stimulate interest in the Fourth Liberty Loan. The Centralia chapter of the Red Cross and the State Council of Defense were represented and the total attendance at the meeting was about 3,000. Two of the features of the program were addresses by the district fuel supervisor, who spoke to the railroad men and miners present on the fuel problem, and by a returned Canadian soldier who made an appeal for increased production. At the conclusion of the addresses, the men all pledged themselves to do everything in their power to increase the output and to give their superior officers the fullest co-operation to help bring the war to a speedy conclusion.

The effect of this meeting has been felt by the men at Centralia. One of the railroad officers at that point stated recently that since the meeting his department has been turning out more work than it did before the war with the same number of men. There has also been a noticeable change in the spirit with which the workmen go about their tasks. While the results of the movement are gratifying, they are not surprising. The object which is uppermost in the mind of every American is the winning of the war and it is only natural that an appeal for support to help win the war should bring the increased output which wage advances have failed to secure. Organizations similar to that formed at Centralia should be encouraged by railroad officers. Where such associations are not feasible, occasional mass meetings with speeches by returned soldiers can be made to serve a similar purpose. The motive of patriotism is the strongest force in the nation today. If that power can be used as an aid to production, there will be no more labor slacking for the period of the war.

Southern Railway

THE SOUTHERN RAILWAY, has of necessity, changed its fiscal period from the year ending June 30 to the calendar year, and a report has just been issued covering the six months, June 30, 1917, to December 31, 1917, and the calendar year 1917. There is no extended comment by President Fairfax Harrison on the work of the year, and this is a distinct loss to students of contemporary railroad history and science. In the five years since Mr. Harrison has been president of the Southern his letters of transmittal with the company's annual reports have been real contributions to economic literature. Mr. Harrison was chairman of the Railroad's War Board in Washington up to the time the government assumed control and had an immense amount of work and responsibility besides that of the management of the Southern Railway.

The showing made in the fiscal year ended June 30, 1917, was excellent and the Southern was actually able to carry a part of the gain in gross revenue through to net. Total operating revenues in the calendar year 1917 amounted to \$90,717,000, an increase over 1916 of \$15,162,000. Operating expenses were \$11,089,000 more in 1917 than in 1916; taxes increased by over a million, and interest and rentals by over half a million. Net income available for dividends amounted to \$14,037,000 in 1917, an increase of \$2,513,000 over 1916.

The Southern, unlike the eastern trunk lines, has a very large margin of capacity over and above the work that most of its mileage has ever been called upon to handle, although this is not true of certain main lines. A large increase in both freight and passenger business could be handled without the extraordinary expense resulting from congestion, but, making full allowance for this fact, a gain of two and a half million dollars in net available for dividends is a remarkably good showing.

The increase in cost of labor and materials was probably as great on the Southern Railway as on any large system in the country. Fuel for train locomotives cost \$6,715,000 in 1917, comparing with \$3,450,000 in 1916. Furthermore, the fuel received was probably of a considerably poorer quality, the average miles run per ton of coal being 11.67 in 1917 and 12.84 in 1916. The total tonnage of coal consumed increased by about 14 per cent, while the cost of fuel for train locomotives increased nearly 100 per cent and for yard locomotives increased much more than 100 per cent.

The total tonnage of freight carried in 1917 was 37,063,000 and in 1916, 32,789,000. Of the total tonnage 40.86 per cent was products of mines in 1917 and 41.79 per cent in 1916; 18.01 per cent products of forests in 1917 and 16.46 per cent in 1916; and 30.02 per cent manufactures in 1917 and 29.47 per cent in 1916. It will be noted, therefore, that the increase in heavy loading commodities was not proportionately as great as the commodities that ordinarily move in smaller car load lots. Nevertheless, the average loading per loaded car was 22.37 in 1917 and 20.23 in 1916, an increase of 10.58 per cent. The average freight train load was 467 tons in 1917 as against 452 tons in 1916, an increase of over three per cent. The increase in train loading was accomplished despite the fact that traffic was not as well balanced in 1917 as in 1916. The percentage of loaded cars in each train was 69.82 in 1917 as against 72.49 in 1916.

The Southern carried its passengers with a considerably less expenditure of train miles per hundred passengers. The total number of passengers carried one mile in 1917 was 1,113,000,000, an increase of 37 per cent over 1916. Passenger train mileage was 16,018,000 in 1917, an increase of 17 per cent over 1916. The average number

of passengers per train for the year 1917 was 66.57 as against 42.49 for the year 1916. The movement of drafted men and of troops presumably in part accounts for this showing.

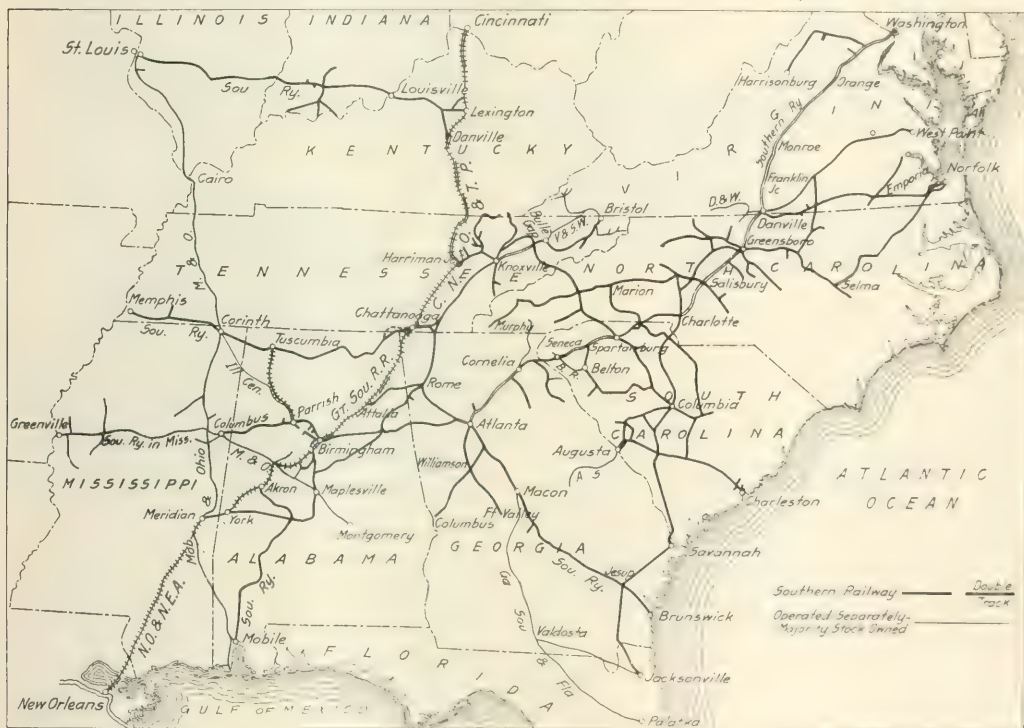
The expenditures for maintenance of way were about the same in 1917 as in 1916; totaling \$9,245,000 last year and \$9,781,000 in the previous year. There was a large decrease in the amount spent for bridges, trestles and culverts and a considerable decrease in the amount spent for ties. The total expenditures for additions and betterments to road amounted to \$10,569,000 in 1917, comparing with \$6,811,000 in 1916. It is rather interesting to note that in 1917 \$2,108,000 was spent for additions and betterments to bridges, trestles and culverts as against \$1,218,000 spent in 1916. Very often larger expenditures on additions and betterments to bridges, etc., necessitated also larger charges to maintenance for this account, but this was not the case with the Southern in 1917.

A total of \$7,543,000 was spent for additions to equipment in 1917. In 1916 only \$717,000 was spent for additions to equipment. Maintenance of equipment in 1917

per year, paying a dividend of 2½ per cent in November, 1917, and reserving from the income for the six months, June 1 to December 31, 1917, \$1,500,000, representing the 2½ per cent dividend on the preferred stock payable in April, 1918. This resumption of dividends was apparently entirely justifiable and gave to Southern preferred stockholders only their due. During 1915 and 1916, these stockholders had foregone any return on their investment, thus permitting the company to pull through the trying period at the beginning of the European war in sound condition. On December 31, 1917, the company had \$7,445,000 cash on hand and only a nominal amount—\$455,000—loans and bills payable.

In the following table are given the principal figures for the operation of the Southern Railway for the year 1917 as compared with 1916:

	1917	1916
Average mileage operated	10,608	9,679
Freight revenues	\$58,459,416	\$59,972,781
Passenger revenues	24,303,183	17,637,413
Total operating revenues	90,716,569	75,554,652
Maintenance of way and structures	9,245,000	9,781,000



The Southern Railway

cost \$14,656,000 and in 1916 \$11,612,000. The expenditures for repairs, exclusive of retirements and depreciation per unit of equipment, were as follows:

	1917	1916
Locomotives	842	738
Passenger train cars	107	83
Freight train cars		

In 1917 the company resumed the payment of dividends on its preferred stock at the regular rate of five per cent

Maintenance of equipment	14,656,481	1,357,614
Traffic expenses	1,996,342	1,984,382
Transportation taxes	31,000	1,804,088
General expenses	626,048	468,242
Total operating expenses	60,113,598	4,024,967
Taxes	4,143,861	1,096,734
Operating income	26,429,962	2,399,393
Gross income	29,310,162	749,851
Net income	118	1,524,196
Dividends	1,500,000	
Surplus	12,417,205	

Forest Fires Take Heavy Toll in Lives and Property

Railroads Unremitting in Relief Work During Conflagration
Which Swept Northeastern Minnesota

THE RAILROADS not only suffered great damage to their property but also distinguished themselves in relief work during the forest fires which swept northeastern Minnesota a week ago. In general the fires commenced on October 11 and on the following day got beyond the control of the inhabitants and were spread at a rapid rate by a fierce gale. The conflagration started at points about 75 miles west and southwest of Duluth and covered the entire territory between those points and the head of the lakes. Many towns were wiped out and the fact that a number of others escaped serious damage may be attributed to some of the freak hap-

Location of the Fires

Serious fires first occurred east of Swan river, where a large number of new settlers, mostly Finns, had located. Other fires then appeared around Mirbat, 75 miles west of Duluth, and toward Cloquet, 41 miles west of Duluth. On the morning of October 12, a strong west wind came up, which developed into a gale by 4 p. m. At Superior it was so dark at that time that all the street lights were turned on. The air was full of dirt, smoke and ashes and was heavily charged with electricity while the sky was a blood red color.

The fires worked east along the Great Northern main line on the Mesabi division as far as Carleton, which is 34 miles west of Duluth. The first town of importance burned was Brookston which is located 57 miles west of Duluth. The town proper was destroyed. The Great Northern ore terminal is located at this point and there is also a coal and water station there. The coal shed, water tank, pump house, depot and one section house were saved at this point, largely through the efforts of an Italian section foreman, who has been with the company for many years. He kept the pump going throughout the fire and continually sprayed the buildings with water. He



The Remains of the Trestle Approach to the Interstate Bridge

penings which occur at times during such catastrophes. The rescue work carried out by the railroads in the fire zone diminished to a large extent the loss in lives. In general, railway employees carried on relief work until compelled to leave the fire-swept territory to avoid being trapped.

The Northern Pacific incurred property damage estimated at \$33,300 at Cloquet, \$55,400 at Duluth, \$4,600, at Moose Lake and \$1,100 at Corona. Along the lines of the Great Northern one interlocking plant, one station, several section houses and a number of laborers' cottages were destroyed by the fire, but the greatest damage was to the Interstate bridge used by the Minneapolis, St. Paul & Sault Ste. Marie and the Great Northern between Superior, Wis., and Duluth, Minn. The Northern Pacific lost 65 freight cars and the Great Northern lost 5 at Cloquet and 15 outfit cars at Brevator just west of Cloquet. Many miles of telephone and telegraph lines were burned. On the Great Northern the damage to the track is estimated at \$40,000 or \$50,000, that to buildings between \$25,000 and \$30,000, and to the Interstate bridge about \$90,000.

The last summer was one of the driest experienced in Minnesota for a number of years. Very little rain had fallen for two months and the water holes and streams were drying up. A large number of settlers have been locating in this territory, who were engaged in clearing the land for farming purposes. The slashings from the cut-over timber land were generally burned and these fires evidently got beyond the control of the inhabitants. Bush fires were first noted by George S. Stewart, general superintendent of the Great Northern, while out on the line on October 10 and he then issued instructions to prepare for emergencies.



Another View of Interstate Bridge

was the only person who remained in the town during the conflagration.

The depot at Brevator, five miles east of Brookston, was destroyed and 15 outfit cars occupied by an extra gang were burned. No men were lost, as they fled ahead of the fire and were picked up by the relief train that moved the people out of Brookston and picked up the settlers around Draco. At Nagonat one section house was lost.

Cloquet, a thriving little city of 9,000 inhabitants, was practically wiped out by the fire. Only 9 dwellings remained, four of which were located near the west end and five in the east end of the town. About 60 per cent of all the lumber was destroyed. Of the five big sawmills two were left intact, one was partially destroyed and the other two were completely wiped out. A big paper mill, a toothpick factory and a box factory were saved, as by one of its freaks the fire passed on all sides of these factories. An important water tank at North End, just west of the Cloquet lumber yards, was saved largely through the efforts of the section foreman and five men. From 40,000,000 to 50,000,000 ft. of lumber was piled upon both sides of and close to the track. The heat from these

burning poles badly warped the rails and destroyed the track for a distance of $1\frac{1}{4}$ miles. A 42-ft. bridge was destroyed at this place. Everything between North End and Cloquet was burned, including the block signals, and telephone and telegraph lines.

At Scanlon, three miles from Cloquet, the fire destroyed 12 houses, but no railroad property was damaged nor was any railroad property east of there burned. Through the Iron Range country a great many smaller fires occurred, but no bridges or other railroad property were damaged on the Great Northern, as eight engines with water cars were employed to fight the fires as they started. At Kewattan two section houses were lost and miles of telegraph or telephone lines were blown



The Remains of Union Station at Cloquet

or burned down. By 9 p. m. on the evening of October 12, the wind was blowing 60 miles an hour. Several mine locations in the fire zone were damaged to a considerable extent.

The Interstate Bridge Destroyed

The Interstate bridge is used by the Great Northern and the Soo line, the street car company, and for vehicles and pedestrians between Duluth, Minn., and Superior, Wis. On the north side the approach to the fixed span consisted of 1,350 ft. of concrete and steel construction and 1,000 ft. of wood trestle running up to the fixed span. In addition, the bridge had two 600-ft. approaches from the street on the north side for the street car lines. There were two fixed spans, each 302 ft. long, and each weighing 1,000 tons, while the draw span was 498 ft. long and weighed 1,800 tons.

Fire brands from the fires burning in West Duluth were carried by the wind and set fire to the wood trestle at the point where it connected with the concrete and steel approach at Arthur avenue, and in a short time the trestle was destroyed, as were the two approaches from the street. A switch engine and about 40 men arrived at the bridge about 10 o'clock Saturday night, October 12; at 10:30 p. m. the city fire department had a hose working and at 11 a fire tug arrived; but the wind was blowing a gale which made it almost impossible to fight the fire. The fixed span on the north side connecting to the south end of the trestle work had the decking entirely destroyed, together with the rail fastenings, while the steel floor stringers underneath were bent out of shape and otherwise badly damaged. In addition to this holes were found burned through the decking throughout the entire length of the otherwise undamaged part of the structure.

By 8:30 the following morning 60 men and two derrick scows were on the way to clear away the debris. A large amount of material was on hand for use in repairs to the ore docks after the ore season closed, and this was used. Any material not on hand was gathered from other division points. The vacant ground to the west of the old approach will be used for the framing of the wood timbers used for rebuilding

and these timbers will be towed out in the form of rafts by motor boats to be lifted in place by the derrick scows. Work will be carried on from both ends of the bridge. A railroad derrick will work from the south end of the steel and concrete approach, erecting bents.

In less than 40 hours after work was started, all the debris on the north side had been cleared away to the water's edge, the piling was cut on 21 bents and these were ready for the sills. It is expected to have the work completed and ready for traffic in 30 days, while one side of the bridge will be ready for use in about 15 days. The contract for the work on the bridge has been let to Peppard & Farlton, and 150 men, 10 teams, 2 derrick scows and a pile driver are at work on the reconstruction. With the exception of the ferries which ply occasionally between Superior and Duluth, and the railroad trains which operate over other bridges, all direct means of traffic is cut off between the two cities.

The Rescue Work

Only quick action on the part of the railroad officers succeeded in keeping down to a remarkably small figure the loss of life along the line in the fire-swept territory. When conditions began to look serious on Saturday, October 12, F. D. Kelsey, division superintendent of the Great Northern, issued instructions to all employees to keep a close check on conditions and to the train crews to pick up people from the towns where the fires were breaking out. Four relief trains were sent to the city of Cloquet on Saturday evening. The first train consisted of passenger equipment and left Cloquet for Superior at 9:15 p. m. with women and children. The other three trains with a total of 130 box cars left at intervals of about an hour, the last train with 54 cars leaving the burning city at 11:40 p. m. At this time the city was practically wiped out. Great credit is due the train and enginemen on the last train, as they moved it slowly ahead of the fire from the center of the city to the east end, keeping the whistle blowing almost continuously, and stopping at all road cross-



Track Just East of Cloquet Station

ings to wait for stragglers to show up. At this time the smoke and wind made it almost impossible to live outside, regardless of the fire.

Four trainmasters, four traveling engineers and the roadmasters were out on the line directing the work. Too much credit cannot be given all classes of employees for the excellent manner in which they performed their work, regardless of danger. The section foremen and their men fought the fires until practically surrounded. The agents and operators were some of the last to leave, sending in reports until the wires went down. The operator at Brookston, a woman, stayed in the station until a big store only 400 ft. away was destroyed. This was only one of a number of such cases. After the train and enginemen were out of touch with headquarters they acted on their own initiative and waited as

long as possible to pick up all stragglers. The bridge and building men also did excellent work. The chief dispatcher, track dispatchers, superintendents and general superintendents arranged to meet all contingencies when the brush fires first began to be reported in various localities. General Superintendent Stewart arranged to have the city authorities and principal business men of Superior meet the refugees, 4,700 of whom were brought in. On their arrival they were provided for in clubs, lodge rooms, churches, school houses and private homes.

The Northern Pacific also operated a number of relief



Moose Lake After the Fire

trains between the fire district and Duluth and Superior, rescuing a large number of people. On Sunday, October 13, a special relief train was run from St. Paul, Minn., to Moose Lake and through the balance of the fire district with physicians, nurses and state officials in charge of relief work. This train, in addition to the regular trains, moved the injured to St. Paul and Duluth, and picked up numbers of women and children who had taken refuge in swamps along the line and moved them to points where they could be taken care of. On October 14, a train leaving St. Paul for Duluth took several baggage cars of supplies to Moose Lake and on



Planing Mill and Wrecked Equipment East of Cloquet

the same day a supply of lumber and gasoline was transported from Duluth to Moose Lake. Each day since that time hay and oats have been moved to points in the burned district to feed the surviving cattle. In addition several companies of militia, fire apparatus and auto trucks were distributed throughout the fire zone.

Damage to Roadway

On the Great Northern miles of telephone and telegraph line were destroyed, two miles of track and of automatic signals, and an interlocking plant at Brookston, where the road branches off to the iron range, were destroyed as was also

one small bridge and numerous buildings. On Sunday morning, October 13, three line gangs with material and extra gangs and eight cars of rail and ten cars of ties were moving to Cloquet. Because of the smoke and heat it was nearly noon before the actual repair work could be started.

The Grand Rapids-Superior line of the Great Northern handles a large amount of iron ore from the range and it is essential that no interruption to this service occur; otherwise lake boats would be held up at the docks. Traffic was interrupted by the fire for only 24 hours and at the end of that time the east-bound main line was opened up and trains were being operated by the staff system. Twenty-one hundred and eighty-eight cars of ore were on hand in the Allouez yards when the calamity occurred and nine boats were loaded at the Great Northern ore docks on Sunday, October 13. By getting the line opened so quickly, enough ore was brought in to the docks to supply the boats as fast as they tied up, occasioning no delay to this traffic. On Monday, October 14, shipping out of the American Head was impeded or totally stopped by the smoke from smoldering forests. In addition a dense fog helped to obscure large objects but a few yards distant. Government sirens ashore were directing the course of vessels in the fog and smoke trying to make the harbor.

Cost of Locomotive Fuel in 1917

THE COAL CONSUMED by locomotives of Class I railroads in 1917 cost approximately \$115,000,000 more than it would have cost at the 1915 prices, according to a compilation made by the Bureau of Railway Economics from the annual reports of railways to the Interstate Commerce Commission. The average cost per ton, according to the bureau's figures, was \$2.54 in 1917, an increase of \$0.8364, or 49 per cent. over the average cost in 1915. The results of the study made by the bureau are given in the following tables:

CONSUMPTION OF FUEL BY LOCOMOTIVES

YEAR ENDED DECEMBER 31, 1917

	(Railways having annual operating revenues above \$1,000,000)			
Item	United States	Eastern District	Southern District	Western District
ANTHRACITE COAL:				
Tons consumed.....	5,293,301	5,293,301		
Aggregate cost.....	\$14,010,125	\$14,010,125		
Average cost per ton.....	\$2.6468	\$2.6468		
BITUMINOUS COAL:				
Tons consumed.....	132,491,677	61,551,592	24,064,797	46,875,238
Aggregate cost.....	\$336,019,409	\$165,663,004	\$52,810,044	\$117,546,361
Average cost per ton.....	\$2.5362	\$2.6914	\$2.1945	\$2.5076
TOTAL COAL:				
Tons consumed.....	137,784,928	66,844,893	24,064,797	46,875,238
Aggregate cost.....	\$350,029,534	\$179,673,129	\$52,810,044	\$117,546,361
Average cost per ton.....	\$2.5404	\$2.6879	\$2.1946	\$2.5076
FUEL OIL:				
Tons consumed.....	10,992,617	61,943	205,624	10,725,050
Aggregate cost.....	\$12,357,615	\$607,106	\$852,414	\$40,877,395
Average cost per ton.....	\$3.8514	\$9.8010	\$4.1455	\$3.8114
WOOD, COKE AND CHARCOAL:				
Tons consumed.....	371,186	132,423	24,145	214,618
Aggregate cost.....	\$1,528,043	\$538,976	\$94,138	\$894,929
Average cost per ton.....	\$4.1167	\$4.0701	\$3.8989	\$4.1699
ALL FUEL:				
Tons consumed.....	149,148,731	67,039,259	24,294,566	57,814,906
Aggregate cost.....	\$388,384,439	\$180,819,211	\$53,756,596	\$159,318,685
Average cost per ton.....	\$2.6049	\$2.6972	\$2.2127	\$2.7557
Mileage Represented.....	50,844	50,844	42,852	130,758

ANNUAL COST PER TON

YEAR ENDED DECEMBER 31, 1917, COMPARED TO YEAR ENDED JUNE 30, 1915

Item	United States	Eastern District	Southern District	Western District
COAL:				
Average cost per ton:				
1917.....	\$2.5404	\$2.6879	\$2.1936	\$2.5076
1915.....	\$1.7040	\$1.6352	\$1.3646	\$1.9794
Increase, 1917 over 1915:				
Amount.....	\$0.8364	\$1.0527	\$0.8290	\$0.5282
Per cent.....	49.0	64.4	60.8	26.7
ALL FUEL:				
Average cost per ton:				
1917.....	\$2.6410	\$2.6972	\$2.2127	\$2.7557
1915.....	\$1.7738	\$1.6392	\$1.3676	\$2.1006
Increase, 1917 over 1915:				
Amount.....	\$0.8672	\$1.0580	\$0.8451	\$0.6551
Per cent.....	48.9	64.5	61.8	31.2

NOTE: Fuel and material consumed in connection with the fire on the basis of the cost of the remaining material and material on hand at the time of the fire, and soft wood 2 cords to the ton; charcoal on the basis of 100 bushels to the ton.

The Mechanical Department Supervision Problem

The Dilution of the Quality of Labor Has Increased the Need of More and Better Supervision

By Frank McManamy

Assistant Director, Division of Operation, United States Railroad Administration, Washington, D. C.

THE IMPORTANCE or in fact the necessity of efficiency in the railroad organization cannot be overestimated and as stated by the director general in his report to the President, the efficiency of the railroads depends entirely upon the supply and condition of the motive power and the efficiency with which it is operated.

The supply of locomotives has never been such as to cause serious apprehension because with 18 per cent, which is approximately one locomotive in every six, out of service for repairs, which was the situation last winter, we could not well say that a shortage of locomotives existed. The important question, therefore, was to get the locomotives in shape to perform efficient service and maintain them in that condition. At the present time the big factor in this is the question of supervision of shops and shop work.

The Interstate Commerce Commission reports the gross revenues of all Class I railroads, that is railroads with annual operating revenues in excess of \$1,000,000 for the year ended June, 1917, as \$3,824,419,739. Of this amount, \$633,543,697, or almost exactly one-sixth of the gross income, was expended for maintenance of equipment. It was exceeded by only one item—transportation. In view of the prevailing cost of labor and material this figure will be greatly exceeded in the current year.

Reports show that there are employed in the mechanical department of the railroads under Federal control, 393,000 persons, of whom 255,000 are in the locomotive department and 138,000 in the car department. These are the persons who make up the maintenance of equipment forces and the amount paid them for wages with the value of the material they use makes up the enormous sum under the caption "maintenance of equipment."

To insure efficient and economical handling of this labor and material, organization is required and the prime factor in any organization is supervision. Railroad forces, and particularly maintenance of equipment forces, have been subjected to heavy drain because of the war and this has resulted in dilution of the quality of labor. Because of this dilution supervision both in kind and in quantity, becomes even more important than heretofore. It is today the big problem in railroad operation.

Supervision to be effective must be adequate in quantity, therefore, the number of workmen under one officer must be such that the officer is in constant touch with his force. Persons who have studied military and industrial organizations state that one man can properly supervise not to exceed from 25 to 35 men, a figure much below that which is often used in railroad work which has been known to extend to nearly 100 men. The statements as to the number of men who can be properly supervised by one officer are based on studies made when conditions were normal. In view of the necessity for the intensive use of labor and material today, because of the demand for both, the figures stated are, I believe, too high.

Supervision to be effective, must be constant. The withdrawal of the foreman or supervising officer from his duties many times each day to answer summons from those in authority, the preparation of reports and routine office work which could be done in much less time by persons with

clerical experience, the daily attendance of staff meetings which necessitates absence from usual duties for periods ranging from 30 minutes to two hours, are not conducive to efficient supervision.

Many supervisory positions have been permitted to become supervisory positions in name only. We find superintendents of shops, master mechanics, general foreman, roundhouse foreman and even men in positions of lesser responsibility, required to devote so much time to office work, to personally transmitting reports to superiors and to other work of like character, that they can devote little or no time to the direction of the active work, and by active work I mean the actual expenditure of the labor and material under their control.

Supervision to be effective must be respected, and this applies to those of higher as well as lower rank. The possession of proper title to indicate the character of services rendered which will command respect from those under his jurisdiction and consideration from those in other departments with whom he comes in contact, is a necessary advantage which should be given each supervising officer.

Active competition for supervisory positions should be encouraged by making such positions as attractive as possible and if this is done, it will result in securing the best material available, which is highly essential if the output in both grade and in quantity is to be kept up to the standard.

Supervision to be effective must be instructive. Some one has said that the principal reason for not getting the result we anticipated was because we failed to explain just what was wanted—a lack of understanding. To this cause may be laid many failures both of men and of plans. It is necessary, therefore, that instructions be complete, that they be concise, that they be understandable, and that—above all, they be workable.

The issuance of orders is the easiest thing in the world, but to issue a large number of orders is to insure their being disregarded. Voluminous instructions therefore should be carefully avoided. If this is done and the instructions issued are brief and are to the point, better observance may be expected; instructions alone, no matter how carefully prepared, are of little value without a proper follow-up or checking system to see that the instructions are observed and the work up to the required standard.

Supervision to be effective must be courageous. The quality of production comes from the top downward. We get from the average workman as good a job as we accept, no better. Supervision must maintain the accepted standards and this requires, in many cases, real courage, but it is necessary, and the supervising officer is the only means whereby this can be accomplished. With the conditions now existing the maintenance of high standards is necessary to the morale of the forces and to the preservation of proper discipline.

As previously stated, there are today in the locomotive department 255,000 employees, and in the car department 138,000 employees, a total of 393,000. There are approximately 20,000 more employees in the locomotive department today than there were a year ago and approximately 8,000 more in the car department than for this date last year. Added to this we are working more hours, many more hours, per week than we did a year ago. With the increase in force and the increase in man hours, we are not in all cases receiving the

*Abstract of a paper presented before the New York Railroad Club

returns we should; I attribute this largely to inefficient supervision.

I have endeavored to point out some of the essential requirements of effective supervision but it must be more—it must be responsible, as authority and responsibility go hand in hand. We cannot separate them and if we confer adequate authority on an officer he must have sufficient confidence in his own ability and judgment to do the work required and assume the responsibility for it.

Since the government has assumed control of the railroads supervising officers have often made the statement that they did not know just what authority they had and in many instances when matters which have always been handled by certain officials have been put up to them their reply has been "I do not know whether I can handle this without instructions from Washington," and this has been given as an excuse for failure of almost all kinds.

Paragraph 1 of General Order No. 1, issued by the director general on December 29, 1917, reads as follows:

All officials, officers and employees of the railroads are hereby notified that it is the policy of the government to require that all officials, officers and employees of the railroads shall be held responsible for the performance of their duties and for the supervision of their subordinates.

This in the absence of subsequent orders to the contrary, seems to me effectually to dispose of any doubt as to the authority of supervising officers and leaves the question of failure to properly supervise the work squarely up to the officer involved. What is wanted by the Railroad Administration is that each railroad officer or employee who remains in the service, who continues to perform the usual duties assigned to him will if possible do a little more work than he ever did before and do it a little better.

There can be no question as to the authority of railroad officers under government control to perform all of their usual duties and there has been no lack of support from the Railroad Administration when those duties were properly and diligently performed.

A discussion of the question of supervision would not be complete without considering co-operation in connection therewith, because I believe the real test of the supervising officer is his ability to obtain the co-operation of the men working under his direction. I sometimes feel, however, that the real meaning of the word "co-operation" is not always realized. Webster defines the word co-operation as "To operate together or jointly for a common object or a common end" and Gladden has well said "Men cannot co-operate successfully for any purpose if the sole bond between them is self-interest."

The extent to which the supervising officer can get his force to work together for a common object depends almost entirely upon his attitude towards the men and his interest in the work that is being done. The supervising officer who considers that his full duty has been performed when he has issued instructions covering the work to be done is not going to secure any great amount of co-operation. He must show the employee that he has a personal interest not only in the work but in the workman. They must know that in addition to passing out the work slips he is going to follow them to see that the work is promptly done and in a workmanlike manner. He should also encourage workmen by seeing that both material and tools are supplied to mechanics so that they may keep their machines in operation, for there is no one thing that goes further to discourage a good mechanic and curtail the output than to require him to shut down his machine while locating materials which should have been delivered by a laborer or to secure tools which a tool messenger should have delivered.

There is nothing that will keep a force of men at their best quite so well as the knowledge that the supervising officer is on the job, inspecting their work, both as to quality and quantity, and that good work will be noted and the workman given due credit, as surely as work that is not up to the standard will be corrected.

In addition to co-operation between employees and supervising officers we must also have co-operation between different departments if we are to get results out of our locomotive shops. The work must be co-ordinated so that time lost by one department in waiting for another is reduced to a minimum. To bring this about it is usually necessary for certain employees in one department to work overtime or to make an extra effort so that someone else is not waiting for the job they are doing and this is one of the times when co-operation between supervising officers and employees is of direct benefit because without it there is frequently objection on the part of the employees to work the necessary overtime to help someone else.

Absolute fairness in handling this is also necessary because if the employee loses confidence in the supervising officer's fairness in matters of this kind, objection to the overtime worked will usually result.

Co-operation between shops and roundhouses is extremely important and roundhouse jobs should be given preference and promptly handled, because in this way many locomotive hours may be saved.

Increased shop output due to closer co-operation and better supervision over the maintenance of power will avail us little without co-operation between the transportation and the mechanical departments with respect to the use of power.

The freight locomotive mileage for the period from January 1 to June 30, 1918, was 370,489,316. This mileage was made by 31,197 serviceable freight locomotives and represents an average daily mileage of 65.6 per locomotive. An increase of five miles per day for each freight locomotive will result in an increase of 7.62 per cent in our freight locomotive miles and would be the equivalent, measured by any standard, of 7.62 per cent increase in our freight locomotive stock. It would be equivalent to adding 2,377 locomotives to our present equipment. With three exceptions this exceeds the present number of locomotives on any railroad in the country. It is 962 locomotives more than the total number ordered by the Railroad Administration for their 1918 requirements and represents the entire production of our locomotive builders for five months.

Figuring the average cost of a locomotive at \$60,000, it represents a capital expenditure of \$142,620,000. With the average mileage per serviceable freight locomotive down to 65.6 is there any conceivable plan by which the expenditure of this vast sum of money can be so easily avoided as by increasing our existing freight locomotive mileage by five per day, particularly when we compare the average performance with the best mileage made by any Class 1 railroad during that period, which is 101.9? This was made by one of the coal carrying roads with heavy traffic and numerous branch lines and mine runs and therefore cannot be said to have been made under exceptionally favorable conditions. As a matter of fact, there are few railroads where the average miles per day cannot be increased twice five by properly utilizing the time serviceable locomotives are unnecessarily delayed at terminals.

In addition to the saving above referred to this will also reduce the amount of terminal overtime paid and the number of crews which must be relieved under the Hours of Service Law. Without this co-operation on the part of the transportation department in the use of locomotives the very best efforts on the part of the builders and the repair shops will not be able to supply the demand, because there has never been a supply of anything so unlimited that if wastefully used it would not at some time or other lead to a shortage.

The freight car miles for the first six months in 1918 were more than one hundred ninety billion. This mileage was made by 2,410,907 freight cars and represents an average of 24.3 miles per car each day. If we can increase this figure but two miles per day it will have the effect of increasing the car miles 8.25 per cent, or over fifteen billion car miles.

It would represent an increase in our freight car stock of 198,417 cars. This number of cars figured at \$1,550 each would add \$267,862,950 to capital, would require more than one year for their construction and is about twice the number of cars which the Railroad Administration ordered for their 1918 requirements.

These figures are given not because it is expected that everyone will be able to equal the best under the varied operating conditions but it is evident from the wide margin between the average mileage per locomotive and the best mileage per locomotive that the average conceals some very disgraceful individual performances which should be improved and in the conservation of fuel, of steel, of labor, and of time this is a field that should not be neglected.

The railroads were taken over by the government not because it desired to go into the railroad business but because under the conditions which existed at that time increased efficiency was absolutely necessary. The efficiency with which the railroads had been operated prior to that time was not the question at issue because, however great that may have been, still greater efficiency was required.

It has been the general impression among the people, if we are to judge by the remarks made when the subject was discussed, that government operation of railroads would simply establish a big political machine and that efficient railroad men would be displaced to make room for politicians and for that reason the present organizations would be destroyed and replaced by inefficient ones. Nothing could be farther from the truth so far as the present Railroad Administration is concerned. Order No. 1 of the director general has made it clear that under government control of rail-

roads there would be no disposition to replace competent, experienced railroad officers or employees. In fact, I can say emphatically that no railroad officer or employee who is efficient and diligent in the performance of his work was ever so secure in his position as he is at the present time.

The question before us at the present time is not as to whether government control or government ownership of railroads is a good thing or a bad thing—that will be settled by the people after the war.

The question before the railroad officers and employees today is solely one of operating efficiency and still greater efficiency in order to meet the demands placed upon them. The operation of the railroads of the country as a unit during the war is the most severe test that has ever been placed upon the railroad men of the country. The operation of railroads is not only the Railroad Administration's job, it is also the railroad man's job. It is not the Railroad Administration's reputation that is at stake, it is the reputation of the railroad man that is at stake; this brings the issue down to each individual, which is just where it should be.

The question before us is not what is the other fellow doing nor what did we do last year, but what am I doing now to help increase the efficiency of railroad operation. This question will be best answered by the record of achievement.

The railroad men of the country have furnished their full quota for the front in all branches of service; they have gone over the top in the Liberty Loans; they have repaired more locomotives and pulled more tons of freight than ever before and I am sure that the record of operating efficiency will be equally as good during the time the railroads are under the control of the administration.

Government Controls Timber Treating Industry

Report of Conference to Consider How Supply of Treated Timber for Railroads Could Be Increased

THE EFFECT OF THE WAR on the timber treating industry and on the supply of treated timber available for the railroads was the topic presented for consideration at a conference of members of the American Wood Preservers' Association, the committee on Wood Preservation of the American Railway Engineering Association and representatives of commercial treating plants and of manufacturers of preservative materials, which was held at Madison, Wis., on October 10. At this meeting John Foley, associate manager of the Forest Products section of the United States Railroad Administration, took the opportunity to inform the industry regarding the plans of the Government.

The Railroad Administration is fully committed to timber preservation and to the treatment of all forest products for which plant capacity and preservatives are available. With the centralization of tie purchases in the hands of the Railroad Administration it is necessary for commercial treating plants to change their practices of selling treated ties to that of selling the treatment only, as described in the *Railway Age* of September 13, page 519.

The questions now confronting the industry are (1) the extent to which the production of the preservatives now used can be increased; (2) the possibilities of using other preservatives not now commonly employed; and (3) the extent to which it may be advisable to revise present treating practices in order to conserve the supply of preservatives for that work most important.

In discussing the first question representatives of several manufacturers of creosote stated that they saw little hope of increasing the output of that material in the near future.

The production of tar has been increased somewhat but a larger amount is also being burned so that there is no increase in the quantity available for creosote distillation. Representatives of zinc chloride producers indicated that there is some hope of an increased output of this material provided sufficient sulphuric acid can be secured. One firm now producing only a limited quantity expects to increase its output considerably by January 1, while another expects to increase its annual production by 1,000 tons next year.

The government has now placed creosote on a so-called clearance list under which the distribution is transferred from the manufacturers to the War Industries Board. The Chemical Section of this board allots the available supply to essential users in proportion to their demands. That for the railroads is distributed to the plants by the Forest Products section, no distinction being made between railroad-owned and commercial plants treating railroad materials. Existing contracts for the delivery of oil will not be cancelled or relet although the oil may be diverted from one plant to another as the roads using the treated timber are new parts of one unified system. No shipments of preservatives can now be made by the manufacturers without permits and specific shipping instructions. These clearance regulations apply at present only to creosote, but they will be extended to zinc chloride as soon as it is found that there is any tendency to accumulate larger than the normal supply of this material. The government does not desire to take over the distribution of zinc chloride so long as the plants can secure it direct, for it does not desire to interfere with the usual procedure of business unless necessary. No steps

have been taken to fix prices for preservatives and such action is not contemplated unless it is necessary to control profiteering.

In the investigation of the possibility of developing substitutes for creosote and zinc chloride to increase the total quantity of preservatives suitable for the treatment, a representative of one manufacturer stated that his company was prepared to build a large plant for the manufacture of sodium fluoride if it could ascertain that there is a sufficient demand to warrant taking this step. This company now operates a small plant with a capacity of 35 tons per month and is considering the advisability of greatly increasing this output. It has been used in considerable quantities by the Philadelphia & Reading Coal and Iron Co. for the past two years in the treatment of mine props for use in coal mines where it has been found superior to zinc chloride, particularly in the elimination of electrolysis. The serious disadvantage attending the use of this material at present has been the inability to develop a method of control whereby the strength of the solution and the depth of penetration can be determined accurately.

Attention was also called to the possibility of using wood tar as a substitute for the preservatives generally used, and it was stated that from 8,000,000 to 10,000,000 gal. of this material can be produced. While it has certain serious disadvantages its value as a possible substitute was emphasized.

In endeavoring to ascertain the extent to which it may be possible to revise present practices in the treatment of timber to conserve the preservatives for that work which is most important it was stated that it is the policy of the Railroad Administration in the allotment of creosote to give preference to the preservation of materials involving a high original investment such as bridge and dock work, and that the treatment of ties and similar materials was made secondary to this. Attention was called to the revision of the specification for the treatment of cross-ties with zinc chloride which is now under consideration by the Committee on Wood Preservation of the American Railway Engineering Association and which contemplates that (1) ties shall be air dried before treatment, (2) they shall be given a short preliminary steaming before the introduction of the zinc chloride and (3) they shall be treated with one-half pound of zinc chloride per cubic foot, injected in a weak solution to secure the maximum penetration of the timber. It will also probably be advisable to use ties treated with zinc chloride in parts of the country where this has not been considered economical before and where creosoted ties have been used exclusively, for since it is impossible to secure a sufficient quantity of creosote to treat all of these ties it is more satisfactory to treat them with zinc chloride than to insert them untreated.

The question was raised whether it was ever advisable to treat piling with zinc chloride. The consensus of opinion was that piling should not be treated with the preservative as long as any creosote was available or was being used for the treatment of ties, but if no creosote could be secured it was better to use zinc chloride than to install the timber in a structure untreated. Several instances were reported where piling treated with zinc chloride has given satisfactory service, particularly in the west.

The conference brought out in an interesting manner the position of the commercial treating plants. There has been much uncertainty regarding the attitude of the government towards this industry while the difficulty in securing the preservatives has introduced much embarrassment in the negotiations of the companies with their patrons. There will be no distinction between commercial and railroad-owned plants. With the plan outlined, each plant is assured of its share of the oil for use on railway work while the manufacturers are relieved of the difficulty of deciding be-

tween patrons in the distribution of their products. As stated above the quantity of material to be treated is limited solely by the capacity of the plant and the ability to secure preservatives.

The attitude expressed by those representatives of commercial treating plants who were present indicated that they were well satisfied with the measures which are being adopted. While adjustments may be necessary in the operating practices of certain plants, these are only such as may be necessary to adapt them to the conditions brought about by the war. In a few instances where plants may not be able to convert readily for railway work, it is expected that they can be given work for the army or navy. In other words, it is planned to concentrate the entire timber treating capacity of the country on essential work.

Orders of Regional Directors

NUMBER OF CARS IN TROOP TRAINS.—In supplement 1 to Circular 22, the Northwestern regional director announces that the maximum number of cars to be handled troop trains either loaded or deadhead has been fixed at 16 cars and during extremely cold weather the number should be limited to 12 cars to insure proper heating.

Sale of Unclaimed Freight.—In Circular 116, the Southwestern regional director interprets General Order No. 34-A as permitting advertising as a method of disposing of unclaimed freight if in the judgment of the individual road, the best results will thereby be obtained. The order was so worded that many took it to mean that unclaimed freight must be sold at public auction without advertisement.

Movement of Oil.—Circular 115 of Southwestern regional director—same as Supplement 3 to Circular 72, Northwestern regional director, see page 700, *Railway Age*, October 18.

Management of Tie Treating Plant Changed.—In an announcement, dated October 19, the Southwestern regional director states that the properties of the Santa Fe Tie and Lumber Preserving Company, Somerville, Tex., have been assigned to the jurisdiction of F. G. Pettibone, district director. These properties will hereafter be designated as the Somerville Treating Plant. The Gulf, Colorado & Santa Fe will continue to finance the plant but the Southwestern regional purchasing committee will have jurisdiction over the purchase and movement of materials into it for treatment. Shipments from the plant will be made only upon requisitions duly approved by the regional purchasing committee.

Grade Coal to be Furnished to Railroad Administration.—In Circular 117, the Southwestern regional director quotes a letter from the manager of the fuel conservation section which states that it is not the intention of the Railroad Administration to accept coal from mines which is inferior to the grade of coal produced for the commercial market, with a few exceptions necessary to make in the case of special war requirements. Federal managers are asked to advise the fuel conservation section specifically of any situation involving delivery of inferior coal which they are not able to rectify through their regular inspection forces.

Physical Examination for Mechanics.—Order 93 of Southwestern regional director—same as Order 3000-421, Eastern regional director, see page 700, *Railway Age*, October 18.

Track and Bridge Work for 1919.—In Order No. 94, the Southwestern regional director gives detailed instructions regarding track and bridge work for 1919, with particular reference to pile or trestle bridge repairs, track tie renewals and inspection before renewal, switch tie renewals, and the application of new joints to get further life out of rails. The Southern regional director issued the same instructions in Order No. 403.

Convention of the Maintenance of Way Painters

Three-Day Meeting at Chicago was Devoted to Discussions of the Present Problems in This Field

THE LABOR SITUATION, conditions in the paint supply field, and the use of labor saving devices, were among the subjects which occupied a considerable portion of the program of the fifteenth annual convention of the Maintenance of Way Master Painters Association, which was held at the Hotel La Salle, Chicago, October 15, 16 and 17. The first session was called to order on Tuesday morning by President H. E. Conrad, master painter, Pennsylvania Railroad, Huntingdon, Pa., with 41 members and guests of the association present. The registration of members was 33, which is considered a good showing for a total membership of 73, taking into account the epidemic which is now keeping so many people away from public gatherings.

The invocation was offered by Rev. Frank O. Beck of the Wabash Trinity Parish, Chicago, and an address of welcome was made by Harry B. Miller, prosecuting attorney, City of Chicago, in behalf of the city and the Chicago Association of Commerce.

All officers were re-elected for the ensuing year, these including: President, H. E. Conrad; first vice-president, H. F. Jones, master painter, Cleveland, Cincinnati, Chicago & St. Louis, Wabash, Ind.; second vice-president, Ole Stubstad, master painter, Chicago & North Western, Winona, Minn.; and secretary-treasurer, F. W. Hager, Fort Worth & Denver, Fort Worth, Tex. St. Louis was selected as the place of the next meeting, to be held October 14, 15 and 16, 1919.

The paint situation of today was the subject of a paper by W. R. Parker, John Lucas & Co., Chicago, which outlined the obstacles confronted by the paint industry as a consequence of the war. It discussed the restrictions to which the industry is subjected by the War Industries Board and the efforts which the various manufacturers are making to do their full share in winning the war. The influence of the present conditions on the supply and purchase of paint material was illustrated clearly by a table showing the increased cost of representative materials, based on June 1918 figures as compared with the cost in effect on January 17, 1917, this increase being given in percentages, as follows:

	Percent increase
Varnish gums	From 10 to 75
Shellac-TN	180
Standard zinc oxide	5
Lehigh zinc	9
Lithophone	15
Silica	40
American ochre	90 to 170
American sienna	60
American umber	80
Linsed oil	75
Indian red	70
Grinders' lamp black	40 to 50

Robert H. Ford, principal assistant engineer, Chicago, Rock Island & Pacific, Chicago, spoke on the labor situation and gave a chronological account of the various events of the past four years which have been instrumental in bringing about the present shortage of labor. He described the social distinctions between the skilled and unskilled laborer and explained the conditions which have led to the formation of the floating labor class of this country. It is the problems arising from this particular class that have received the particular attention of the United States Employment Service since the early part of this year.

Other matters which were discussed included "Structural Metal Primers and Finishing Coats," by G. G. Mowat, Sherwin-Williams Company, Cleveland, Ohio; "Proper Handling of Paint as Received by the Painters," by S. W. Russell, president, Charles R. Long Company, Louisville, Ky.; "Car-

bonium Wood Preservative," by B. M. McDade, sales manager, Detroit White Lead Works, Detroit, Mich.; and the "Proper Method of Painting the Interior of Water Tanks," a round table discussion by the members. The general conclusion of this discussion was that while many metal paints were a success on surfaces that were completely immersed at all times, practically all paints were subject to failure when exposed to alternate wetting and drying. Several members related experiences with special compositions that were applied with heavy coatings at high temperatures, but in practically all cases the time of service of these coatings was too short to establish a thorough test. Three other papers presented at this convention are abstracted below.

Painting Stations

By G. W. Thompson

Chief Chemist, National Lead Company, Brooklyn, N. Y.

Such a large number of paint materials enter into the products used by painters that it is impossible for everyone to become fully equipped with a knowledge of the suitability of these materials for the various ends that are sought. The number of paint materials is increasing steadily with a corresponding increase either in confusion or in the need of more study on the part of the user of paint materials, unless there is provided some simpler way of handling the whole question. Paint specifications for railroad stations have been complicated and bewildering and I would urge a simplification of formulae and simplifications of color schemes. This lack of simplicity is due, in my opinion, to a failure to appreciate some of the simpler principles of paint designing. I will give a few illustrations of what I mean.

Take the question of the durability of paint. As paint is made of vehicle and pigment, the question we should ask is to what extent is the durability of paint dependent upon the pigment or upon the vehicle, or both. It is obvious that pigment alone will not protect. It is equally obvious that oil alone will not protect, and yet it is perfectly true that pigments do not decay appreciably and that paint decay is due to the destruction of the oil present. These facts have led to two different conclusions. One is that as it is the oil that decays, the more oil in a paint the longer it will last. The other is that inasmuch as it is the oil that decays, durability is obtained by the protective action of the pigment.

There is a popular demand for high gloss finishing paints. I think this is a mistake. Very few paints having a high gloss, except enamel paints, will retain that gloss satisfactorily for more than a year. High gloss is generally obtained by an excess of oil, and my experience has shown that a high gloss paint at the end of one year will as a rule have much less gloss than a paint which had a semi-gloss at the beginning.

I would also direct your attention to the question of color and color schemes. You compare two paints and you see a difference. Is the difference trivial or is it a substantial one? Placed side by side the difference appears to be great. Separate the two paints a short distance from each other and you may not be able to see the difference. Apply these two paints to two different buildings and they may give equally satisfactory results insofar as the color effect is concerned. In judging of colors there ought to be some means of comparing them that will allow for considerable differences so long

as those differences do not substantially affect their practical use.

One other fundamental proposition should be considered in designing paint. All paints intended for decoration should be of colors that have no jarring effect upon the eye. All paints when applied, to get the best artistic results, should blend in harmony with all other colors which may come to the eye from the same general source. What I have had to say with regard to color may be summarized this way: Look only for substantial differences in color. Do not select colors that jar with each other, and do not demand pure whites except for line effects, but always have them tinted to harmonize with color environment.

Cleaning of Iron with Sand Blast; Use of Spraying Machine in Painting

By A. E. Wilson

Master Painter, New York, New Haven & Hartford, Hartford, Conn.

Painting over scale or the fine rust under the scale is labor and material wasted, as corrosion will continue as long as there is any rust under the paint. The only effective way to remove this rust is by the use of a sand blast. This method will remove all rust, dirt, etc., and leave the iron in a condition that will enable the new paint to stop further corrosion. The best outfit to use is a portable machine that is light and easily transferred in work cars and which can be set up on the job without blocking the main track or stopping trains.

In using the sand blast care should be exercised not to hold the nozzle too close or too long on the same place, as it will wear away the metal. The cost of cleaning by the sand blast varies according to the type of bridge to be cleaned, but it will average about \$1 a ton, which is much cheaper than it can be done by hand.

The heavy scales of rust must be chipped off with hammers or air chisels, as the sand blast will remove them only by eating through and the men operating the nozzles are liable to go through too far and damage the iron. It is necessary to follow up the cleaning with a coat of good paint immediately, as corrosion starts very quickly after the use of the sand blast. All the surface cleaned should be painted before leaving the work at night, or it will be covered with a fine rust by the following morning.

As regards spraying of paint on bridges, personally I prefer the old fashioned way of applying a paint of medium weight with a good brush, except in places where one can not reach with a brush or swab. But in applying cold water paint or white wash on the interior of buildings or in the painting of concrete buildings I think spraying the material is the best and cheapest method. Concrete is so porous that it takes quite a little time to rub in the paint to fill up the pores, and unless you have reliable men they will skip over the outside of the surface and not fill it in, thus leaving it very uneven when finished. A portable compressor and tank for this work will pay for itself in one season if there are many concrete buildings to paint or white wash.

I would not recommend the spraying of stations or other station buildings. It is in pockets and other places that are difficult to get at with a brush, as on an I-beam bridge where the I-beams are so close together and it is impossible to get a brush or swab between them, that the sand blast and spraying machine do the best work.

In using the spraying outfit, the air pressure on the tank holding the material should not be more than is necessary to raise the material and cause it to flow slowly from the nozzle held in a working position. The air pressure at the nozzle should be just sufficient to atomize the material. The nozzle should be held about 6 in. to 10 in. from the surface of the

work, and be moved back and forth with smooth and even strokes. Its operation is simple and any one with a little practice can cover a large area in a day.

Volume of Maintenance of Way Painting

This committee was appointed to gather data on the amount of material and labor expended in doing work carried on under the direction of the maintenance of way master painters. A questionnaire was sent to each member of the association requesting his co-operation in preparing an itemized statement of the amount of material used under his direction during 1917 and also the amount of labor in terms of total hours work and total pay-roll for the year. The 23 replies to this circular were thoroughly representative of the entire country as they included districts from Texas to New England and from Kentucky to Canada. The total mileage covered by these reports is 12,690, or approximately 5 per cent of the total mileage of main line in the United States. The amount of territory covered by the individual reports varied from 100 miles of line to 2,577.

With this information at hand, a table was prepared in which the amount of white lead, lamp black, putty, linseed oil, etc., reported by each district was entered. Then by totaling the amounts for each material and dividing by 12,690, the total mileage, quantities were obtained which represented the average amounts of material used per mile of railway line. Then taking the round figure of 260,000 for the total mileage of railway lines in the United States, figures were obtained which represent approximately the amount of material of each kind used in maintaining railroad structures in the United States during 1917. The table below gives the totals obtained:

White lead	3,400,000 lb.
Red lead	2,100,000 lb.
Lampblack	190,000 lb.
All other pigments.....	360,000 lb.
Fillets	22,000 lb.
Whiting	58,000 lb.
Putty	570,000 lb.
Glue	11,000 lb.
Mixed paint for bridges.....	630,000 gal.
Mixed paint for stations.....	490,000 gal.
Linseed oil	480,000 gal.
Turpentine	130,000 gal.
Other thinners	56,000 gal.
Other oils	120,000 gal.
Varnishes	33,000 gal.
Shellac	14,000 gal.
Alcohol	6,700 gal.
Brushes	140,000 gal.

A similar analysis made with respect to labor showed that the labor required in maintenance of way painting aggregated 82 hours per mile of line at a cost of \$27. The total for the country was then estimated at 22,000,000 hours, or a total pay roll of \$7,400,000. Approximate unit prices applied to the quantities of the various materials gave an approximate value for all materials used by the maintenance painters in the United States \$3,500,000. This means that the total expenditure for maintenance painting aggregates close to \$11,000,000 annually.

W. S. LACHER, Associate Engineering Editor, *Railway Age*, Chicago, Chairman.

The Sixtieth street tunnel, underneath the East River, at New York, providing a subway connection between the lines operated by the Brooklyn Rapid Transit Company under Broadway and Seventh avenue, Manhattan, and the new elevated lines in Queens Borough has been "holed through." This tunnel, which crosses beneath Blackwell's Island, is the deepest of the railroad tunnels in New York, being, at some places, more than 100 ft. below mean high water. The engineers of the New York State Public Service Commission, in charge of the work, report that, at some points, during the course of construction, it was necessary to use compressed air at the high figure of 48 lb. to the square inch, establishing a record.

Doings of the United States Railroad Administration

The First Compensation Contract Signed; Conditions at the North Atlantic Ports

WASHINGTON, D. C.

DIRECTOR GENERAL MCADOO on Tuesday affixed his signature to the first of the contracts with the railroads for their compensation during federal control based on the standard return as certified by the Interstate Commerce Commission. The first contract signed was with the Chicago and North Western and other corporations (subsidiaries), providing for an annual compensation of \$23,364,028.55. A separate contract was signed for the Chicago, St. Paul, Minneapolis & Omaha. The contract with the Chicago, Burlington & Quincy and other corporations, which was also signed, provides for an annual payment of \$33,390,079.61. Contracts were also signed with the Fort Worth & Denver, the Wichita Valley, and the Colorado & Southern. The contracts had previously been signed by the railroad executives.

Ten Months' Improvement at North Atlantic Ports

The Railroad Administration reports that accumulations of export freight in railroad terminals at the six North Atlantic seaports had been reduced on October 1 to 18,796 carloads, of which only 5,383 carloads were on wheels. Last December the export accumulations totaled 44,320 carloads—2,000,000 tons—with 12,552 loads standing in cars. Month by month, as the congestion was brought down, the quantity of freight handled went up, and the September export tonnage was more than double that of last December, January or February.

The statement characterizes the record as marking a revolutionary transformation in railroad conditions. "Perhaps no single development has had a more vital bearing on this country's war efforts nor brought greater relief and satisfaction to the responsible war leaders of both America and the Allies."

In September, just past, the export, in addition to bulk grain and coal, was 1,517,795 tons. Last December it was 682,563 tons. The increase was 69 per cent over September of last year, and 281 per cent over September, 1914. The trans-shipment of freight at the ports has proceeded so smoothly during the past few months that the menace of a break in the bridge to Pershing appears to be definitely removed. A "delinquent bureau" was established through which all "slacker" shippers and consignees were followed up and compelled to dispose of accumulated freight and cease misusing railroad facilities for storage purposes. "The rule that the railroad machine should be used to transport freight, not to hold it indefinitely, was enforced at all points."

ACCUMULATION REDUCED

The periodic accumulation figures for all ports (carloads) are:

	December	March	June	September	October	Per cent of Decrease
In cars	12,552	7,018	9,334	6,370	5,383	67.11
On piers etc. }	8,349	7,000	6,321	5,116	5,064	39.34
On ground . .	23,419	16,701	12,250	9,080	8,349	65.64
Total	44,320	30,719	27,905	20,566	18,796	57.59

For New York alone, which handles more than 60 per cent of all North Atlantic exports, the figures are as follows:

	December	March	June	September	October	Per cent of Decrease
In cars	8,069	3,188	5,454	3,239	2,745	65.98
On piers etc. }	4,832	3,557	3,180	2,862	1,919	60.28
On ground . .	13,687	9,729	7,311	5,537	4,914	64.09
Total	26,588	16,474	15,945	11,638	9,578	63.97

SERIOUS DANGER REMOVED

Last winter, when cars under load were backed up on sidetracks for miles inland, railroad officers in desperation arbitrarily dumped cars of non-perishable freight out upon the ground to release track space and cars. In the harbor lighters were delayed for weeks at a time with loads because the congested conditions prevented the prompt making up of composite cargoes. On January 6 there were 213 ocean-going steamers lying idle in New York harbor awaiting either cargo or bunker coal for the trip to Europe, although at this period shortage of bottoms was acute and the U-boat menace at its height.

The records show that railroad facilities for export have not been forced to their extreme limit at any time during the past six months. Excluding United States government war freight, which is accorded preference over all other traffic and excluding also bulk grain and coal, the deliveries of export in carloads at North Atlantic ports for the past six months averaged, daily, 1,055 cars in April; 1,348 in May; 1,351 in June; 1,480 in July; 1,232 in August and 1,651 in September.

The total export tonnage (excluding bulk grain and coal and government freight, which last year was very light) appears as follows:

	April	May	June	July	August	September
1917	1,001,603	915,786	1,007,226	822,439	1,079,942	897,547
1918	1,086,307	1,407,598	1,290,351	1,515,155	1,389,923	1,517,795

Of the 1,651 cars delivered daily in September, exclusive of United States government war supplies, only 215 carloads were commercial export freight; 779 carloads were for account of the French, British and Italian governments; 47 carloads were for the Belgian Relief Commission and 610 carloads were grain and grain products for the United States Food Administration.

TRANSPORTATION NEEDS FULLY MET

No shortage of railroad transportation for war activities or essential industries existed during the summer months; in fact, the capacity of the carriers for months has been in excess of the traffic offered. Export tonnage hauled in September was 9.2 per cent greater than in August; and all lines serving the North Atlantic ports declared themselves able to handle more freight. There has been some shortage in production. The extraordinary demands for steel have baffled even the great efforts of that industry. Food supplies have moved from the West to the seaboard in quantity and at a speed never before known. Shipments of livestock and other perishables eastward from Chicago on October 8 aggregated 1,318 cars. The increased movement of food has fully kept pace with the rapid increase of our expeditionary forces abroad, and the requirements of the allied peoples.

The domestic freight traffic to the seaport cities has grown at a rate approaching that of the exports. For the six weeks ended September 26 total deliveries at one port alone amounted to 115,363 carloads, an average of well over 3,000 cars a day.

THE METHODS EMPLOYED

The statement goes on to explain the measures taken to accomplish these revolutionary results. The War Department, the Navy Department, the Food Administration, and all the other Government Boards appointed experienced railroad traffic men to look after their interests. This prevented conflicting demands or orders and cleared up much of the

chaos previously existing. The Exports Control Committee has co-ordinated the operations incident to the export of freight to Europe, from all ports, and sees to the prevention of congestion at any one port. The close co-operation between our government and the agents of the European governments has also been an important factor. A. H. Smith, eastern regional director, early placed the operations of all railroads at each port under a single joint committee, thus fixing responsibility for prompt unloading and the regulation of delinquent consignees. Carload shipments were subjected to a rigid system of permits. The consignee of freight now has to get the permit necessary for the shipment of his car, and to do this he must show his ability to promptly unload the freight. Applications for permits are passed upon, at each port, by a single committee on which all railroads are represented.

Adequate storage space has been provided at or near the seaports to hold reserves sufficient to prevent delay to steamships. Freight movement from the west has been much simplified by new arrangements for assembling at gateways, and by sending single commodities through in solid trains. Railroad piers are utilized for loading direct from cars to steamers. The tugs, lighters and car floats owned by the railroads have been put under a single management at each port.

Coal export for war needs, not included in the foregoing figures, amounted, in the seven months ending with July, to more than 1,000 carloads a day, or a total of 10,915,337 tons; all this in addition to the vast supplies needed by steamships for fuel.

Conditions in Central Western Region

A report to Director General McAdoo from Hale Holden, regional director of the Central Western region, for the month of September, shows that the movement of traffic over the railroads in that region was better than normal and reviews in detail traffic conditions as well as economies effected through better loading, consolidations of facilities and more direct routing.

The report demonstrates that the "sailing day" plan has reached the point where it is saving 3,429 cars per week. There has been an increased loading in the region of coal, grain and live stock. Particular attention has been paid to the live stock situation with the result that an increase of 19 per cent in loading was brought about. Good results were also achieved through more intensive loading of all kinds of commodities throughout the month. Full car supply was available in the midcontinent oil-field for the loading of oil. Mr. Holden's report also shows that in spite of disadvantages more shop work was accomplished in the region than in September, 1917.

Ticket office consolidations in the region have been effected which will save a total of \$567,978 per annum.

The report follows:

MOVEMENT OF BUSINESS

The weather has been seasonable and favorable operating conditions have existed on all lines with but very few isolated cases of temporary congestion or accumulation and it has been necessary to divert from proper routes or delay very little traffic.

The movement of grain which was unusually heavy during the month of August, continued in September up until the eighteenth when on account of the fact that the elevator capacity at practically all primary markets was filled much earlier than usual it was necessary, through co-operation with the Food Administration and grain control committees to place a limited embargo, under the permit system, at the principal primary markets. Grain control committees were established and through the splendid co-operation of the grain interests generally the situation has been well in hand since the date mentioned above.

The car supply generally has been adequate to meet requirements with the exception of double-deck stock cars for special loading. Unfavorable feeding and weather conditions on western mountain ranges caused practically all of the stock raisers and feeders to want to ship at once. The supply of both single and double-deck stock cars is limited and there have been some disturbing elements to the situation in consequence resulting from our inability to satisfy all the interests. As a matter of fact, however, the business has been moved as fast as the stock yards companies could handle it and we have been compelled to hold back stock at Omaha and Kansas City because it could not be taken care of by the stock yards company.

Car loading was as follows:

	TOTAL CARS COAL LOADED		Per cent increase
	1918	1917	
	164,342	142,299	15.5
	TOTAL CARS GRAIN LOADED		Per cent increase
	1918	1917	
	33,658	27,402	22.8
TOTAL CARS REVENUE FREIGHT LOADED		1918	
	553,868	573,377	3.4 dec.
TOTAL CARS REVENUE FREIGHT RECEIVED FROM CONNECTIONS		1918	
	301,756	292,946	3.0

While there was a substantial increase in the loading of several commodities, such as coal, grain and live stock, the total loading shows a slight decrease caused by falling off of miscellaneous loading and also by the more general intense loading of cars this year as compared with the same period last year. This is particularly true of the less carload merchandise loading, where a very large number of cars were saved by heavier loading and the adoption of the "sailing day plan."

Sailing Day Plan.—During the month of September the sailing day plan was inaugurated at the following points, resulting in savings shown:

CAR SAVINGS PER WEEK		
	Cars	Cars
Albuquerque, N. M.	48	124
Arkansas City, Kan.	12	28
Burlington, Ia.	125	70
Davenport, Ia.	64	49
Rock Island, Ill.	64	82
Mobile, Ill.	11	2
Denning, N. M.	11	40
Dodge, Cal.	187	138
Durham City, Kan.	45	10
Fresno, Cal.	55	84
Great Bend, Kan.	25	49
Hutchinson, Kan.	54	110
Independence, Kan.	6	25
Kansas City, Mo.	570	15
Laurel, Kan.	14	
Las Vegas, N. M.	48	
Los Angeles, Cal.		2,091
Muscatine, Ia.		78
Oakland, Cal.		70
Ottumwa, Ia.		49
Pueblo, Col.		82
Raton, N. M.		2
Sacramento, Cal.		40
San Francisco, Cal.		138
San Jose, Cal.		10
Springfield, Ill.		84
Stockton, Cal.		49
Tapoka, Kan.		110
Wellington, Kan.		25
Winfield, Kan.		15
Total		2,091

In my report for the month of August I showed that the total saving from the installation of the plan during that month aggregated 1,338 cars per week. The total saving to date is therefore 3,429 cars per week which is without question having a favorable effect on the car situation generally.

Fruit Traffic.—126 fruit specials, with 4,758 cars operated from California to the Missouri river and Chicago, with an average of 37 cars per train. 74 special fruit trains originated in Colorado, with a total of 2,226 cars, an average of 30 cars per train. As in former months, all fruit specials were operated on conservative schedules and were filled to enough tonnage with dead freight to insure economical train load and satisfactory time performance.

Livestock.—The loading of livestock in this region shows an increase of 19 per cent. Kansas City market handled a total of 19,046 cars inbound, an increase over same month last year of 5,705 cars or 42 per cent. 8,396 cars handled outbound, an increase of 2,022 cars or 31.7 per cent. South Omaha market had inbound 14,040 cars, increase 3,506 cars or 33.3 per cent. Outbound 7,243 cars, increase 1,243 cars or 20 per cent. St. Joseph market handled a total of 5,662 cars inbound, an increase of 1,312 cars or 30 per cent; outbound 1,527 cars, increase 449 cars or 41.6 per cent.

Oil Traffic.—A full car supply was available in the mid-

continent fields at all times. From this district a total of 516 oil trains were operated, with 14,319 cars, an average of 28 cars per train, of which the Santa Fe handled 91 trains, with 2,984 cars or an average of 33 cars per train.

Troop Movements.—We operated from all camps a total of 73 special trains, with 26,766 men, the larger movements being 21 trains, 8,316 men; 20 trains, 6,510 men; and 18 trains, 8,431 men. All trains were operated on schedule and without accident.

Coal Traffic.—The coal situation in Illinois and Indiana during the month of September was more satisfactory in point of car supply than during the month of August, but much less satisfactory from a production standpoint, as indicated by the following figures which cover loading in the Central zone or district and are a little more in excess of the actual coal loading in the Central Western region:

	August	September
Cars loaded 1918.....	184,738	172,585
Cars loaded 1917.....	1,009,400	146,307
Increase over previous year.....	33,993 3.97	26,283 18.07

It will be noted less cars were loaded in September than during the previous month due to mines not working Labor Day and many mines being shut down on the 18-45 registration day, and for the primary a few days later. Conversely, these holidays enabled the railroads to make a better showing as to car supply.

Even with the decreasing loading the Fuel Administration has been pressed to provide markets, and has only been able to do so by arranging for the sale of coal to railroads for movement beyond the normal commercial zone. In order to continue the ratio of increased loading over last year, particularly in Illinois, the Fuel Administration gave consideration the latter part of September to the established zone lines. As a result, the present summer zone line through Wisconsin and Minnesota will be continued as winter line on all prepared sizes and mine run. The lower peninsula of Michigan will be held open all winter for Indiana, all grades, and for Illinois screenings.

The accumulation of coal on track in the Chicago district is growing less and is practically down to normal. The state and Cook county organizations of the Fuel Administration have taken hold of the situation vigorously and will undertake to force unloading.

Taking it as a whole, the performance of the railroads during the month of September in this territory in coal loading was all that could be asked by the Fuel Administration. There is the closest co-operation between the railroad officers and the Fuel Administration and the general organization is working harmoniously and to the best interests. Reports for the five months since April indicate that the commercial coal requirements for Illinois consumption were 48,360 cars per month or a total of 241,800 cars. We have loaded and handled 290,380, an excess over the requirements of the Fuel Administration of 48,450 cars or 17 per cent. Figures for September, not yet available in detail, indicate a still further excess over the requirements.

Terminal Situation.—All the large terminals in the district have been operated effectively and outside of the abnormal movement of grain and livestock above mentioned there has been no congestion either in carload or less carload business. The labor situation at freight houses has become more stabilized than for any other month during the past year and the result has been a clean-up at all the less car load freight houses to practically a normal basis.

Power and Equipment Conditions.—Our labor situation seems to be improving and the force of men in the mechanical department as shown by the following statement is encouraging. Figures quoted indicate a slight increase in the percentage of engines out of service requiring over 24 hours to repair, but the situation is better than indicated in view of the fact that more of our power has had general overhauling and is, I think, in better condition generally

than it was this time last year. Our orders for new equipment are not being filled as rapidly as we would like to see them but this condition is receiving necessary attention.

	1917	Increase	Percent
Car department.....	63,306	56,693	6,613 10.4
Locomotive department.....	63,306	56,693	6,613 11.7
Total.....	88,940	79,281	9,659 12.2
Total cars in line.....	88,940	79,281	9,659 10.9
Engines.....	88,940	79,281	9,659 10.9
Per cent bad orders.....	.....	.....	5.3%
Bad orders same date.....	.....	.....	.....
Increase.....	.....	.....	.....
Total locomotives on line.....	12,242	12,242	12,242
Number out of service for repairs requiring over 24 hours.....	.....	.....	1,974
Per cent out of service.....	.....	.....	16.3%
Number out of service for repairs requiring over 24 hours same date last year.....	.....	.....	1,749
Increase.....	.....	.....	225 12.8%
Number of locomotives turned out of shops.....	.....	.....	.....
1918.....	3,050	.....	.....
1917.....	2,621	.....	.....
Increase.....	429	.....	16.3%
Number of foreign locomotives turned out of shops.....	.....	.....	.....
11 locomotives turned out of shops.....	.....	.....	.....
Number of locomotives repaired for Eastern lines; classified repairs:	.....	.....	.....
C. B. & O.....	A. T. & S. F.....	C. R. I. & P.....	I. C.....
West Burlington shops.....	.....	.....	.....
2-B. & O.....	2-B. & O.....	3-B. & O.....	4-B. & O.....
Number of locomotives on foreign lines:	.....	.....	.....
A. T. & S. F.....	C. R. I. & P.....	I. C.....	S. P.....
19 on Penna.....	13 on Penna.....	1 on Penna.....	4 on H. V.....
8 on Frisco.....	1 on Penna.....	3 on I. & N.....	7 on H. V.....

Maintenance of Way.—The federal managers as a whole report the condition of their track and property in as good condition as it was last year. There are one or two exceptions to this statement, the explanation being that shortage of labor is responsible for the condition. The proper departments at Washington have been advised of the rail and tie situation which at the present time is more or less discouraging. Our lines are short approximately 230,000 tons of rail and the only immediate prospect in sight is the output from the Colorado Fuel & Iron Company at Minnequa, Colo., from which we expect to get 3,500 tons per week. This is being made a study of special investigation by my engineering staff. The tie situation is unsatisfactory. The shortage as of September 1 represented approximately 6,200,000 ties, an average of 120 ties per mile of line in the region. This has been brought to the attention of the Central Purchasing Committee. Attention is being given to the question of providing for the more important classes of materials which will be required for improvement and maintenance work during the year 1919. Arrangements are in making to place orders so as to get a reasonably prompt delivery next spring.

Routing.—Reports received so far for the month of September show a total saving of 492,714 car miles as result of recruiting shipments from circuitous to direct routes. These figures do not include savings effected by shippers selecting direct routes upon the request of the carriers, nor do they include all savings effected by the carriers in re-routing at point of origin.

Consolidated Ticket Offices.—During the month of September consolidated ticket offices were opened at Denver, Colorado; Kansas City, Mo.; Peoria, Illinois; St. Joseph, Mo.

Prior to September 1, 21 offices were opened and there now remain but five offices to be opened. It is estimated that these consolidations will result in an annual saving of \$379,059.16 for rent, \$188,919.37 for salary and other expenses, or a total of \$567,978.55. Our reports show that in the offices that have been opened the service is good, although great difficulty is experienced in securing and holding experienced employees. The school at Chicago for the education of women as ticket sellers and information clerks was opened October 1. Much interest in the project has been developed and more than 1,000 applications for enrollment were filed. The school opens with 50 students which is the total that can be properly handled. The per-

sonnel of the next class, which will start about eight weeks hence, is also arranged.

Reductions and Increases in Passenger Train Miles.—During the month of September there were additional eliminations of 26,500 passenger train miles in local service on the O. S. L. between Ogden and Salt Lake City. On the other hand because of the very heavy travel it was found necessary to restore trains 7 and 8 on the Union Pacific between Omaha and Ogden, effective September 1. As a result of putting these trains on, the Union Pacific was enabled to eliminate the second section of train 9 from Omaha to Ogden and train 6 from Ogden to Omaha, so that there was no increase or decrease in train mileage, but the addition of trains 7 and 8 made possible the reduction between Ogden and Salt Lake City mentioned above. In addition, a revision of schedules on the L. A. & S. L. between Salt Lake City and Nephi resulted in saving 55,714 train miles. The net reduction is, therefore, 82,214 train miles.

Early Movement of Winter Supplies.—The campaign to induce shippers and receivers of freight to arrange for early movement of their traffic in order to relieve the situation during the winter months has been carried on energetically and reports show that excellent results have been and are being obtained.

Foreign Line Representation by Home Line Roads.—One of the most useful services performed in the past by the off-line agencies was the information they were able to give shippers in regard to rates, routes, terminal facilities, etc., with respect to their lines, and the assistance they were able to render in connection with shipments to or from points on such lines. In order that this service may still be available in so far as possible, arrangements have been effected at a number of important cities and will be put in effect at others, by which each home line has been designated to represent one or more foreign lines.

Unification of Facilities.—The pairing of tracks of the Denver & Rio Grande, Atchison, Topeka & Santa Fe and Colorado & Southern between Denver and Pueblo was made effective October 1. Consolidation of the Wabash-C. B. & Q. trackage between Tracy and Albia, Iowa, and abandonment of the Wabash line practically are perfected and will be completed by the first of November. Joint operation of the C. B. & Q.-C. & N. W. lines Orin Junction to Shoshoni has been arranged for between Casper and Orin Junction. Pairing of Western Pacific and Southern Pacific tracks in Nevada is progressing and it is expected the operation of these two main lines as double track will become effective about October 15.

New Regulations Governing Repairs to Equipment

Director General McAdoo has issued General Order No. 47 prescribing the following regulations to govern the determination of costs and the compilation and rendition of bills by one carrier under federal control against another carrier under such control for repairs to equipment actually made on and after October 1, 1918. Bills for repairs actually made prior to that date are to be rendered and the costs for such repairs shall be determined as heretofore.

REPAIRS TO CARS

(1) The cost to repair freight and passenger train cars and work equipment shall be borne and included in the operating expenses of the carrier which, under the rules and practices, applicable at the time repairs are made, may be responsible for such repairs.

(2) The cost of repairs made by any carrier to its own cars or to cars of another carrier for which it the repairing carrier is responsible shall be based upon actual applied material and labor costs plus a proper proportion of "shop expenses," as prescribed by the rules of the Interstate Commerce Commission or which may hereafter be prescribed.

(3) If the cost of repairs made to cars by one carrier be chargeable to another carrier such costs shall be based on the rules prescribed by the Master Car Builders' Association, which were applicable at the time such repairs were made. Details in support of such repair costs shall be prepared as heretofore.

(4) There shall be compiled monthly, from the detail record referred to in the preceding paragraph, one statement against each carrier under federal

control for the repair costs chargeable to it. Such monthly statements shall be made in duplicate and shall show separately for freight train cars, passenger train cars and work equipment:

STATEMENTS TO BE RENDERED

- (b) Total labor costs including shop expense costs.
- (c) Total material costs including handling and other costs chargeable to material.
- (d) Added per cent.
- (e) Total costs.
- (f) The originals of such statements shall be rendered to and accepted by debtor carriers as rendered, in accordance with the provisions of General Order No. 20.
- (g) The duplicates of such statements shall be attached to the detail data from which they are made and retained by the carrier making the repairs.

REPAIRS TO LOCOMOTIVES

- (7) The provisions of paragraphs (1) and (2) of this order with respect to repairs of cars shall in like manner apply to repairs of locomotives.
- (8) The costs for repairing locomotives of one carrier under federal control for or for account of another carrier under such control shall be determined in the following manner:

- (a) To the cost of all applied material there shall be added 15 per cent to cover cost of handling.
- (b) To the cost of all applied labor there shall be added 10 per cent to cover accounting and other incidental costs.
- (c) Proportion of shop expense costs.
- (d) The aggregate of all such costs shall represent the amount to be charged for the repairs.

(9) Details comprising such repair costs shall be compiled and kept by the repairing carrier, from which monthly statements in duplicate shall be prepared against the carrier responsible for such costs. Such statements shall show the repair costs for each individual locomotive stated in the following detail:

- (a) Total labor costs.
- (b) Total material costs.
- (c) Shop costs.
- (d) Added per cent for labor.
- (e) Added per cent for material.
- (f) Total cost.
- (10) The originals of such statements shall be rendered to and accepted by debtor carriers as rendered, in accordance with the provisions of General Order No. 20. Duplicates shall be attached to the detail data from which they are made and retained by the carrier making the repairs.

ADDITIONS AND BETTERMENTS COSTS

(11) If additions and betterments be made by one carrier under federal control to the equipment of another carrier under such control, the owning carrier shall be billed by the carrier making the improvements for the costs thereof. Such bill shall show the kind and class of equipment, the initial and number thereof, as well as such details as to specifications and costs as may be necessary to enable the owning carrier to make proper record of the improvement. Bills for such costs shall be subject to check and verification by the owning carrier. Bills for additions and betterments costs shall not be included with bills for repair costs.

(12) If in repairing a unit of equipment a change in the standard established by the owner be made such as substitution of parts, advice of such change shall be given the owner.

EQUIPMENT DESTROYED

(13) If a unit of equipment of one carrier under federal control be destroyed on the line of another carrier under such control, advice of such destruction shall be promptly given to the owning carrier by the carrier on whose line the unit was destroyed. Upon receipt of such advice the owning carrier shall bill the destroying carrier therefor, in accordance with Master Car Builders' Association rules as now in effect, or as may hereafter be prescribed.

MATERIALS FURNISHED BY ONE CARRIER TO ANOTHER

(14) Material furnished by one carrier under federal control to another carrier under such control for use in repairing or improving the equipment of the owning carrier shall be billed by the carrier furnishing it and paid for by the repairing carrier at costs at which the material is carried in the accounts of the owning carrier plus actual out-of-pocket handling or shipping costs. Such material shall be taken into the accounts of the carrier to which it is furnished at such billed costs, to which shall be added freight and other handling costs actually incurred by the receiving carrier. The costs thus determined shall be used as a basis for determining the cost of material used in such repairs or improvements.

(15) Bills for material furnished as prescribed in the preceding paragraph shall be made in detail. They shall be subject to check and reclamation or rejection by the debtor carrier in respect to damage or shortage.

(16) Bills for repairs to equipment for which private owners or carriers not under federal control (including Canadian and Mexican railroads) are responsible shall, unless and until otherwise ordered, be made and rendered as heretofore in accordance with Master Car Builders' rules applicable at the time such repairs are made.

(17) Bills for repairs to equipment made by carriers not under federal control against carriers under such control shall be tested, verified and paid by the carrier responsible for such repairs as heretofore.

(18) The provisions of this order in respect to the rendition of monthly statements shall take effect on October 1, 1918, and shall apply only to repairs actually made on and after that date. Bills for repairs made prior to that date shall be rendered as heretofore.

New List of Systems of Transportation Under Federal Control

The Division of Traffic in Circular No. 5 has promulgated a list of the railroads and systems of transportation under federal control for use in connection with the com-

piling and publication of tariffs and schedules, the issuing, publication, filing or changing of rates, fares, charges, classifications, regulations or practices, or matters pertaining thereto. The list has been published for the director general and filed with the Interstate Commerce Commission for the purpose of showing the names of the railroads and systems of transportation under federal control for convenient use and reference in all matters pertaining to or connected with tariff publication and rate regulation. The circular states that the list must not be used or construed as determining or affecting the status or relation with the government of any carrier shown or omitted or the method or manner of operation of any carrier under federal control. The list is made up as of October 10 and will be amended from time to time to include other lines as their status becomes fixed. It includes nearly 700 names, including in addition to the larger roads a considerable number of belt line, switching, terminal, station, bridge and steamship companies, many of which are subsidiary to one or more of the larger companies, and also the inland waterway systems under federal control.

Report on Condition of Locomotives

The table showing the condition of locomotives on the roads controlled by the Railroad Administration for the week ending September 28, 1918, indicates that as far as locomotives are concerned the railroads are in pretty good shape, having a general average of only 14.4 per cent of locomotives in shops. It is particularly gratifying to notice that the number of locomotives turned out of the shops for this week

Political Order Modified

Director General McAdoo has agreed to a slight modification of his General Order No. 42, requiring railroad men to abstain from political activities, at the request of the brotherhoods of train service employees, who in several conferences with the director general protested vigorously against its provisions. The principal change, however, is in recognition of the fact that railroad employees constitute a large proportion of the population in many small communities and permits them to hold local offices under certain conditions, but as to the principle of the order the director general has declined to yield. The changes are incorporated in General Order No. 48 issued as a substitute for No. 42 and Supplement No. 1 thereto, as follows:

"The issuance of General Order No. 42, for the purpose of extending to officers, attorneys and employees in the railroad service of the United States substantially the same regulations as to political activity which have been applied for many years through civil service laws and executive and departmental orders and regulations to other employees of the United States. These laws, orders and regulations conform to a wise policy which has long had the support of the people of the United States regardless of political parties. Since the government has taken control of the railroads and their former officers, attorneys and employees have become public servants; it is necessary that the same policy as to political activity be extended to them as to other employees of the United States. As employees of the government, they cannot be properly exempted from the policy applied to other government employees.

"It has developed, however, since General Order No. 42 was issued, that there are many communities in the United States which are composed largely, and in some respects almost wholly, of railroad employees and their families, and that the proper civil administration of such communities makes it necessary that railroad employees should hold municipal offices. It is clear that in such cases exceptions should be made. Such exceptions have been made by the government in other cases (such as navy yards in

LOCOMOTIVE CONDITION REPORT FOR THE WEEK ENDING SEPTEMBER 28, 1918.

Regions	No. of locos. on line	No. of locos. serviceable	No. of locos. out of shop awaiting service 24 hrs. Per Cent	Locos. turned out of shop 1918	Locos. turned out of shop 1917	Foreign Locomotives repaired	Number of employees 1918	1917
Allegheny	10,045	8,617	1,428	14.2	1,863	1,463	36	44,763
Central Western	11,913	10,066	1,847	15.5	802	655	31	60,924
Eastern	18,395	15,845	2,550	13.8	1,911	1,585	58	78,991
Northwestern	9,267	8,011	1,256	13.5	373	357	19	32,368
Peachontas	1,968	1,741	227	11.5	124	6	6	10,178
Southern	6,890	5,428	962	15.0	361	316	29	38,457
Southwestern	5,148	4,279	869	16.8	377	281	35	23,845
Total	63,126	53,987	9,139	14.4	6,038	4,806	236	275,326
								247,533

is an increase of 1,277 over the number turned out during the same week of last year. At the same time the number of employees increased 27,793 for the week, over the number employed during the corresponding week last year. During the week 236 locomotives were repaired in shops on foreign lines.

Agricultural Committees

To promote agriculture in the southern and the far western states the railroad administration has appointed committees of railroad officers to investigate local conditions and submit recommendations looking to improved experimental work and educational activities wherever practicable. In adopting this policy the administration expects to promote agricultural extension work more actively than in the past. Agricultural emigration, however, will be frowned upon during the continuance of the war.

The agricultural committee of the north and west consists of the following: L. Seagraves, industrial commissioner, Atchison, Topeka & Santa Fe, Chicago, chairman; F. S. Welsh, New York Central; J. B. Lamson, C. B. & Q.; L. J. Bricker, Northern Pacific; W. L. English, St. L.-S. F.; F. S. McCabe, C. M. & St. P.; Douglas White, Los Angeles & Salt Lake.

For the southeastern region Texas and Oklahoma, the committee consists of W. W. Croxton, general passenger agent, A. B. & A., Atlanta, chairman; G. A. Park, Louisville & Nashville; H. J. Schweitert, Illinois Central; J. C. Welty, Missouri Pacific; B. L. Hammer, Seaboard Air Line; J. C. Williams, Southern, and T. L. Peeler, Dallas.

certain localities) where the population consisted wholly or in large part of government employees, and where it was necessary for proper administration of civil affairs such government employees should hold local political offices.

"It has, therefore, been determined to permit railroad employees to hold municipal offices in the communities in which they live, provided they do not neglect their railroad duties as a result thereof, and also to limit Section 2 to a prohibition against railroad employees acting as chairmen of political conventions or using their positions in the railroad service of the United States to bring about their selection as delegates to political conventions, in order to harmonize said Section 2 with existing civil service rules and departmental regulations.

"It is, therefore, ordered that no officer, attorney or employee shall:

"1. Hold a position as a member or officer of any political committee or organization that solicits funds for political purposes.

"2. Act as a chairman of a political convention or use his position in the railroad service of the United States to bring about his selection as a delegate to political conventions.

"3. Solicit or receive funds for any political purpose or contribute to any political fund collected by an official or employee of any railroad or any official or employee of the United States or any state.

"4. Assume the conduct of any political campaign.

"5. Attempt to coerce or intimidate another officer or employee in the exercise of his right of suffrage. Violation of this will result in immediate dismissal from the service.

"6. Neglect his railroad duties to engage in politics or use his position in the railroad service of the United States to interfere with an election. An employee has the right to vote as he pleases, and to exercise his civil rights free from interference or dictation by any fellow employee or by any superior, or by any other person. Railroad employees may become candidates for and accept election to municipal offices where such action will not involve neglect on their part of their railroad duties, but candidacy for a nomination or for election to other political office, or the holding of such office, is not permissible. The positions of notaries public, members of draft boards, officers of public libraries, members of school or park boards, and officers of religious and eleemosynary institutions are not construed as political offices.

"7. In all cases where railroad officers, attorneys and employees were elected to political offices prior to the issuance of General Order No. 42, August 31, 1918, they will be permitted to complete their terms of office so long as it does not interfere with the performance of their railroad duties.

After the expiration of said terms of office, they will be governed by the provisions of this order.

"8. In all cases where railroad officers, attorneys and employees were nominated for political offices, and had become candidates therefor prior to the issuance of General Order No. 42, August 31, 1918, they will be permitted to hold and complete the terms of office to which they may be elected at the general election to be held November, 1918, to the extent that the holding of such offices shall not interfere with the performance of their railroad duties. After the completion of such terms of office, they shall be governed by the provisions of this order.

"Railroad men have given ample proof of their loyalty to their government. I am confident that they will gladly and patriotically accept now those reasonable governmental regulations concerning political activity which their welfare and America's cause demand. They are the same regulations in their general scope and application as all other government employees have lived under for many years without the loss of any essential rights and with added dignity to their citizenship."

The new order was approved by President Wilson by his signature.

Fluctuations in Expenses to Be Explained

The Railroad Administration is arranging to secure an explanation of the causes of fluctuations in operating expenses for the purpose of showing how they are affected by wage rates or material prices. For this purpose the Division of Operation has issued Circular No. 21 which provides:

1. In connection with form O. S. 7, "condensed income account and operating expenses" (see circular No. 15), a monthly statement of "explanation of fluctuations in operating expenses" will be required for all Class I roads, effective with the report for the month of August, 1918. The statement should be made in triplicate and forwarded to the operating statistics section on or before the tenth day of the second month following that to which the figures apply.

2. It is considered impractical to prescribe a standard form for the explanation statement, but the following general principles should be observed:

3. The explanation statement should be typewritten on paper of letter or legal size.

4. The text and the tabulated figures therein should explain the noticeable increases or decreases in comparison with the same month of the previous year.

5. The explanations of such noticeable increases or decreases should follow the primary expense accounts as specified in form O. S. 7, and they should be compared with the increases or decreases in the related units of performance, such as train miles, locomotive miles, car miles, gross ton miles, net ton miles, miles of road operated, and other data reported on forms O. S. 1 to O. S. 6, inclusive.

6. While it is not intended that any additional accounting shall be made necessary by this circular, it is desirable that the explanations shall, in the case of the major items of expense, make some distinction between the elements of labor and materials, and between increases due to higher wage rates or higher prices and additional forces or greater consumption of material.

Revision of Switching Charges

The Division of Traffic of the Railroad Administration has authorized on one day's notice the revision of switching charges for movements not in connection with line hauls which were increased under General Order 28 by the addition of specific amounts. This revision will be on the basis of adding 25 per cent to the switching charges in effect May 23, subject to a minimum charge of \$2.50 per car for intra-plant switching and \$5 per car for intra-terminal and inter-terminal switching. The commodities affected are coal, coke, stone, sand and gravel, brick, cement, plaster, lime and cotton. The switching charges on these commodities were increased by the addition of specific amounts provided in General Order 28, and the revised basis will be a reduction in all cases. This authority does not apply where freight rate authorities previously issued have authorized the revision of charges as increased by General Order 28. It is issued as a temporary measure and it is expected that further consideration will be given to a revision of switching charges not in connection with line hauls to a consistent and reasonable basis.

The Railroad Administration has authorized the cancellation on one day's notice of the provision published in Southern territory to the effect that the minimum class rate scale and minimum charge of \$15 per car as authorized by General Order 28 will apply in connection with switching charges within the limits of industrial switching districts.

Improvement in Ticket Selling Practice

Effective on November 1, 1918, the sleeping and parlor car rate and the additional passage charge for occupancy of space in sleeping or parlor cars will be combined and both charges will be represented by the sleeping or parlor car ticket, except in cases of furlough fare, clergy, and similar tickets, where the two charges must be kept separate. When fares are paid on trains, the sleeping or parlor car conductors will make the collections of both charges, and issue one ticket to cover.

This plan will do away with the delays and confusions now incident to the sale of three separate tickets, and the collection of three separate charges for a railroad journey in a sleeping or parlor car. As rapidly as the necessary alterations in ticket offices can be made, the sleeping car and railroad ticket selling forces will be combined and it will no longer be necessary for a passenger to go back and forth between two different ticket windows at union stations in order to get his sleeping car and railroad tickets and arrange for his accommodations, because both kinds of transportation will hereafter be sold by the same ticket clerk. It is thought that this arrangement, made possible by the fact that the Pullman service is now under federal control, will prove a great convenience and time saver to the traveling public, and will tend to keep down the congestion at ticket offices in union stations.

Effect of Influenza Epidemic

The Railroad Administration on October 23 made public a report of the summary of traffic conditions in each region for the preceding week. These reports indicate continued heavy traffic and difficulties caused by the influenza epidemic in nearly all parts of the country. In the Eastern region the statement is made that: "Passenger Traffic shows decrease on account of influenza and cancellation of public gatherings." The Allegheny region reports that: "The influenza epidemic has seriously interfered with train movements and station labor." The Southern region reports that: "Passenger travel has been largely decreased by influenza and the state fairs of a number of states have been abandoned on this account." The Central Western region reports: "Passenger travel shows decreases on account of the epidemic." The Southwestern region reports: "Passenger travel reduced by epidemic, which is also interfering with work in shops and offices."

Permit System for Wheat

At the request of the Food Administration and because of lack of storage facilities at St. Paul and Minneapolis, the Railroad Administration has found it necessary to establish an individual permit system for the shipment of wheat into Minneapolis. This system has been in effect on all coarse grains but has not been in effect on wheat. It is now necessary to introduce the individual permit system as to wheat to prevent accumulations. The permit system went into effect on October 23.

Contracts Let for Boats for Mississippi River

The Railroad Administration has let contracts for the construction of six steamers and 40 steel barges for service on the Mississippi and Warrior rivers at a total cost of \$6,170,000, deliveries to be in from two to 12 months after the receipt of steel. The steamers will be equipped with engines of 180 horse power and the barges will have a capacity of 2,000 tons of freight in eight feet of water.

At the recent monthly meeting of the New York Railroad Club, D. W. Pye, president of the Teco Products Company, Inc., was elected treasurer to succeed the late R. M. Dixon. Roy V. Wright, managing editor of the *Railway Age*, has been appointed chairman of the subjects committee.



The Axis Shop Band at the New York Central's "Buy Another Bond" Rally

\$164,992,150 Subscribed By Railway Men

Average Liberty Loan Subscription Over \$100. The List of
100 Per Cent Roads a Long One

INCOMPLETE RETURNS to the Director-General on Monday showed the railway men of the country had subscribed \$164,992,150 to the Fourth Liberty Loan, as compared with \$106,655,450 to the Third Loan. The total number of employees was 1,642,694, so that the average subscription was over \$100.

The Central Administration at Washington subscribed 100 per cent for an average subscription of \$493.58. Of the regions the Eastern secured the largest total, namely, \$44,580,450, but the Southwestern secured the best percentage, namely 99.2 per cent, the employees subscribing with an average subscription of \$124.

The details by regions follow:

Region	Number subscribers	Percentage	Amount subscriptions	Amount per emp.
Central Administration Headquarters (Washington) . . .	1,014	100	\$500,000	\$493.58
Southwestern . . .	165,946	99.2	20,661,250	124
Northwestern . . .	236,252	93.15	25,649,150	108.57
Pacahontas . . .	43,654		8,651,700	
Allegheny . . .	273,240	88.95	21,899,650	80.15
Eastern . . .	473,001	85	44,580,450	94
Southern . . .	156,215	74	15,116,550	84
Central Western . . .	293,373	94	32,933,400	110
Total . . .	1,642,694		\$164,992,150	

The 100 Per Cent Roads

The list of roads that reached 100 per cent subscribers is a long one and many important roads are included. Among the more important lines are the following:

EASTERN

Buffalo Creek.
Delaware, Lackawanna & Western.
Grand Rapids & Indiana.
Lehigh & Hudson.
Lehigh Valley.
Lehigh & New England.
New York Central.

ALLEGHENY REGION

Coal & Coke.
Long Island.

NORTHWESTERN REGION

Chicago & Western Indiana.
Chicago Heights Terminal Transfer.
Chicago Junction.
Chicago, St. Paul, Minneapolis & Omaha.
Cooper River.
Spokane, Portland & Seattle.
Wichita Falls & Northwestern.

SOUTHWESTERN REGION

Memphis, Dallas & Gulf.
St. Louis-San Francisco Ry. (N. incl. Ir. West Tulsa, Tulsa, Missouri, Kansas & Texas Ry. (North Incl. Oklahoma Belt).
Chicago, Rock Island & Pacific.
Chicago, Rock Island & Gulf.
Houston, East & West Texas.
Vicksburg, Shreveport & Pacific.
Texas & Pacific.
St. Louis Southwestern of Texas.
International & Great Northern excluding Line Spring to Ft. Worth.
Beaumont & Great Northern.
Trans-Mississippi Terminal.
Ft. Worth & Denver Lines.
St. Louis, San Francisco & Texas—Ft. W.-R. G. B. N. & S.
Houston & Texas Central.
Ft. Worth Belt.
San Antonio & Aransas Pass.
San Antonio, Uvalde & Gulf.
Missouri Pacific System.
St. Louis Southwestern—North.
Louisiana & Arkansas.
Gulf, Colorado & Santa Fe.
So. Pacific Lines in Texas & Louisiana (excluding H. E. & W. T.-H. T. C.).
Gulf Coast Lines.

CENTRAL WESTERN REGION

Chicago, Rock Island & Pacific.
Des Moines Union.
Portia & Peñon Union.

Totals in the West

Liberty loan subscriptions in the Central Western region aggregated \$32,933,400 on October 19, representing 94.3 per cent of the employees and officers of the lines in that territory. These figures, however, are not final, as further subscriptions from outlying points are constantly being reported. In addition to the subscriptions by the various lines in the region, the regional director's staff, consisting of 86 officers and employees, subscribed \$66,300, or an average of \$771 per subscriber. Out of the 31 railroads in the district, 21 have records of 100 per cent, four above 99 per cent, and all but four above 90 per cent. The Rock Island lines in the region, which have been over the top with 100 per cent for over a week, have increased the average subscriptions per subscriber to \$108.57, the total subscription for the employees and officers of the Rock Island lines in the Central Western district being \$2,867,500. The Oregon Short Line is the second 100 per cent road with respect to the size of aggregate subscriptions; it reported

\$1,118,600 or \$108.91 per subscriber. The Southern Pacific lines in the region reported the largest total of subscriptions with \$5,854,700, and the Chicago, Burlington & Quincy was second with \$5,426,300. Both roads were also in the 99 per cent class.

Incomplete reports received from roads in the North-western region up to 10 a. m. October 21, showed total subscriptions amounting to \$25,649,150, representing 93.15 per cent of the employees and officers in the territory. Out of the 38 railroads reporting, 17 were in the 100 per cent class, the largest of these being the Chicago, St. Paul, Minneapolis & Omaha with a total of \$1,091,800, and an average of \$123.21 per subscriber. The Chicago & North Western led in the subscriptions per road, with \$4,927,500.

New York Central Rally

One of the features of the Liberty Loan campaign on the New York Central, was a "Buy Another Bond" rally at the Grand Central Terminal, New York, Friday afternoon, October 18. The rally took place in the big concourse and was attended by 15,000 persons of whom 5,000 were railroad employees.

The sum of \$240,700 in additional bond subscriptions was secured at the rally, of which \$60,700 was signed among those on the rostrum and the remainder in small extra pledges by railroad workers. William K. Vanderbilt, Jr., president of the New York Central Railroad Company, joined in the rally from the floor with the crowd, subscribing \$10,000 additional bonds, as did also A. T. Hardin, assistant regional director. A. H. Smith, who was absent from the city, telegraphed \$5,000, and other \$5,000 subscribers included A. H. Harris, vice-president of the New York Central Railroad Company; Ira A. Place, counsel of the New York Central; P. E. Crowley, federal manager of the New York Central, and Henry Russell, vice-president of the Michigan Central, who a few days ago lost an aviator son on the Western front.

Marcus A. Dow, general safety agent of the New York Central, presided, and among the speakers were John Ken-

shop work, won high praise of musicians and generally were thought to be professionals. The band paraded Fifth avenue and also played at Herald Square.

The wildest enthusiasm characterized the rally. "Tony" Francis, engineer of the Twentieth Century Limited, was called from the entry-way to the train shed to the rostrum

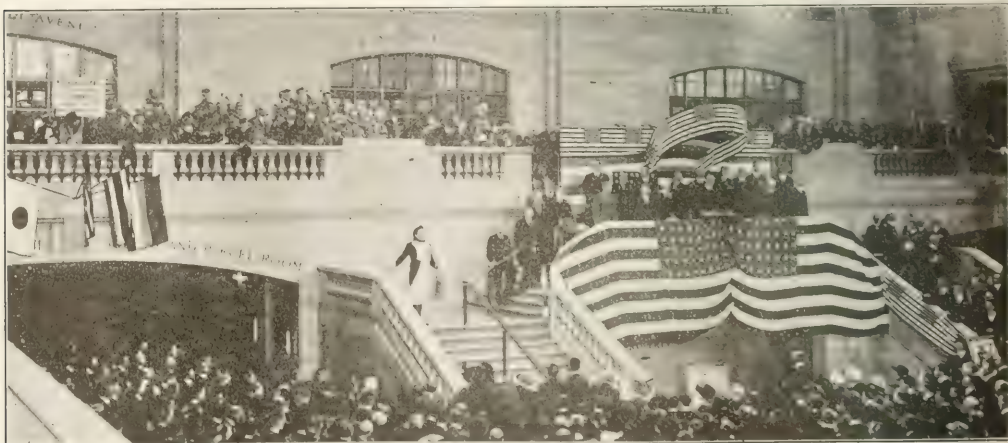


The Largest Flag in the World as it Hung in Grand Central Terminal, New York, During the Loan Campaign.

The Flag Is 80 by 160 Ft. in Size.

and in his grimy overalls sang "The Long, Long Trail," the vast throng joining in the chorus. The rally closed with an unprecedented scene, when E. L. Bartlett, holding aloft a sign labelled "Twentieth Century Limited for Berlin" headed a serpentine march around the building that gathered in over 3,000 cheering enthusiasts.

A dramatic incident of the rally was the unfurling of



Leon Rothier of the Metropolitan Opera House Sings the Marsellaise to an Appreciative Audience of 15,000 at the Grand Central Rally

drick Bangs, the novelist, and "Kiltie" Pat McCoy, a soldier. The New York Central shop band from Avis, Pa., was in attendance. The 40 members of this band are all active mechanics in the locomotive and car shops at Avis. The musicians, whose hands showed the callouses and grime of

revised service flags in the midst of the program. Chairman Dow asked the vast throng to "face east and uncover in honor of our fighting railroad men," and as the throng obeyed three large service flags were slowly unrolled from the east balcony.

Investigating Old Bridges For Heavier Loading*

The "Classification" of Structures by the St. Paul. Sources of Weakness and Methods of Strengthening

By C. F. Loweth

Chief Engineer, Chicago, Milwaukee & St. Paul, Chicago.

IT WAS FORMERLY the common practice, when a new engine loading was up for consideration, to investigate all the light bridges involved. Stresses throughout the structure for this loading were figured and a decision then made as to whether or not the load could be handled safely. Each time a new loading came up for consideration the process was repeated and little or no use made of the previous computations.

The present practice on the Chicago, Milwaukee & St. Paul is to make an investigation or "classification" of each structure. Its carrying capacity is determined in terms of a standard series of train loadings. New engine and car loadings that come up for consideration are classified in the same series of standard loadings, and it is then a matter of direct comparison to tell whether such proposed loadings can be handled over the various bridges safely. Every bridge which is known to be, or suspected of being, overloaded is thus classified.

In making these classifications it is necessary to establish the maximum unit stresses to which the various materials can safely be subjected. For the different materials these maximum safe stresses are taken as near the limit of strength of the material as is considered safe. The maximum safe stresses must be made low enough so there is no danger of the material yielding, altering its character or reducing the strength to carry loads after being subjected to this limiting stress for any number of times.

As an illustration of what may be considered as safe limiting unit stresses, the following are given and may be taken to apply where the design and physical condition of the structure are known to be first class:

	Wrought Iron	Steel
	lb. per sq. in.	
Beams and girders, fiber stress in bending	22,000	26,000
Truss members, tension on net section	20,000	24,000
Timber stringers, fiber stress in bending	2,000	

(With suitable reduction for age for exposed timber over six or eight years old.)

In fixing upon limiting unit stresses for loading old bridges, it is necessary to take into account: (1) the character of design, (2) the character of workmanship, (3) deterioration, (4) action under load, (5) speed likely to obtain over the structure and confidence as to the observance of any speed restrictions that may be imposed, (6) element of certainty as to the assumed loading being the maximum to which the bridge will be subjected, (7) importance of traffic and the hardship which might result from temporary disablement of the structure, (8) the probability of early renewal on account of change of line, etc., (9) judgment based upon all of the factors surrounding the bridge, its location, service and condition.

Standard Loadings

In the systematic investigation of a large number of bridges, it is necessary to have a unit loading as a basis of comparison. The familiar Cooper's series of standard train loadings furnishes a convenient and well-known basis. On account of the fixed wheel rearrangement for all the classes and the proportionality of wheel loads, it follows that the stresses in

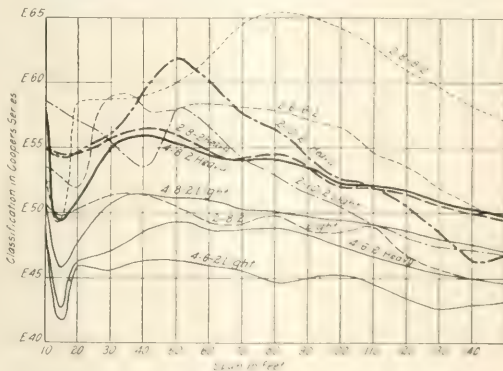
all parts of bridges on account of these loadings are directly proportional to the classes, that is, the stresses in every part of the structure, for Class E-50 loading will be just 50 times the stresses for Class E-1 loading.

In addition to the direct weight of the engine and carloads or live loads, certain other effects must also be taken into account. These include the impact action of moving loads, centrifugal forces which tend to throw a larger proportion of the load on the outside of the curve, and traction which is a force exerted along the track due to the traction of the locomotive or to setting the brakes on the train. In determining the maximum live loads which can be handled over any structure, it is necessary to make proper allowance for these extra effects of the live loads. It is also necessary to take account of the dead load stresses due to the weight of the structure itself and wind stresses due to the effect of wind pressure.

The general method of investigating any part of the bridge and making a classification is as follows:

1. The maximum allowable stress is determined which, in the simpler cases, is the cross sectional area of the member multiplied by the limiting unit stress allowed.
2. Deduct from this the stress in the part due to dead load and wind load. The remainder gives the allowable stress for the live load effect.
3. Divide this by the stress for unit live load (Class E-1) which gives the classification for allowed live load, if at rest (train standing on the bridge).
4. Divide this classification by the term which takes into account the extra effects of the live loads, due to impact and centrifugal force, the result being the classification of the allowed live load at full speed.

As an illustration of this general method, assume that a bridge member has a sectional area of 8 sq. in. Also assume



Classification of United States Standard Locomotives for Maximum Bending Moments. All Engines Double-Headed Except Santa Fe and Mallet Types. Train Load Assumed at 5,000 lb. per lin. ft.

that the circumstances warrant the limiting unit stress of 24,000 lb. per sq. in., so that the total allowable stress is 192,000 lb. Assume that the total dead load stress is 17,000 lb., and that the wind load is so small that it may be neglected. The total allowable stress available for the live load is then 192,000 lb.—17,000 lb.=175,000 lb. Assume also that the stress in the member for the Class "E-1" loading as determined by the usual method of computing stresses in bridges is 1890 lb.

*Abstracted from a paper read at the convention of the American Railway Bridge and Building Association at Chicago, October 16, 1918, by R. L. Stevens, assistant engineer, Chicago, Milwaukee & St. Paul, who collaborated with Mr. Lowell in its preparation.

The total allowable live load, if at rest is, therefore,

$$\frac{175,000}{1.865} = 93,833$$

Assume that the impact as determined by the ordinary formula for the given case equals 0.865 of the live load. Then if there is no centrifugal force and if LL represents the net live load at full speed

$$\begin{aligned} LL + 0.865 LL &= 1.865 LL \\ LL &= \frac{93,833}{1.865} = 50,312 \end{aligned}$$

which represents the classification of the member at the assumed unit stress.

Classification of Locomotives

The Class "E" loading above described, is an assumed typical loading. Actual engine and car loadings vary a great deal with the spacing of the wheels and the distribution of the weight on the various wheels. The effects of various loadings on bridges are not in direct proportion to the weight of the engine or cars, but depend on the number of wheels, the spacing of the wheels, the distribution of weight, etc. Actual engine loadings can, however, be reduced to equivalents in the standard train loadings corresponding to the different span lengths.

This is done by computing the maximum bending moments and end shears for the given train loading for each span length. These are divided by the maximum bending moments and end shears for the unit Class "E-1" loading for the corresponding span, the result being the classification of the loading. As an illustration of classifications of various loadings a diagram is given which shows the classification of several of the new United States standard locomotives.

Speed Restrictions

In the foregoing, the classification has been determined with an allowance for the effect of the maximum speed over bridges. Where speed is reduced the effects of the live load are much less and the allowance for impact and centrifugal forces, if any may be correspondingly reduced. This will, permit heavier loadings to be operated at reduced speed than at full speed.

From the tests conducted by the American Railway Engineering Association, it is found that the maximum impact which will be obtained at reduced speed is:

Less than 30 percent for a speed of 10 m. p. h.
Less than 40 percent for a speed of 15 m. p. h.
Less than 50 percent for a speed of 20 m. p. h.
Less than 55 percent for a speed of 25 m. p. h.

Where the classification of the bridge indicates that some loadings which might be desired to run cannot be handled at full speed, the classification for certain reduced speeds should be worked out.

An inspection of the diagram indicates that the effective span of the bridges and the characteristics of the engine loadings determine in a very large way whether or not the given loading can be run over the bridge, and that it is unsafe to base such conclusions simply on a knowledge of the total weight. Unfortunately it is assumed by some officers that the effect of all locomotives of the same total weight is the same. If this practice must be resorted to, the limits set must be on a very conservative basis, otherwise there will be danger of producing unsafe conditions. This practice also would not be economical because it might lead either to the premature renewal of some bridges or to the unnecessary ruling off of certain types of engines.

Where Low Classification Usually Occurs

In older bridges there are certain parts where low classifications can usually be expected. These have been found to occur most often in the lightest members of the structure and members which carry the smallest dead load stresses. Thus it is found that the floor systems of bridges have generally a

lower classification than girders or the chords of trusses.

The low classification of stringers is generally in the section of the flanges near the center, in the riveting in flanges near the ends of stringers particularly if they are shallow, and in the riveting in connections of the stringers to the floor beams. In plate girders the flanges frequently show low classifications at points where the web is not fully spliced near the center and at points near the ends of cover plates. The flange riveting near the ends of girders frequently has a low classification, particularly where the girders are shallower at the ends. Webs of plate girders show low classification near the ends of the girders where there is a relatively large expanse of web, unsupported by stiffeners. The web splices near the end of the span have a low classification where only one line of rivets is used in each side of the splice.

In trusses, the posts and diagonals near the center of the span usually show a low classification. This is particularly true of the diagonals and counter-diagonals of light eye-bars or loop rods. Suspenders, or hip vertical members, frequently have a low classification. The classification of end posts and top chords of truss bridges is frequently low on account of the eccentricity of the member with respect to the location of the pin.

The pins of old truss bridges frequently show a surprisingly low classification where computations are made in accordance with the usual methods and it is necessary to take advantage of certain conditions which are more favorable than the usual assumption to help out the classification. In timber truss bridges the lowest classification usually occurs in the floor beams, truss rods and diagonal braces.

It has been found that metal bridges suffer frequently from corrosion at the top flanges of stringers and floor beams on account of the action of brine drippings from refrigerator cars. In bridges where ties are supported on shelf angles riveted to the web of the girders, the shelf angles frequently show considerable corrosion and tend to break at the root of the angle. In pin connected trusses, excessive wear sometimes takes place in the pin bearings, particularly in drawbridges.

Possible deterioration of the structure of the metal itself has been a matter of apprehension in some quarters, but it now seems to be recognized that no such integral deteriorating action takes place where the bridge has not been subjected to excessively high stress. If crystallization is found in the metal of a structure, it probably was there at the time the structure was built, on account of improper methods of manufacture of the material. It may, therefore, be taken as a certainty that iron and steel bridges, if not reduced in section by rust, etc., and if not shaky on account of inadequate bracing, are fully capable of carrying the figured loads at reasonable limiting unit stress provided they are carefully inspected and properly maintained.

Strengthening Bridges

The strengthening of light bridges may be either a matter of reinforcing minor details which are found to limit the carrying capacity of the bridge, or may consist of heavy reinforcing in an attempt to increase the strength of the structure throughout.

The minor strengthening can usually be done at small expense and is an economical method of getting considerably greater life out of bridges. Heavy reinforcing may or may not be economical as it involves doing work in the field which is expensive, while the maintenance of traffic during the time the work is in progress, which involves some risk to traffic, is unusually expensive. On very large bridges where the cost of replacing amounts to a very large sum, some very extensive strengthening operations have been carried out economically. In making plans for reinforcing bridges, it is usually preferable to add new material to the structure so that the existing structure is not temporarily weakened, rather than to remove parts and substitute heavier ones, though the latter must sometimes be done.

In plate girders the top and bottom flanges may be strengthened by additional cover plates, particularly at points where the web is spliced and not effective for carrying its proportion of the bending stress. Where there are no cover plates on the girders, cover plates of desired length can be added. Plate girders can be doubled up to make deck spans, using three or more girders per span at small expense, thereby using up light girders and providing bridges of large carrying capacity. Where waterway or other undercrossing conditions permit, timber bents can be placed under spans to strengthen them.

Where the rivets in the flanges of girders show low classification, larger rivets can be substituted, or, where the rivet spacing permits, additional rivets can be driven. Where the web plates give a low classification, additional stiffeners can be placed in the panels near the ends of the girders to give additional support to the web. Shelf angles can be strengthened by short vertical stiffeners beneath them. Where web splices with low classification occur, these can be replaced with wider splice plates with additional rows of rivets in the splice.

In through bridges the stringers can be reinforced by additional riveting, by the placing of additional stringers either timber or steel, and by shifting existing stringers to secure better distribution of the load. Where stringers are spaced so that some stringers do not carry their full proportion of load, it is possible to introduce cross bracing so that all the stringers in the panel act together to carry the load.

Floor beams can be reinforced by cover plates or angles added to the flanges by additional riveting, or by shifting the stringers toward the trusses to reduce the bending in the floor beams. In very old bridges, floor beams are frequently of much lower classification than the remainder of the bridge and can sometimes be replaced with entirely new floor beams at a reasonable expense so as to get additional life out of the remainder of the structure.

In trusses the diagonals and counters can usually be reinforced with additional bars or rods with loops over the truss pins and connected by turnbuckles to provide adjustment. Similarly, bottom chords of eye-bars can be reinforced with additional bars with yokes bearing on the heads of the original eye-bars.

End posts of through bridges, having low classification due to eccentricity can be strengthened by placing angles or plates on the sides of the members, so as to reduce the eccentricity.

Where pins have low classification, it is sometimes possible

to move the members on the pin to reduce the bending. In some cases, diaphragms placed inside of built-up members will relieve bending on the pin. The pins themselves can be strengthened by replacing with high carbon or special alloy steel pins of the same size, or if additional strength is required, by boring out the pin holes and putting in larger pins.

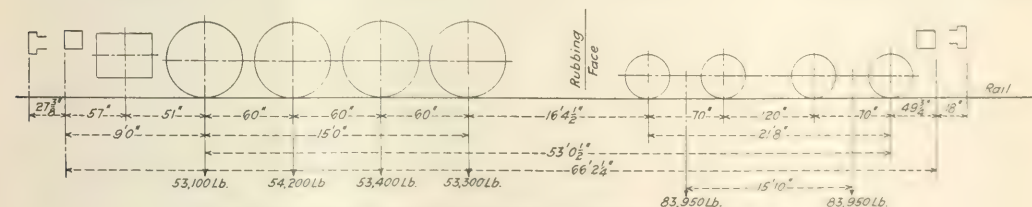
The cost of strengthening bridges varies with the size of the job, the amount of staging required, the amount of shifting of members required to reach different portions of the work, the size of the crew available, the distance traveled by the crew, the tools available, etc. In a general way, it has been found that the cutting out and replacing of rivets on ordinary strengthening jobs costs from 25 cents to 75 cents each and drilling and driving new rivets 50 cents to \$1 each; that is, the cost of such work will be given by the total number of rivets driven at these unit prices, plus the cost of additional material required.

With the maintenance of old and light capacity bridges, the question continually arises whether it is more economical to strengthen the structure or renew it. As a general proposition it would be permissible to spend each year for strengthening an amount equal to the interest on the investment in a new bridge, less the cost of the additional maintenance required by the old bridge on account of the greater attention it receives.

It must be recognized, of course, that a newly designed and heavy structure is preferable to a lighter structure. It is possibly true that in case of a serious accident on a bridge, a light structure might be destroyed while a heavy new structure might withstand the same treatment without being seriously disabled. Such consideration must be taken into account in shaping the general policy in keeping light bridges in service.

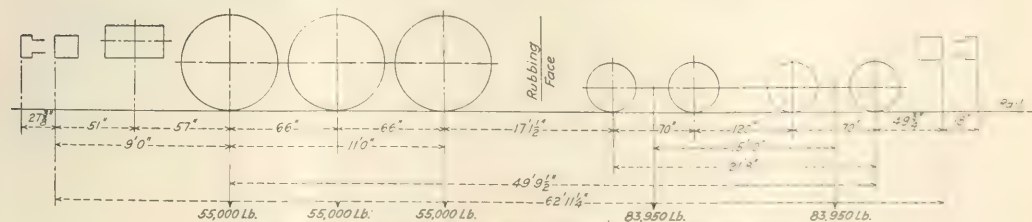
Clearance and Weight Diagrams for Standard Locomotives

FOR THE PURPOSE of presenting in a convenient manner the clearances of the standard locomotives of the Railroad Administration, F. P. Pfahler, chief mechanical engineer of the Division of Operation of the United States Railroad Administration, has prepared the diagrams shown in connection with this article. They are given for the light and heavy Mikados and the Eight-wheel and Six-wheel



Eight-Wheel Switcher - Weight in Working Order, 8,000 Gal. Tender - Freight Trucks.

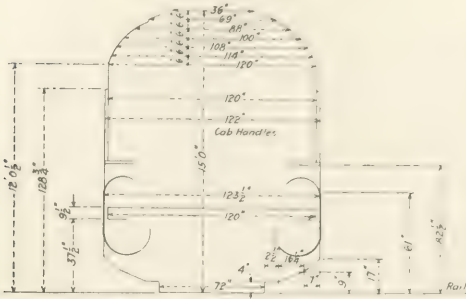
Wheel Loading and Spacing for the Standard Eight-Wheel Switcher



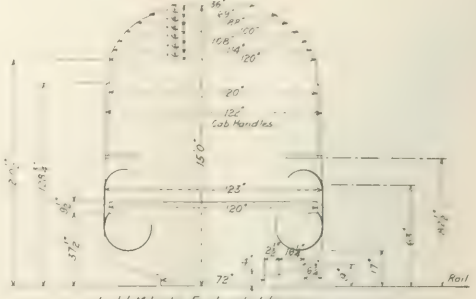
Six-Wheel Switcher - Weight in Working Order, 8,000 Gal. Tender - Freight Trucks.

Wheel Loading and Spacing Diagram for the Standard Six-Wheel Switcher

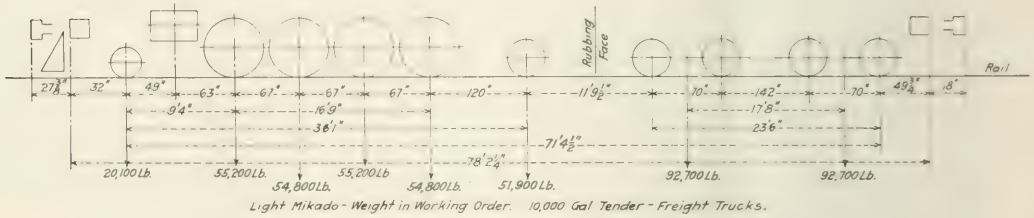
switchers and represent the correct diagrams for clearances and give the official distribution of weights of the different locomotives. These diagrams should be of assistance to the men on the roads using the standard locomotives.



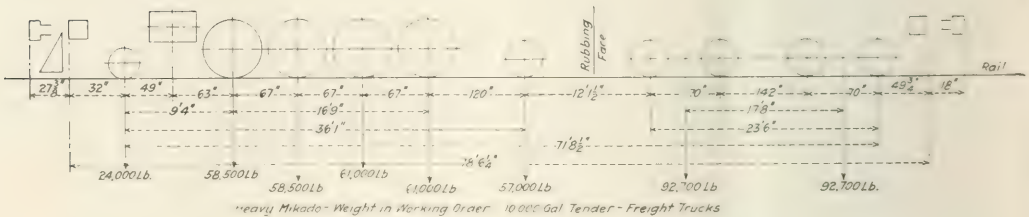
Clearance Diagram for the Standard Heavy Mikado



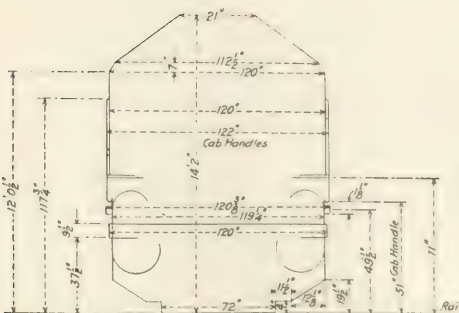
Clearance Diagram for the Standard Light Mikado



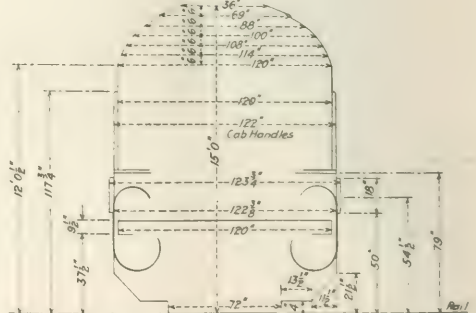
Wheel Loading and Spacing Diagram for the Standard Light Mikado



Wheel Loading and Spacing Diagram for the Standard Heavy Mikado



Clearance Diagram for the Standard Six-Wheel Switcher



Clearance Diagram for Standard Eight-Wheel Switcher

Joint Conference on Grain Handling and Weighing

Much Attention Was Given to Grain Leakage and the Construction of Box Cars to Prevent It

A CONFERENCE to further the interests of uniformity in the practices of terminal grain weighing departments was held at Milwaukee, Wis., on September 25. Among those in attendance were terminal weighmasters from many important grain handling points, the Committee on Grain Weighing of the National Scale Men's Association, and several representatives of railroads and other interests concerned. H. A. Foss, board of trade weighmaster at Chicago, acted as chairman of the conference.

As a result of the deliberations, resolutions were passed in which specific recommendations were made as to the practices the members of the conference thought should be adopted to improve the present conditions. In the matter of car seals, it was stated that the seals used by some of the carriers on the doors of box cars bear duplicate identification marks which make it possible to seal and reseal cars in a given yard or district many times without any changes in the identification marks to show that the original seals placed on the doors have been broken and the cars resealed. On the other hand, the use of consecutively numbered seals, which many of the carriers have adopted, makes it practically impossible to break the seals of a car without the facts being indicated either by an examination of the seals on the doors or by an examination of the seal records of the carriers and terminal weighmasters. The carriers were urged to adopt seals that are consecutively numbered, no two bearing the same identification marks.

The relation of rough handling of cars in transit to leakage of grain was considered. Cars often receive rougher treatment at terminals and interchange points than during road haul movement. It is apparent that much of the rough handling of cars in switching, either by switch engines or over gravity tracks is unnecessary and avoidable. Since such rough handling of cars causes much of the leakage of grain the officials under whose jurisdiction the switching of cars at terminal markets comes were urged to enforce greater care in this operation.

Construction of Box Cars to Prevent Leakage of Grain

Several recommendations were made regarding practices in the construction and repair of cars which would tend to reduce grain leakage. It was stated that investigations made by terminal grain weighmasters as well as grain leakage statistics compiled by terminal grain weighing departments show that a large majority of all the leaks of grain from box cars occur between the outside car sheathing and the car sills, due to the tendency of the sheathing to spring away from the sills under load. Examination of box cars used for transporting grain indicates clearly that the nails used to secure the sheathing boards to the sills are inadequate since they do not effectively and permanently hold the sheathing tightly to the sills under the stress and strain to which cars are subjected in switching and handling. A few of the roads have realized the inadequacy of nails alone for holding the sheathing in position, and some of the grain carrying lines have experimented with metal strips to secure it in place. These are of two designs, one consisting of flat bars of iron fastened by means of bolts, the other of an angle iron which is also bolted to the sills. The flat bars were not considered as wholly satisfactory for this purpose. It was resolved that the carriers and builders of box cars be urged to find other methods of securing the sheathing to the car sills more effective than nailing and that such improved methods should be

applied to the box car equipment now in use as far as it is practicable to do so.

The effectiveness of grain strips in box cars in fulfilling their function of freeing any grain lodged behind the inside linings and thereby making it accessible to the unloaders was considered. Extensive examination of cars used for carrying grain showed that a large percentage of the grain strips are warped, twisted and loose. This condition is so prevalent in the older cars as to indicate need for more durable and serviceable grain strips and better methods of securing them in position. It was noted that some cars of recent construction are equipped with strips of much heavier design than are generally used in the older cars, these strips being bolted in position instead of being nailed. The railroads and car builders were urged to investigate the question of grain strips with a view to adopting a type that will perform its function better than those now in use, and for the purpose of developing better methods of securing the strips in position.

Much of the leakage of grain between the sheathing and the sills was attributed to the grain sifting behind the lining through cracks and crevices in the belt rails where the brace rods and side posts pass through. If grain can be prevented from sifting through the belt rails into the pockets of the lining, leakage between the sheathing and the car sills is materially reduced. The lodging of grain in the pockets of the linings, where it is often inaccessible to the unloaders, not only causes loss of grain, but results in the abuse of the car by trespassers in railroad yards who damage the equipment in trying to get the grain thus lodged. The railroads were urged to find a means of filling all cracks in the belt rails where the rails do not fit tightly around the side posts and brace rods, to make the inside wooden lining of cars grain tight. Such methods should be applied to cars now in use which are equipped with inside wooden lining as well as new cars. Furthermore, openings should be provided to admit the free passage of any grain that may lodge behind the lining.

The conference protested against the misuse of grain doors. It was recommended that unloaders in releasing the grain from cars should detach the grain doors from the top of the doorway section by section wherever practicable. Grain shippers should not use nails for securing grain doors to the doorposts larger than the 16 penny size and no more nails than are necessary. The purchasing agents of the railroads were urged to revise their specifications for grain doors or to take such other steps as might be necessary to stop the growing practice of using poor, culled, rotted or other unsuitable lumber in the manufacture of such doors.

Inspection of Grain Cars and Scales, Weighing and Handling of Cars

The marked variation in the percentage of cars reported as leaking grain upon arrival by the weighing departments at the various terminal markets has resulted in much criticism and has tended to throw discredit on the reliability of all reports of grain leakage. It is contended by many that these variations are due in large part to differences in the methods employed in searching for evidence of leakage. A committee was appointed to determine the most effective method of securing and recording reliable evidence of leakage from grain cars, to the end that greater uniformity of practice might be brought about and that steps might be taken to induce the carriers to adopt similar methods for the guidance of their car

inspectors when inspecting cars for leakage in transit. It was recommended that cars should, if possible, receive daylight inspection and where grain leakage is found an effort should be made to determine whether the loss is considerable or slight and the findings reported. A committee was also appointed to draft rules to govern the testing of grain scales.

Regulations for the guidance of elevator designers and builders in the installation of scales and the equipment used to weigh and handle grain to and from cars, and rules for the guidance of the loaders and unloaders of grain and terminal weighmasters were also adopted. For the guidance of those interested in grain weighing, standard weight supervision was defined. It was recommended that certificates issued for weights determined under standard supervision should state on the face that such supervision governed the weighing. It was the sense of the meeting that it is incumbent upon terminal grain weighing departments to inspect outbound cars as well as inbound cars.

Bad Order Car Situation

A GENERAL SUMMARY of the bad order car situation taken from the reports of the railroads to the Division of Operation of the Railroad Administration for 10 weeks ending September 21, are interesting in that they show a steady decrease in the number of bad order cars. At the beginning of this period there were 173,771 cars in bad order,

The distribution of the bad order cars amongst the different classes by regions is shown in another of the tables as of September 21. Box cars comprise 42.5 per cent of the total number, hopper cars 18.2 per cent, gondola cars 25.2 per cent, and the remaining classes all vary below four per cent.

CLASS	REGIONS								All regions
	East	Alle	Pac	South	Central	South-West	North-West		
Box	20,476	9,889	1,727	1,570	1,707	1,175	15,449	64,941	64,941
Refrigerator	2,076	214	77	200	1,171	107	1,315	5,307	5,307
Stock	1,037	234	106	422	2,108	502	1,329	5,738	5,738
Hopper	18,818	9,966	1,843	1,484	1,707	1,175	1,315	55,307	55,307
Gondola	16,077	7,574	1,000	1,424	1,685	1,147	1,197	58,618	58,618
Flat	1,512	531	228	1,051	658	322	1,800	6,102	6,102
Coal	230	675	103	176	40	5	95	1,744	1,744
Miscellaneous	960	67	18	470	814	50	574	3,283	3,283
Total	55,833	28,501	4,877	52,394	14,881	6,644	35,676	153,798	153,798
Percentage	36.3	18.5	3.2	34.1	9.7	4.3	23.2	100.0	100.0

It will be seen from this table that the greatest bulk of the bad order box cars are in the Eastern and Northwestern regions. In the Northwestern region they comprise 60 per cent of the cars in bad order. In proportion to the number of cars in the Allegheny region the number of bad order hopper cars is, of course, high.

Referring again to the table showing a summary of the bad order car conditions it will be noted that during the 10

TEN WEEKS STATEMENT OF CAR CONDITION REPORTS

	July 29	July 27	Aug 3	Aug. 10	Aug. 17	Aug. 24	Aug. 31	Sept. 7	Sept. 14	Sept. 21
Number of roads represented.....	158	158	143	143	143	143	143	140	139	139
Total revenue cars.....	2,474,787	2,503,828	2,492,749	2,494,408	2,480,792	2,484,381	2,493,145	2,407,798	2,493,730	2,493,074
Bad order cars.....	173,771	129,670	175,281	173,771	169,539	164,826	157,339	158,133	155,899	153,798
Light repairs.....	87,488	83,532	93,287	94,796	95,798	96,432	91,656	92,301	91,134	90,956
Heavy repairs.....	87,283	87,137	82,494	78,975	73,741	68,394	65,683	65,832	64,765	62,842
Percentage of bad order cars.....	7.0	5.2	7.1	7.1	6.8	6.6	6.3	6.6	6.2	6.2
Ave. B. O. cars repaired per working day.....	97,719	96,246	97,348	95,973	96,688	96,681	97,027	96,346	99,009	97,077
Light repairs.....	10,442	9,347	9,744	11,961	11,961	10,003	10,359	9,750	10,473	10,442
Heavy repairs.....	87,283	87,137	82,494	84,012	86,335	86,678	86,668	86,596	88,536	86,635
Number of cars transferred to other shops.....	346	215	459	290	1,363	1,750	1,862	2,188	2,501	1,791
Number of employees.....	134,615	137,360	138,659	140,308	142,895	146,677	150,042	150,006	145,141	146,004

or seven per cent of the total revenue cars on the roads then under the jurisdiction of the Railroad Administration, and on September 21 there were 153,798 or 6.2 per cent, a decrease of over 11 per cent. In order to increase the car supply it has been the practice on nearly every railroad to concentrate attention on bad order cars requiring light repairs. This is

weeks in question the number of employees in the car department increased from 134,615 to 146,004, with high weeks of over 150,000. This is an increase of about 14 per cent over the number of men employed a year ago at this time. It is interesting to note that with this increase in the number of employees the average number of bad order cars repaired

DETAILS OF THE BAD ORDER CAR SITUATION AS OF SEPTEMBER 21, 1918.

	All regions	Eastern	Allegheny	Pacific	Southern	Central	South-western	North-western
Number of railroads.....	140	140	140	140	140	140	140	140
Total revenue cars.....	2,493,074	789,811	398,935	88,869	242,743	372,349	214,266	386,101
Total bad order cars.....	153,798	55,833	28,501	4,867	12,394	19,583	6,944	25,676
Light repairs.....	90,956	34,553	20,772	3,125	7,012	11,751	4,052	9,691
Heavy repairs.....	62,842	21,280	7,729	1,742	5,382	7,832	2,892	15,985
Percentage of bad order to revenue cars.....	6.2	7.0	7.1	5.5	5.0	5.2	3.2	6.6
Railroads having four per cent bad order or less.....	61	9	6	1	12	14	7	10
Railroads having more than four per cent bad order.....	78	131	132	138	130	126	133	130
Number of cars damaged in trains.....	19,695	2,809	1,832	268	11	6,394	863	6,504
Cost of repairs.....	\$1,715,707	\$27,528	\$19,378	\$3,643	\$15,097	\$35,791	\$7,050	\$12,568
Material.....	\$1,675,707	\$41,445	\$27,316	\$5,960	\$21,471	\$44,363	\$8,447	\$16,795
Labor.....	67,16	0	1,043	105	404	584	1,609	762
Number of cars damaged in yards.....	67,16	\$19,614	\$11,355	\$1,190	\$5,556	\$6,578	\$4,774	\$8,503
Cost of repairs.....	\$2,848	\$27,533	\$16,442	\$3,900	\$8,000	\$8,760	\$6,418	\$9,295
Material.....	29,741	29,741	29,741	4,507	7,234	12,732	10,787	21,198
Labor.....	10,442	2,843	820	274	1,205	2,184	857	2,259
Light repairs.....	86,635	26,898	11,888	4,233	10,538	9,930	18,939	18,939
Heavy repairs.....	116,449	7,756	1,609	2,092	110	0	0	88
Total number cars in contract shops undergoing and awaiting repairs.....	4,267	2,652	421	392	532	108	0	142
Number of cars transferred from one road to another to help reduce bad orders.....	1,791	1,312	163	1	216	0	0	0
Total number of employees.....	146,004	15,532	19,532	5,237	18,915	25,453	13,403	22,180
Net total increase during the week.....	1,170	648	6 (dec.)	13	64	183	20	284
Total number of employees for same week of last year.....	128,437	35,715	15,904	4,948	17,244	22,182	14,466	17,998

reflected in the table giving the summary of the conditions, the light bad order cars decreasing from 87,283 to 62,842. At the same time the heavy bad order cars have been kept well in hand.

per working day has not kept pace with the increase in the number of employees, although for the week ending September 14 there was a high record of 99,009. The lowest number reported is for the week ending August 10, when

95,973 cars were repaired per working day with 140,308 employees.

It is also interesting to note the number of cars that have been transferred from one road to another to reduce congestion. This has as a rule steadily increased, except that during the week ending September 21 a less number of cars was transferred than for the previous three weeks. It shows the improvement in co-ordination of the work.

A study of the more detailed freight car condition report for the week ending September 21 shows that during the week 26,411 cars were damaged in trains in the yards at a cost

of \$427,710. While this number is a little over one per cent of the total revenue cars, an analysis shows that in the Central Western and Northwestern territory the number of cars damaged in this manner was about two per cent of the total number of revenue cars in that territory. In these regions there is considerable mountainous territory and it may be possible that the general air brake conditions of the cars are responsible for the proportionately large number of cars damaged in this manner.

One of the tables gives details of the bad order situation in the various regions for the week ending September 21.

"The Railroad Bureau for Brickbats and Bouquets"

What the Public Sometimes Writes About to the Bureau for Suggestions and Complaints

By Theodore H. Price

Actuary to United States Railroad Administration

AS YOU FALL unconcernedly asleep in a Pullman car, which, with all its drawbacks, is the least uncomfortable means of traveling at night on land that has as yet been devised, did you ever reflect upon the number of persons and the complexity of the organization upon which you are dependent for the safety and luxury in which you are able to make your journey? The engineer and the fireman, the conductor and the brakemen, the Pullman conductor and the porter, the steward in the dining car and the waiters are all more or less in evidence, and of their presence and the service they render you may be more or less conscious, but behind them and directing their activities is an unseen host of others upon whose vigilance in the performance of their duties your life and comfort depend.

There is the train despatcher and the telegraph operators, the track walker who patrols the right of way day and night, and the section gang who must always be ready to repair any defects, the switchmen, and the inspector who used to go about tapping the car wheels with his tell-tale hammer at the end of each division, the "hostler" who takes care of the engine and the machinist who repairs it, the car cleaners, the iceman, the commissary chief who provisions the dining cars, the ticket agent and the station master, the "red cap" and the baggageman; if any one of these fails in his appointed task, the passenger is almost certain to suffer or be inconvenienced. Back of these again there used to be the executive officers, the president, the various vice presidents, the general manager, and the superintendent, with scores of other functionaries who were the objects of relentless public criticism if their subordinates were careless or inefficient. Now that the railroads are under the control of the government the operative duties of the railroad president and the vice-presidents devolve upon a federal manager and his assistants. They are in turn responsible to a regional director, who is the representative of Director General McAdoo at Washington; but in other respects the operating organization is not much changed and, because some people, forgetting the exigencies of the war, assume that the government is omnipotent, they are now disposed to be more, rather than less, exacting in demanding perfection of service from the machine that is called the American railroad system.

Composed, as this machine is, of literally millions of mechanical parts whose functioning depends upon the co-ordinated watchfulness and care of thousands of fallible human beings, it is really surprising that more accidents do not occur, and that the reaction of man upon man does not

result in irritation oftener than is the case. When we consider that a loose spike, a defective rail, a misplaced switch, or a misread signal may precipitate a trainload of people into eternity, and that an innumerable number of spikes, rails, switches, and signals, to say nothing of the air brakes, couplings, electric wires, and steam and water supply pipes, with an engine having about 15,000 separate parts that make up a passenger train must all be as they should be if we are to reach our journey's end successfully and on time, it is little short of marvelous that travel is as safe as it has become and that under the strain to which they are subjected railroad employees are not oftener careless and impatient. It is greatly to the credit of the executive officers who through three generations had built up the fabric that is called the American railroad system that they should have succeeded in developing the *esprit de corps* by which the men under them were animated. This had been accomplished in the face of many difficulties, including especially a mass of hampering legislation in 48 different states; and when, in order to meet the exigencies of the war, it became necessary for the President to put the transportation agencies of the country under the control of Mr. McAdoo, his first care was to preserve and increase the spirit of idealism in the performance of their duty that was characteristic of the Americans who had become proud of being called "railroad men."

There were not wanting those who predicted a speedy decline in what has come to be called the "morale" of the railroad army, and there were some who, professing to discern such a decline, persuaded others to look through glasses that were darkened by a defeatist self-interest in the failure of government control.

The director general, confident as he was of the loyalty of the men, did not share this pessimism, but feeling nevertheless that it was his duty to ascertain whether it had any basis, he determined, with his customary directness, to ask the public to tell him frankly how and where the service could be improved.

Accordingly he issued an order establishing a Bureau for Suggestions and Complaints, and on the third of September, 1918, the following notice was posted in every station and passenger coach under the control of the United States Railroad Administration:

To the Public:

I desire your assistance and cooperation in making the railroad service while under Federal control in the highest possible degree satisfactory and efficient.

Of course, the paramount necessity of the war must have first consideration.

Our soldiers who are fighting in France, and on the high seas, must be adequately supplied through the railroads, and without transportation for the movement of troops and war materials and the war industries of the nation going without interruption.

The next purpose is to serve the public convenience, comfort and necessity to the fullest extent not incompatible with the paramount demands of the war.

In order to accomplish this, criticisms and suggestions from the public will be extremely helpful, whether they relate to the service rendered by employees and officials or impersonal details that may convenience or inconvenience patrons of the railroads. It is impossible for even the most vigilant management to keep constantly in touch with local conditions and correct them when they are not as they should be unless the public will co-operate in pointing out deficiencies and dis-service when they exist, so that the proper remedies may be applied.

I have therefore established a Bureau for Suggestions and Complaints in the Director General's office at Washington, to which the public is invited to resort.

Aside from letters of complaint and suggestion, the public can render a genuine service by sending letters of commendation of employees who are conspicuously courteous and efficient in the performance of their duties. Nothing promotes the spirit of a great organization more than recognition from time to time of these employees who perform their duties faithfully and commendably.

It is requested that all communications be brief and explicit, and that the name and address of the writer be distinctly written.

Also give the time of day or night, the number of the train, the name of the railroad, and, if possible, the name of the employee whose conduct is complained of or whose services are commended, together with such other information as will enable me to take appropriate action.

To deal with the letters which this notice was expected to elicit, five trained men were selected and put under the direction of the writer. They include Ballard Dunn, assistant actuary to the United States Railroad Administration and formerly special representative of president's office, Union Pacific Railroad, Omaha; J. F. Jarrell, formerly editorial writer on Kansas City Times and Topeka Capital, and later with the Atchison, Topeka & Santa Fe as editor of its industrial and agricultural publications and in general charge of publicity matters; T. T. Maxey, formerly of the Chicago, Burlington & Quincy as advertising agent; E. H. Lamb, formerly general agent of the Chicago & North Western at Sacramento, Cal.; and Frank F. George, formerly secretary to the actuary to the United States Railroad Administration.

This Bureau for Suggestions and Complaints, which a newspaper man has facetiously dubbed the "bureau of brickbats and bouquets," is Mr. McAdoo's latest application of his motto "The public be pleased." It has now been in existence long enough to make it possible for those in charge of it to draw a cross section of the composite public mind as revealed in the many thousands of letters that have been received.

The writers of these letters unconsciously divide themselves into two classes—one comprising those who are temperamentally censorious, and another which includes the people who believe that praise is a duty and that "criticism is best defined as an emphasis of the desirable."

The rhyme which runs—

Between the optimist and pessimist the difference is droll,

The optimist the doughtnut sees—the pessimist the hole finds fresh application in not a few contrasting letters upon the same subject, but between the two extremes there are many who are evidently inspired by a public-spirited desire to improve the service that the railroads are trying to render and a patriotic willingness to subordinate their own convenience and comfort to the primary purpose for which the railroads were taken over, namely, the winning of the war. That this latter class is in a very large majority is one of the reassuring facts revealed by the experience of the Bureau for Suggestions and Complaints.

Some of the newspaper writers who have been vociferous in proclaiming the discourtesy and indifference of "Uncle Sam's railway employees" would perhaps be surprised at the number of letters of commendation that have been received, and while a few of them are no doubt the result of auto-suggestion, it is evident that as a class the men and the increasingly large number of women who compose the "railway army" of the United States are loyal and enthusiastic, anxious and willing to give the best that is in them to the work in which they are enlisted.

It may be appropriate to mention a letter from a man who says that "I know that many will complain of the discourtesy of railway employees to the public, but I desire to file a complaint in regard to the discourtesy of the public to railway employees," as emphasizing the need of reciprocity in politeness in a way that many travelers would do well to ponder, for it is undoubtedly true that some of the questions that railroad men have to answer and some of the demands made upon them are absurd and exasperating to a degree that even Job would have resented.

Of the letters received probably three-fourths complain of conditions that are presently unavoidable or of regulations, the reasonableness of which is not apparent to the casual traveler who fails to appreciate or understand the complexity of the railroad machine or the necessity of protecting the public against the ignorance, carelessness, and selfishness of some and the dishonesty of others who feel that it is no sin to evade the payment of their fares or "get the best of the railroad."

Common Complaints

What may be called the conventional complaints relate chiefly to a few subjects which are dealt with, as follows, in the order in which they seem uppermost in the public mind and have elicited the largest number of letters.

They are:

1. *The crowded condition of the stations and cars and the delay encountered in purchasing tickets.*—Under this heading there may be considered practically all the complaints which arise as a result of the unprecedented increase in the passenger traffic of late and the shortage in the ticket-selling forces that is the result of the draft and the high wages which have attracted many experienced railroad men into other positions where they can, for the present at least, earn more than it is possible for the railroads to pay. The enormous increase in passenger traffic with which the railroads are now contending is not perhaps generally appreciated. The complete comparative statistics for June, 1917, and June, 1918, are not yet available, but a statement which includes the passenger traffic of 208,988 miles of railroads out of a total mileage of nearly 300,000 miles shows that 3,621,088,633 passengers were carried one mile in June, 1918, as compared with 3,049,803,635 passengers carried one mile in June, 1917. The increase of 571,285,028 passengers carried one mile is equal to 18.17 per cent, and if it be assumed that the average journey of each passenger was 50* miles, which is probably an approximation to the fact, we shall be justified in concluding that the railroads reporting had to carry 11,425,700 more persons in June, 1918, than during the same month in the previous year, and that there was an equal increase in the number of tickets sold. As the roads reporting include only about two-thirds, but the most important two-thirds of the total mileage in the United States, it is not improbable that there was an aggregate increase of 15,000,000 in the number of persons traveling and the number of journeys made throughout the United States in the month of June, 1918, as compared with June, 1917. This means an increase of 750,000 in the number of persons traveling each day. The average passenger car will seat 50 people, and to carry 750,000 persons 15,000 cars filled to capacity would be required. They are not to be had. They could not have been built even if they had been ordered. The labor and material necessary are unobtainable. According to the figures of the Interstate Commerce Commission there were (excluding parlor and sleeping cars) only 40,870 passenger cars of all sorts in the

*According to the figures of the Interstate Commerce Commission the average journey per passenger in 1916 was 34.73 miles, which figure, if applied to the returns for 1918, would indicate an increase of over 21,000,000 in the number of persons traveling during the month of June, 1918, as compared with June, 1917. Inasmuch, however, as this year's figures include the movement of many troops over long runs, I have preferred to make the above statement by assuming that the length of the average journey for passengers was 50 miles.

United States in the year 1916, and the necessity of crowding these cars in order to transport those who now desire to travel will at once be apparent even to the statistical tyro.

An average of about 1,100,000 troops a month is now being carried by the railroads on orders from the war and navy departments. A great many other soldiers and sailors are traveling on their own account and at their own expense. The mothers, fathers, wives, sweethearts, and friends of these men have also been traveling to visit them at the camps at which they were stationed. The high wages that are being paid in industry generally, and particularly in the shipyards and munition factories, the agricultural prosperity that is the result of \$2 wheat and 30-cent cotton have made many of those who were not previously in the habit of traveling feel able to "take a trip," and they have yielded to the impulse. Concurrently the force of ticket sellers has been depleted by draft or resignation to accept other and better-paid positions, and those who were left have had to deal with the unprecedented increase in the passenger traffic that the figures given disclose.

Under the circumstances it is not surprising that sometimes long lines of people are to be found waiting at important ticket offices. It is not possible for untrained men to sell railroad tickets. This work requires a knowledge of routes, rates, timetables, and connections that can only be acquired by experience and an ability to make change promptly and accurately and to be self-controlled when tired or exasperated that cannot be learned in a minute. In an effort to meet the public demand the United States Railroad Administration has opened schools in some of the larger cities for the education of women as ticket sellers, and not a few graduates have been passed from these schools into active service, but the number of women who have applied for this instruction is not large, and after making allowances for the drain that will be caused by the pending draft it seems unlikely that the ticket-selling force can be appreciably increased in the near future.

These conditions are frankly stated that the public may have some idea of the situation and refrain from unnecessary travel. The increase in passenger rates seems to have had no effect. Mr. McAdoo has appealed to the public to avoid pleasure traveling, but he seems to have been unheeded. It is not possible for the United States Railroad Administration to put a quart in a pint bottle. It cannot carry the soldiers who must be transported comfortably and provide the public with the luxury and accommodations to which they have been previously accustomed. The former is an imperative duty, and this is written that those who complain of the crowded cars and the delays at ticket offices may understand that some discomfort and inconvenience are unavoidable. Universal mileage books, good in the hands of bearer upon any railroad under the control of the director general, have been devised and are now on sale. Those who use them will avoid the delay usually encountered in the purchase of tickets, but the best method of relieving the situation is to avoid unnecessary travel and preach the gospel of "winning the war by staying at home" among your friends by both precept and example.

2. *The surcharge of one-half cent a mile now made for transportation in parlor or sleeping cars, which charge is in addition to the regular Pullman fare, is another thing that provokes many complaints.* The reasonableness of this charge will be appreciated in the light of the following comparisons: With one person in a berth the average sleeping car will accommodate but 27 people, whereas a modern coach has seats for approximately 60 people. Upon the average, a passenger in a sleeping car occupies 13½ square feet of space, whereas a passenger in a modern steel coach occupies but 7½ square feet. The average dead-weight per seat in a sleeping car is 3,250 pounds, whereas the average dead-weight per seat in a modern steel coach is but 1,400 pounds.

The passenger capacity of a sleeping car is, therefore, less than half of the passenger capacity of the average coach and the engine load per passenger is more than double in the case of Pullman cars that are completely filled, and still further increased when they are only half filled, as was not infrequently the case when a person with only one transportation ticket was permitted the exclusive occupation of a section. In view of these figures the reasonableness of the increased charge now made for the luxury of a Pullman car at once becomes apparent. It is not necessary to elaborate upon it.

3. *The rule which makes it impossible to reserve Pullman accommodations without paying for them and another rule, formerly in force, which made it necessary that Pullman tickets not used should be sent to Chicago for redemption are the subjects of many complaining letters.* These rules were deliberately adopted in an effort to prevent those who were only thinking about a journey that they were not certain to make from preempting the Pullman space that was urgently required by others who were compelled to travel. When it was possible to reserve a berth by telegraph or telephone or buy a Pullman ticket and get your money back at the last moment, it frequently happened that sleepers in which all the berths were reserved in the morning would go out half filled in the evening because the reserved space had not been taken up or had been released so late that it could not be resold. Now that it is necessary that both the railway ticket and the Pullman space must be paid for before a berth can be reserved, only those who are reasonably certain of traveling make reservations, and the Pullman cars are better filled, to the advantage of both the public and the railways. The rule which made it necessary to send Pullman tickets to Chicago for redemption has recently been rescinded and they will now be redeemed at the office of sale, provided they are presented long enough before the departure of the trains to permit of their resale. Thus tickets on trains leaving during the forenoon of any day must be presented at the office of sale by 5:30 o'clock p. m. on the previous day, and tickets on trains leaving after 12 o'clock noon must be presented at least three hours before the departure of the trains for which they are sold. Pullman space released later will, if possible, be resold for account of the buyer, and when so resold the tickets will be redeemed if sent by mail to the Pullman Company in Chicago. The necessity of providing Pullman cars for the transportation of our troops on night journeys has made it necessary to adopt these rules, all of which are designed to secure a full loading of the sleepers which are used by the public and thereby release those which are necessary for the transportation of soldiers.

4. *The sale of surcharge tickets for transportation in Pullman cars when no berths or seats are to be had is one of the things properly complained of that has been remedied.* Formerly the Pullman Company, being a separate and independent organization, objected to collecting revenue due the railroad companies. Now that both are under the control of the United States Railroad Administration this difficulty has disappeared, and arrangements are being made in pursuance of which the Pullman Company will hereafter sell tickets for the transportation surcharge to those, and only to those, who are able to secure accommodations in parlor cars or sleepers. Much of the unnecessary confusion hitherto arising will thus be avoided.

5. *The limit of from 24 to 48 hours now placed upon the use of tickets issued by a few roads that formerly sold unlimited or 30-day tickets for short journeys has also provoked many complaints.* It is natural that those who do not understand why this limitation has been imposed should resent it, but there is a good reason for the new rule. It is to be found in the crowded condition of the trains, which makes it exceedingly difficult for the conductor to be sure

of collecting the tickets from everyone in the car, especially when some of those who have no scruples about "beating the railroad" are skillful in evading him. If these dishonest persons could buy unlimited tickets and succeed, as many of them do, in riding without surrendering them, they would be able to resell the unused ticket or get a second or third ride free, thus giving them an advantage over their more conscientious fellow travelers. A limited ticket good only on the day of issue makes such practices more difficult, and the rule prohibiting the sale of unlimited tickets has been framed in the interest of the honest as against the dishonest person and is to be commended rather than condemned.

6. *Ill-kept stations, cars, and lavatories* compose another group of the grievances complained of in many letters that reach the Bureau for Suggestions and Complaints. The investigations which have followed the receipt of these letters reveal not a few cases of genuine neglect and carelessness. Efforts are being made to prevent their recurrence and enforce high standards of cleanliness and sanitation everywhere. It is to be admitted, however, that the shortage of labor makes this difficult, and that while the war lasts, immaculate housekeeping is hardly to be expected. One of the letters received upon this subject is worthy of special notice. It came from a woman in a Pennsylvania town where the station was unkempt. The writer said that she knew that the station agent was doing all that he could, but that she realized that it was impossible for him with the help at his disposal to keep things in a presentable condition, and she offered to organize a committee of women who would undertake to sweep out and clean the station daily as a part of their war work. It has not yet been decided whether it would be expedient to accept this offer, but the admirable public spirit that it expresses is entitled to appreciative recognition.

7. *The departure and arrival of trains at inconvenient hours and schedules which are arranged to prevent rather than facilitate close connections between trains on roads that were formerly in competition* are matters that are complained of in still another group of letters, many of which have been helpful to the officials who ever since the United States Railroad Administration was organized have been trying to co-ordinate the time tables of the various roads.

Now that competition is eliminated, there is every reason why the national time tables should be synchronized as far as possible. Efforts are being made toward this end, but the arrangement of a railroad schedule is a matter of infinite complexity and its rearrangement is even more difficult. There are many communities in the United States where the whole scheme of living has become adjusted to the arrival and departure of certain trains. To change their time would involve almost a social revolution. Then again a single change in a schedule may compel hundreds of other changes at other points or on other roads, and each innovation must be carefully studied. Some improvements have already been made, and ultimately, no doubt, a large portion of the time now wasted in waiting for connections can be saved; but in the effort to attain the ideal in this as in other respects great care must be used to avoid dropping a monkey wrench into the machinery that is already working fairly well.

Miscellaneous Complaints

This about completes the list of what have come to be called "conventional grievances" in the Bureau for Suggestions and Complaints. Of course, it does not include many other things that are complained of, nor does it take account of the innumerable suggestions that are made for the improvement of the service. Some of these suggestions are practicable and have been thankfully adopted. Others, as for instance, a bachelor's advice that a nursery car reserved for mothers and children should be run upon every train, are impracticable.

Complaints of discourtesy on the part of employees are

less frequent than might have been expected and are about equal in number to the letters of commendation received.

The consolidation of ticket offices, which was at first criticized, is now generally approved as the new offices are getting into working order and their convenience is appreciated.

The delays in settling claims for lost or damaged freight and baggage are the subjects of many letters which will, no doubt, lead to a reform in the traditional policy of many claim agents who had been in the habit of trying to save money for their roads by a procrastination which often wore the claimants out. Mr. McAdoo has ordered that just claims shall be promptly paid, and that unjust or dishonest demands shall be resisted and the claimants prosecuted where there is any evidence of criminality.

Concurrently with the increase in passenger travel there has naturally been an increased amount of baggage to handle, but the comparatively small number of letters reporting "lost trunks" encourages the belief that the baggage men have succeeded in meeting the strain to which they have been subjected. It may not be amiss, however, to express the hope that the American public will soon realize that it is a war duty to travel with as little baggage as possible when travel is necessary. Handling heavy baggage is a duty that can only be performed by strong and vigorous men, and delay in the transportation and delivery of heavy trunks is almost inevitable when the number of such men available is constantly being decreased by the draft.

Generally, and with few exceptions, the communications reveal a widespread desire to co-operate with Mr. McAdoo and the United States Railroad Administration in the effort that is being made to improve railroad efficiency for the winning of the war. To this everything else must be subordinated, and in comparison with this everything else is trivial. Our soldiers must be carried in comfort on what, for some of them, will be their last journey in their own country. While they are risking their lives for our protection on the battle fields and in the trenches of Europe, they must be kept liberally supplied with everything that they may require. Our allies must be fed. Our wounded must be brought back and tenderly carried to the homes and hospitals that are ready to receive them. The Bureau for Suggestions and Complaints was primarily organized to promote the efficiency with which the railroads may serve the Nation in the doing of these things.

If it shall have exalted the convenience or comfort of the individual to the disservice of the country or a civilization that has become militant in the assertion of right and the protection of humanity, then it had better be discontinued. Comfort and convenience must give way before the supreme needs of war and be surrendered until victory is ours.

Call for Cranes by Director

General Military Railways

S. M. Felton, director of military railways, needs a quantity of second-hand 8-wheel locomotive-type cranes of 15-ton capacity and up, to fill the needs of the rapidly growing army and its attendant railway problems. Crane manufacturers have been unable to keep pace in any degree with new crane orders given them, their mills and shops being blocked with orders that will keep them working at their full capacity.

In view of this extraordinary and extreme condition, the need of cranes of this kind being very great, Mr. Felton, has sent a letter appealing to owners of second-hand cranes of above general specification, to sell the cranes to Uncle Sam and help to win the war. It is not required of anyone that they donate their crane, nor that they sell at a loss, because full value will be paid in all cases to acquire such machinery, which will be turned over to essential war industries and help war workers get war munitions Over There.

General News Department

On suburban passenger trains running to and from Chicago, smoking is now prohibited, on account of the epidemic of influenza. This order was put into effect on October 22.

The appropriation bill reported to the House of Representatives on October 16 by the appropriations committee includes an item of \$441,946,317 for the transportation of the army.

Charges of evasion of Director General McAdoo's orders that women railroad employees shall receive the same wages as are paid to men for similar service have been laid before the Labor Division of the Railroad Administration by the Brotherhood of Railway Clerks, according to a statement circulated by the National Women's Trade Union League. This brotherhood is pushing its organization campaign among women employees and at present 40 per cent of the members are women.

Ambrose Swasey, of Cleveland, Ohio, has given Engineering Foundation \$100,000 for the endowment of engineering research. This is in addition to a similar gift of \$200,000 which Mr. Swasey made in 1915. His original gift made possible the establishment of Engineering Foundation by the United Engineering Society, representing the American Society of Civil Engineers, the American Institute of Mining Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. Mr. Swasey is a past president of the American Society of Mechanical Engineers and his latest gift is an expression of his appreciation of the war service which the United Engineering Society and the Engineering Foundation have rendered to the country.

An Acknowledgment

The article entitled "The Work of the Fuel Supervisor," by F. P. Roesch, which was published in the issue of October 18, page 713, should have been credited to the Missabe Railway Club; as it was written particularly for that organization.

Economical Loading in Northwest

Statistics covering the loading of 1. c. l. freight in the Northwestern region for the month of August show an increase of 5,023 tons of freight handled and a decrease of 15,917 cars used, as compared with the same month a year ago. This represents an increase in the average loading per car of approximately 20 per cent.

An Organization of Tie Producers

The Tie and Timber Division of the St. Louis Chamber of Commerce held a meeting on October 4, at which preliminary steps were taken in the organization of a national association of firms engaged in the manufacture of railroad cross ties, to provide a channel for communication and co-operation with the United States Railroad Administration and other branches of the Government in matters relating to the manufacture and sale of ties. At this meeting it was decided to call a convention of the men in this industry which will be held at St. Louis, Mo., on November 19 and 20.

Railroad Builders in France Keeping Up with Armies

The demands from Gen. Pershing for iron and steel are constantly on the increase. Every time an advance is made by the American Expeditionary Forces, there comes an order for more steel rails. The railroad builders are keeping right up with the fighting forces. B. M. Baruch, chairman of the War Industries Board says that Mr. McAdoo has taken the

position: "Pershing comes first." A program has been made for rails and other needs of the American railroad system based on a clear conception that it is absolutely necessary that the railroad system must be kept up; but he has shown consistently a willingness to forego that program in the interest of the American Expeditionary Forces.

Kansas City Southern Valuation Hearings

Final arguments on the protest of the Kansas City Southern against the tentative valuation of its property certified by the Bureau of Valuation of the Interstate Commerce Commission, nearly two years ago, were held at Washington before the commission on October 17, 18 and 19. Samuel Untermyer, counsel for the company, at first filed a motion for a continuance on the ground that certain testimony regarding land values was made necessary by the commission's decision in the Texas Midland case which the road had not presented because of the understanding that it would not be required. The commission denied the motion "without prejudice." Mr. Untermyer also filed a motion that the proceeding be dismissed on the ground that the valuation act is unconstitutional. Arguments on behalf of the road were presented by Mr. Untermyer and Samuel W. Moore, general solicitor for the Kansas City Southern, and also by the representatives of the Bureau of Valuation, the state railroad commissions, and the Western Union Telegraph Company, which objected to a part of its property being scheduled as a part of the property of the railroad.

Development Committee of A. S. C. E.

The American Society of Civil Engineers has appointed a committee on development to make a survey of the activities of that organization and to suggest any changes which may be advisable from the standpoint of the welfare of the organization. This committee consists of seven members appointed by the president and one appointed by each of twenty-one local associations. It includes Onward Bates, consulting engineer, Chicago, chairman; W. L. Darling, consulting engineer, St. Paul, and formerly chief engineer Northern Pacific; Frank T. Darrow, assistant chief engineer, Chicago, Burlington & Quincy, Lincoln, Neb.; H. R. Safford, engineering assistant to regional director, Central Western region, Chicago; E. S. Nethercut, secretary, Western Society of Engineers, Chicago; Charles Hansel, consulting valuation engineer, Pennsylvania and Philadelphia & Reading railroads, New York, and W. H. Hoyt assistant chief engineer, Duluth, Missabe & Northern, Duluth, Minn.

Make Every B. O. Locomotive a Live One

We cannot assume that there will be an early cessation of fighting. We are not going to stop fighting until we get this thing finished. Pershing needs locomotives—why? Because we have the Germans on the move to Berlin and they are moving so fast that it takes American locomotives to keep up with them. Pershing wants locomotives that we need for the railroads of the United States, and he wants steel rails over there to put those locomotives on so he can keep up with the Germans. I have said that General Pershing can have those locomotives, as we railroad men will see that he gets anything he needs from the railroads of the United States. We can give him those locomotives only if you make every bad order locomotive a live one as quickly as you possibly can do it. I want you to work all the harder on these dead locomotives. A bad order locomotive is a Prussian soldier, and I want you to jump on every Prussian soldier that gets into the shops, mark "Prussian" on him in chalk and then hammer hell out of him until you convert him into a

live American soldier. That is the way you can help Pershing and the boys in France. (From an address by Director General W. G. McAdoo at Connellsville (Pa.) shops on October 13.)

Well-Organized Thieves

Merchandise valued at more than \$25,000 which had been stolen from New York Central freight cars in Bay View, West Seneca and Gardenville yards, has been recovered by Capt. Seth Conover of the Pennsylvania railroad police force and allied city and special forces; and 13 railroad employees have been placed under arrest. Four of the men arrested are special officers entrusted with the protection of property, seven are switchmen in the yards, and two men had stations in the signal towers, where it was possible to manipulate the signals so as to stop heavily laden trains where thieves might climb aboard and carry on their looting before the trains came into the city. Silverware, overcoats, Victrolas, furniture, food, sweaters, suitcases, cameras, hats and shoes were some of the stolen property recovered.—*Buffalo Courier.*

Canadian Pacific Freight Handlers' Strike

A strike which was started by the freight handlers on the Canadian Pacific at Calgary, Alta., on September 21, has not yet been settled, notwithstanding the company's strenuous efforts to reach an amicable agreement with its employees.

The freight handlers notified the company on the day mentioned that they would strike within four hours unless the company would restore to his position a foreman who had been reduced because of incapacity; or would agree to fill the position according to seniority. The company would not consider such a proposal, and the men accordingly struck, being joined by some of the clerks in the freight office, all the employees in the baggage room and a number of yard clerks. The Canadian Department of Labor at once attempted to mediate. The men who belonged to the Brotherhood of Railway Clerks, Freight Handlers and Station Employees then said that, in addition to the matter about which the specific dispute arose, there were other grievances which must be adjusted before they would return to work; the failure of the company to recognize their union, and to make the effective date of certain increases of pay May 1, instead of August 1.

The men had not submitted either of these grievances to the company before stopping work. The road immediately made an offer that if the men would return to work at once and would abandon their contention in connection with the foreman it would receive a committee with regard to the other matters, and if no settlement could be reached it would allow the questions to go to the Board of Adjustment formed by the Canadian Railway War Board. The employees failed to keep their promise to the government's representative that they would return to work on this understanding, and having been given several opportunities to do so, the company filled their places, employing among others a number of soldiers who had seen active service and had been discharged from military service; and also a number of dependents of soldiers still serving at the front. As there was apparently no prospect of the strikers returning to work these new employees were promised permanent positions.

In the meantime, the freight handlers at Winnipeg, Man., who belonged to the same union, had been negotiating in regard to wages. They finally appealed to Grant Hall, then vice-president and general manager of the western lines, but no agreement was reached and it was decided to refer the matter to the Board of Adjustment. At the last minute the men at Winnipeg said they would not allow the matter to go to this board unless all the strikers at Calgary were allowed to return to work. The company refused this request and the freight handlers were then called out at Fort William, Ont.; Winnipeg, Man.; Regina, and Moose Jaw, Sask.; Lethbridge, Medicine Hat and Edmonton, Alberta; and Vancouver, B. C. After they had been out for some time they were joined by the mechanics employed in the Ogden repair shops near Calgary and the mechanics at one or two outside roundhouses. At present a member of the Canadian government is endeavoring to effect a settlement.

End of the Daylight Saving Season

The hands of the clocks throughout the United States will be turned back one hour on the morning of October 27, at 2 o'clock, in accordance with the law. The bill which was introduced in Congress by Senator Calder to amend the law and to continue keeping all clocks and watches an hour ahead of time, was passed by the Senate; but in consequence of the numerous objections presented before the House Committee, no action was taken in that body, and the law remains in force. Three different methods will be employed by the railroads to rearrange their trains when the clocks are changed. The plan of the New York Central to start its principal through trains on the evening of the 26th one hour behind time, was noted in our last issue. The Erie and the Lehigh Valley will pursue a similar course. The Pennsylvania will make no changes in trains until 2 o'clock. All regular trains on the road at that hour must be stopped at the first open telegraph or telephone office and there compare time with the train dispatcher; and they will then continue their journey as extras, arriving at subsequent stations one hour ahead of time. Train 37, for example, leaving New York at 11:30 p. m., and due in Pittsburgh at 9:55 a. m. will, if it suffers no unforeseen delays, reach Pittsburgh, according to the new reading of the clocks, at 8:55. On single track lines of the Pennsylvania, all trains must be brought to a standstill at 2 o'clock and the men must change their watches; and they can then proceed only on a regular order from the train dispatcher. The New York, New Haven & Hartford, like the Pennsylvania, will run its through night trains, after 2 o'clock, as extras.

The Delaware, Lackawanna & Western proposes to start its trains on time and to hold them one hour at some convenient station about 2 o'clock. For example, train No. 9, leaving New York at 8:30 p. m., will be held at Binghamton, and train No. 10 leaving Buffalo at 5:50 p. m., will be held at Scranton.

Bridge and Building Supply Men's Association

The Bridge & Building Supply Men's Association, which presented an exhibit in connection with the convention of the American Railway Bridge & Building Association at Chicago, on October 15, 16 and 17, elected the following officers at its concluding session on Thursday morning of last week: President, P. C. Jacobs, H. W. Johns-Manville Company, Chicago; vice-president, Tom Lehon, the Lehon Company, Chicago; treasurer, C. E. Ward, U. S. Wind Engine & Pump Co., Batavia, Ill.; secretary, M. J. Trees, Chicago Bridge & Iron Works, Chicago. Members of Executive Committee: G. R. McVay, the Barrett Company, Chicago, to succeed E. J. Caldwell, resigned; W. O. Washburn, American Hoist & Derrick Company, St. Paul, and A. J. Filkins, Paul Dickinson Company, Chicago.

Railway Surgeons

The American Association of Railway Surgeons held its fifteenth annual meeting at the Hotel Sherman, Chicago, on October 16, 17 and 18. There was an attendance of only about 55 on account of the influenza epidemic. The following officers were elected for the coming year: President, J. P. Kaster, chief surgeon, Atchison, Topeka & Santa Fe, Topeka, Kan.; first vice-president, J. M. Miller, Villa Grove, Ill.; second vice-president, Charles P. Frantz, Burlington, Iowa; third vice-president, J. P. Lord, Omaha, Neb.; treasurer, H. B. Jennings, Council Bluffs, Iowa; secretary, Louis J. Mitchell, Chicago.

Manufacturers of Chilled Car Wheels

The Association of Manufacturers of Chilled Car Wheels held its annual meeting October 15 at the Waldorf-Astoria, New York. The following officers were elected for coming year:

President and treasurer, George W. Lyndon; vice-presidents, E. F. Carry, president, Haskell & Barker Car Company, and J. A. Kilpatrick, president, Albany Car Wheel Company; secretary, George F. Griffin, president, Griffin Wheel Company; consulting engineer, F. K. Vial, chief engineer, Griffin Wheel Company.

Railway Earnings in August

Net operating income of the railways for the month of August as reported by the Interstate Commerce Commission was \$127,549,531, or \$26,000,000 greater than in August, 1917. Operating revenues, \$502,759,622, were over \$136,000,000, or 37 per cent greater, reflecting the increases in freight and passenger rates, while the operating expenses, \$358,987,665, showed an increase of \$112,000,000, or over 45 per cent, a large part of which is attributable to the increased wages.

For the eight months of the calendar year the net operating income was \$417,654,223, as compared with \$633,752,969 in 1917. This is approximately \$200,000,000 short of the estimated amount of the government's guarantee to the railway companies. For the eight months' period operating revenues showed an increase of \$440,000,000 while the operating expenses increased \$652,000,000. The mail traffic is the only item of revenues that shows a decrease, while traffic expenses and transportation for investment are the only items of expenses to show a decrease. The detail figures follow:

RAILWAY EARNINGS AND EXPENSES

FOR THE MONTH OF AUGUST.

Item	UNITED STATES				EASTERN DISTRICT			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....	56,606.19	232,202.31	...	...	56,703.42	59,336.78	...	...
REVENUES								
2. Freight.....	\$148,281,570	\$250,281,115	\$1,502	\$1,078	\$162,059,307	\$113,154,339	\$2,714	\$1,967
3. Passenger.....	11,464,976	81,923,003	488	353	52,100,614	37,539,969	873	633
4. Mail.....	4,124,887	4,830,148	19	21	1,750,651	1,905,731	29	32
5. Express.....	10,680,416	9,107,049	46	39	5,002,457	4,244,913	84	71
6. All other transportation.....	11,992,973	10,050,982	52	43	6,962,538	5,724,385	117	96
7. Incidental.....	11,791,653	9,769,008	51	42	6,951,910	5,436,484	116	92
8. Joint facility—Cr.....	837,496	402,401	2	1	265,323	200,528	4	1
9. Joint facility—Dr.....	149,664	140,105	1	1	75,321	86,572	1	1
10. Railway operating revenues.....	502,759,622	366,223,601	2,139	1,577	235,017,479	168,121,777	3,936	2,833
EXPENSES								
11. Maintenance of way and structures.....	56,585,861	42,393,551	243	182	24,652,300	18,113,493	433	333
12. Maintenance of equipment.....	11,747,636	59,912,634	497	258	57,956,197	28,199,537	971	473
13. Traffic.....	3,517,435	3,609,413	24	24	1,568,114	2,362,132	26	40
14. Transportation.....	171,597,296	128,893,684	737	555	83,531,375	64,215,636	1,399	1,088
15. Miscellaneous operations.....	3,376,553	2,968,545	13	13	1,637,385	1,377,702	27	27
16. General.....	8,590,329	7,928,576	37	34	3,792,699	3,469,467	64	54
17. Transportation for investment—Cr.....	477,298	787,662	2	3	44,525	96,184	1	1
18. Railway operating expenses.....	358,987,665	246,918,741	1,544	1,063	173,093,545	117,641,783	2,899	1,988
19. Net revenue from railway operations.....	143,771,957	119,304,860	617	514	61,923,934	50,479,994	1,037	855
20. Railway tax accruals (excluding "War Taxes").....	15,596,966	14,774,951	67	64	6,048,494	5,838,464	104	99
21. Uncollectible railway revenues.....	\$1,907	\$7,917	...	...	1,515	27,068	...	...
22. Railway operating income.....	128,173,081	104,477,891	550	450	55,803,933	44,144,466	934	754
23. Equipment rents.....	1,013,144	1,617,885	4	17	643,574	3,000,076	11	81
24. Joint facility rent (Dr. Bal.).....	1,586,694	1,468,951	7	6	863,526	744,788	15	12
25. Net of items 22, 23 and 24.....	127,549,531	101,386,055	547	447	55,388,833	41,087,644	931	689
26. Ratio of operating expenses to operating revenues.....	71.42	67.41	...	...	73.65	69.97	...	...

Item	SOUTHERN DISTRICT				WESTERN DISTRICT			
	Amount		Per mile of road operated		Amount		Per mile of road operated	
	1918	1917	1918	1917	1918	1917	1918	1917
1. Average number miles operated.....	42,854.34	42,762.32	...	...	136,888.11	136,181.11	...	...
REVENUES								
2. Freight.....	\$54,088,225	\$37,104,308	\$1,262	\$868	\$133,660,435	\$107,471,288	\$1,000	\$790
3. Passenger.....	16,360,440	11,405,914	465	267	41,614,413	30,957,120	319	230
4. Mail.....	724,363	733,747	17	17	1,606,888	1,606,676	12	12
5. Express.....	1,711,856	1,235,631	40	29	3,304,663	3,000,000	26	21
6. All other transportation.....	815,174	707,396	19	17	4,118,381	3,616,497	30	26
7. Incidental.....	1,380,639	955,937	32	22	3,161,084	3,371,187	27	26
8. Joint facility—Cr.....	145,330	95,118	3	2	116,853	107,254	1	1
9. Joint facility—Dr.....	66,638	22,896	...	1	48,307	2,662	...	...
10. Railway operating revenues.....	78,775,990	52,214,155	1,848	1,221	188,966,153	145,837,669	1,438	1,111
EXPENSES								
11. Maintenance of way and structures.....	9,342,230	6,614,733	218	155	22,591,331	17,665,325	177	130
12. Maintenance of equipment.....	18,053,700	9,803,700	431	231	39,737,619	21,909,971	300	168
13. Traffic.....	646,548	979,321	15	23	1,303,246	2,267,960	10	18
14. Transportation.....	25,338,742	17,303,806	596	406	62,727,179	47,374,242	481	369
15. Miscellaneous operations.....	326,518	254,379	8	6	1,412,650	1,336,464	11	10
16. General.....	1,611,071	1,166,021	38	27	3,485,929	3,293,038	27	27
17. Transportation for investment—Cr.....	66,413	132,438	...	3	316,860	559,040	...	4
18. Railway operating expenses.....	54,953,026	35,988,948	1,285	842	130,941,094	93,288,010	1,005	717
19. Net revenue from railway operations.....	23,822,964	16,225,207	559	379	58,025,059	52,549,659	433	404
20. Railway tax accruals (excluding "War Taxes").....	2,318,525	1,334,340	54	31	677,437	677,437	58	58
21. Uncollectible railway revenues.....	740	6,068	...	...	1,515	27,068	...	...
22. Railway operating income.....	21,494,649	13,983,288	505	348	56,846,111	45,872,184	390	347
23. Equipment rents.....	314,964	1,337,583	7	31	...	...	...	...
24. Joint facility rent (Dr. Bal.).....	662,477	144,000	3	6	...	...	...	...
25. Net of items 22, 23 and 24.....	21,497,140	15,185,778	508	348	50,316,471	45,339,673	388	344
26. Ratio of operating expenses to operating revenues.....	69.70	68.90	...	...	69.93	69.93	...	...

*Debit item.

Note: The average railway operating income corresponding to item No. 25 above for the month of August for the years 1914, 1915, 1916, 1917, 1918 and 1919 was \$396 per mile of line for the Eastern District, \$500 for the Southern District, and \$481 for the Western District.

Traffic News

The annual meeting of the National Industrial Traffic League will be held at the Hotel Sinton, Cincinnati, O., on November 21 and 22. The docket for the meeting will be distributed about November 10, giving in detail the subjects to be considered.

Grain for Newport News has been temporarily embargoed on account of the inability of the Chesapeake & Ohio to take any more cars for that point. This failure on the part of the C. & O. is due to the influenza epidemic which has incapacitated a large number of train service employees. As a result of the embargo about 250,000 bushels of oats is now being held in Minneapolis and St. Paul waiting for other disposition.

Reduced passenger fares for soldiers and sailors are not desired by the War Department, which does not approve the Calder bill, proposing a cent a mile rate. While it is recognized that such legislation would be very acceptable to the officers and enlisted men of the army, the department feels that it would result in an increase of travel over the already much congested railroads incommensurate with any advantage gained.

The Indiana State Chamber of Commerce is to establish at Indianapolis a freight bureau, with a view to exercising the highest intelligence in securing for Indiana, from the railroads, every traffic advantage that belongs to that state. The members of the Chamber are said to have resolved to "wage a fight" against alleged discrimination in freight rates in favor of Illinois as against Indiana. The new bureau will be in charge of a committee of 15, who will represent all parts of the state; and an appropriation of \$12,000 a year has been made to maintain the bureau.

The Shreveport (La.) Chamber of Commerce has adopted resolutions calling the attention of the director general of railroads to the intimate connection between rate adjustments and the success of Liberty Loan campaigns. The Shreveport merchants feel a growing uneasiness over the probable effect of proposed rate revisions, such as the proposed readjustment of lumber rates between points in Texas, contemplated increases in commodity rates from St. Louis, and the proposed new mileage scales for southern and western territories. While the Chamber of Commerce does not question the justification for further necessary blanket increases nor object to the correction of specific maladjustments that may have been caused by General Order No. 28, it does believe wholesale changes in rate relationships will tend to unsettle business conditions and endanger the success of future bond sales.

Transit Privileges Extended

The Railroad Administration has arranged a plan by which milling-in-transit and transit privileges generally at the various transit points will be available via all lines, so that commodities shipped into a transit point may, on surrender of the bill of lading, be shipped out at the balance of the through rate, over any line.

Precautions Against Freezing

Director General McAdoo has issued a statement asking the co-operation of shippers in the conservation of perishable food products. He says:

"The loss of fruit and vegetables on account of freezing during the course of transportation in winters past has been enormous. The conservation of food, as urged by the Food Administration, makes it particularly necessary to give serious consideration to the protection of fruits and vegetables with the approach of winter. Extra precaution in the packing, as well as protection against exposure at the point of origin and destination is very essential. The Weather Bu-

reau advance notices of temperatures should be closely observed by shippers and shipments withheld when very low temperatures prevail and when forecasted. A delay to conserve the property is to the advantage of both shipper and consignee. The best protection available will not always protect perishable freight in extremely cold weather."

Coal Production

Production of bituminous coal during the week ended October 12 is estimated at 12,321,000 net tons, an increase over the corresponding week of last year of 12 per cent. For the first six months of the coal year of 1918 production of bituminous coal is estimated at 312,282,414 net tons, an increase of 37,745,242 net tons, or 13.7 per cent, as compared with the corresponding period of 1917. This, however, was 3.7 per cent behind the estimated requirements. During the week ending October 5, the percentage of full time output lost on account of car shortage is reported at 5½ per cent.

For the week ending October 12 production of anthracite is estimated at 1,955,000 net tons, a decrease of 4.7 per cent compared with the preceding week.

The Car Service Section of the Railroad Administration reports the total loading of coal for the week ending October 5 as 270,909 cars, as compared with 236,154 in the corresponding week of 1917. For the week ended October 12, with the figures for some roads estimated, the increase in coal loading in 1918 up to October 12 over the same period of 1917 was 713,076 cars.

Reductions on Sheep and Apples

The traffic department of the Railroad Administration has authorized the establishment on one day's notice of a rule to provide that: Sheep in carloads, originating in Arizona, California, Colorado, Idaho, Kansas, Minnesota, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington or Wyoming, may be stopped at West Chicago, Illinois, to be rested, fed and watered at public feed yards for a period not exceeding six months, on a basis of the lawful tariff rate from point of origin to final destination in effect on date of shipment from point of origin, provided sheep remain in possession of and under control of carrier. Sheep handled through public feed yards, served by carrier's rails to be considered as being in possession of carrier. All excess weight from stopping point to be charged for at local rate from stopping point. Where carrier furnishes food, the charge therefor will be current market price plus 10 per cent in addition to charge for labor incident to the feeding of the stock.

Tariff authority has also been issued for the publication on one day's notice of a minimum rate of \$1.10 per hundred pounds on apples, in carloads, from Pacific coast states to eastern territory where the rate in effect prior to May 25, 1918, was \$1.00 or less; and where the rate in effect on May 25, 1918, was higher than \$1.00, then the new rate will be 10 cents higher per hundred pounds above the old rate. These are reductions from the rates established by General Order 28 and will be published as emergency rates to expire May 31, 1919. The old rate on apples from Pacific Coast states to eastern territory was generally \$1.00 per hundred pounds, and was advanced by General Order 28 to \$1.35.

Pooling of Stock Trains Out of South St. Paul

In August the Northwestern regional director initiated a plan under which train-lot movements of live stock between South St. Paul, Minn., and Chicago are confined to four roads, alternating by trains. During the month of September an aggregate of 2,990 cars was moved in this manner by the Chicago, Burlington & Quincy, the Chicago, Milwaukee & St. Paul, the Chicago Great Western and the Chicago, St. Paul, Minneapolis & Omaha (Chicago & North Western). A total of 53 trains were run with an average of 56 cars per train. Allowing one hour for weighing the stock and making deliveries of cars to the carrying line, no train was delayed to exceed 20 minutes; and all but three trains out of the 53 started on time. All of the trains made the trip to Chicago within the 36-hr. limit set for the run.

Equipment and Supplies

The War Department's inquiries for freight cars for service on the military lines in France are classified as follows: 4,060 flat cars, 9,670 low-side gondolas, 7,135 high-side gondolas, 7,840 gondolas with cabs, 10,010 box cars, 550 refrigerator cars and 1,050 tank cars, making a total of 40,315. Bids are being received this week.

600 More Standard Locomotives Ordered

The United States Railroad Administration has ordered for 1919 delivery 600 locomotives in addition to the 1,415 which it has already ordered. Of these, 500 will be built by the American Locomotive Company and 100 by the Lima Locomotive Corporation. The orders are distributed as follows: American Locomotive Company, 150 eight-wheel switchers, 200 light Mikados, 50 heavy Mikados, 25 light Santa Fe and 75 2-8-8-2 type Mallet; Lima Locomotive Corporation, 50 six-wheel switchers and 50 light Mikados. Bids have been asked for the specialties, which will be in accordance with the standard specifications used for the previous orders.

The United States Railroad Administration has authorized the building of 2,000 100-ton coal cars for the Virginian, to be equipped with six-wheel trucks and to conform generally to the standard specifications. This departure from the standards is authorized to enable the Virginian to use larger cars, which its grades make desirable, than the standard cars already ordered.

Cars Built in Railroad Shops

A total of 5,701 freight cars and 85 passenger cars have been constructed in railroad shops from January 1 to August 31 this year, according to reports to the Mechanical Department of the Railroad Administration. For the first six months of the year 4,414 freight cars were built and 66 passenger cars. In July 518 freight cars and 9 passenger cars were built and in August 769 freight cars and 10 passenger cars. The total by classes for the eight months period is as follows:

NEW CARS CONSTRUCTED IN RAILROAD SHOPS

Class of Cars	Steel	Steel under-frame	Steel under-sellers	Wood	Total
PASSENGER					
Sleeping	..	..	..	..	..
Parlor	..	..	..	..	..
Dining	..	..	..	..	..
Parlor observation	..	..	..	..	..
Passenger coach	..	..	..	..	..
Passenger baggage	1	..	..	1	2
Passenger and mail	..	..	..	4	4
Mail	..	..	..	..	..
Baggage and mail	..	..	..	..	..
Baggage	21	3	..	..	24
Express	..	1	..	19	21
Express and refrigerator	..	..	..	..	..
Horse express	..	..	..	..	..
Milk	..	..	..	3	3
TOTAL PASSENGER EQUIPMENT	36	4	0	55	85
FREIGHT					
Stock	..	..	..	..	..
Hopper	..	..	..	..	..
Gondola	..	..	..	..	..
Flat	118	..	..	135	253
Coke rack	..	..	..	..	..
Work cars	..	..	..	57	57
Miscellaneous freight cars	..	..	..	..	..
Caboose	..	..	..	..	..
Box	501	..	1,785	2,286	2,786
Refrigerator	18	..	..	..	18
TOTAL FREIGHT EQUIPMENT	6	1,365	1	4,381	5,751
TOTAL FREIGHT AND PASSENGER	6	1,369	1	4,381	5,751

Locomotives

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for one 30-in. gage locomotive weighing about 25 tons, and one standard gage locomotive, weighing about 70 to 80 tons of the Consolidated or Ten-wheel type.

Supply Trade News

Oscar F. Ostby, railway supplies, has moved his office from 2736 Grand Central Terminal, New York, to Room 1044 in the same building.

Charles V. Eads, formerly connected with the Sarco Company, at Chicago, has become associated with the Lehon Company, in charge of its waterproofing department, and will have his headquarters in Chicago.

H. D. Megary, assistant to the president of the Chicago Pneumatic Tool Company, with headquarters at Chicago, has been elected secretary, with the same headquarters, succeeding W. B. Seelig, resigned. Mr. Megary will continue to act as assistant to the president.

Lloyd H. Atkinson has resigned as vice-president of the Air Reduction Company, Incorporated, 120 Broadway, New York. Mr. Atkinson has been in poor health for some time, as a result of overwork, and will take an extended vacation before engaging in one of the war service activities.

Phillips Wesley has been appointed manager in charge of the oxyhydrogen plant and sales office of the International Oxygen Company at Pittsburgh, Pa. The company announces also that Jack Heller, long with L. Heller & Sons, has joined its New York sales force, succeeding Mr. Barnitz. George Quelch, one of the staff engineers of the International Oxygen Company, 115 Broadway, New York, sailed recently for England to supervise the installation of a 480-cell plant of I. O. C. unit oxyhydrogen generators for the British admiralty.

C. D. Morton has left his position as sales engineer for the Page Steel & Wire Company to become a captain in the general engineer depot, U. S. A., at Washington. Chas E. Goodnow, formerly assistant sales manager of the electrical and special wire department of the American Steel & Wire Company, and more recently identified with building construction work in Washington and Brooklyn for the army and navy, is now with the Page Steel & Wire Company. Mr. Goodnow's efforts will be devoted to sales and service on Armco iron welding rods and "Copperweld" electrical wire.

Lieut.-Colonel Lamont Promoted

Lieut.-Col. Robert Patterson Lamont, president of the American Steel Foundries, who has been assistant chief in the procurement division of the ordnance department of the army, has been promoted to succeed Brig.-Gen. Samuel McRoberts as division chief of ordnance, with headquarters at Washington, D. C. His military rank, however, continues the same. Col. Lamont was born at Detroit, Mich., on December 1, 1867, and graduated from the University of Michigan in 1891. After leaving college he was engaged as engineer of construction at the World's Columbian Exposition in Chicago, and from 1892 to 1897, was secretary and engineer of



Lieut.-Col. R. P. Lamont

the contracting firm, Shailer & Schinglau. He then became connected with the Simplex Railway Appliance Company as first vice-president. In 1905, he was elected first vice-president of the American Steel Foundries, and was elected president of that company in 1911.

Railway Officers

Railroad Administration

Central Administration

E. J. Rogers, formerly purchasing agent of the Chicago, Indianapolis & Louisville, who was appointed on October 1 general storekeeper of that road, the Cleveland, Cincinnati, Chicago & St. Louis; the Chesapeake & Ohio of Indiana, and a group of roads in that territory, has been furloughed and appointed manager of the Stores Section of the Central Advisory Purchasing Committee, with office at 601 G street, Washington. **U. K. Hall**, general storekeeper of the Union Pacific, has been appointed associate manager of the section, with office at the same address in Washington.

Regional

G. W. Jett, in addition to his duties as superintendent of telegraph of the Norfolk & Western, has been appointed supervisor of telegraph and telephone facilities for all roads in the Pocahontas Region.

Federal and General Managers

Phil Carroll, general manager of the Texas & Pacific, with office at Dallas, Texas, has had his jurisdiction extended over the Weatherford, Mineral Wells & Northwestern.

J. F. Murphy, general manager of the Missouri Pacific, the Chicago, Rock Island & Pacific line from St. Louis, Mo., to Kansas City, and the Memphis, Dallas & Gulf, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Arkansas Central, the Natchez & Southern and the Natchez & Louisiana Railroad Transfer, with the same headquarters, effective October 15.

Operating

J. A. Gillies, district engineer of the Atchison, Topeka & Santa Fe, western lines, at La Junta, Colo., has been appointed trainmaster at Dodge City, Kan.

J. W. Allen, whose promotion to superintendent of the Puget Sound division of the Northern Pacific, with headquarters at Seattle, Wash., was announced in the *Railway Age* of October 4, was born at La Porte, Ind., in June, 1861. Mr. Allen began his railway career in the freight office of the Wabash at Kansas City, Mo., in 1878. Three years later he went to the Mexican National, now a part of the Constitutionalist Railways of Mexico, in the auditor's office at Laredo, Texas. From 1884 to 1890, he was in charge of the export grain elevator of the Fitchburg Railroad, at Boston, Mass. In the latter year he entered the service of the Northern Pacific, as agent, at Seattle, Wash., and served in that capacity continuously until January, 1918, when he was appointed acting superintendent at Seattle, which position he held until his promotion to superintendent of the Puget Sound division, as mentioned above.

A. Patriarche has been appointed assistant to the federal manager of the Pere Marquette, in charge of traffic, having authority also over traffic matters of the Grand Trunk, west-

ern lines, the Detroit & Toledo Shore line, the Ann Arbor, the Detroit & Mackinac, the Detroit, Bay City & Western, and the Port Huron & Western, with office at Detroit, Mich.

J. K. Graham has been appointed manager of station operation of the Baltimore & Ohio Railroad, Eastern Lines; the Coal & Coke; the Wheeling Terminal Railroad; the Western Maryland; the Cumberland Valley, and the Cumberland & Pennsylvania, with headquarters at Baltimore, Md., in charge of station service, inspection of freight service and prevention of freight claims.

G. G. Derby, division superintendent of the Atchison, Topeka & Santa Fe at Arkansas City, Kan., has been transferred to the Southern Kansas division, with headquarters at Chanute, Kan. **J. E. McMahon**, division superintendent at Pueblo, Colo., has been transferred to the Oklahoma division, with office at Arkansas City, Kan., in place of Mr. Derby. **O. J. Ogg**, trainmaster at Raton, N. M., has been promoted to assistant superintendent of the Panhandle division at Wellington, Kan. **A. Ewing**, division superintendent at Clovis, N. M., has been transferred to Dodge City, Kan., in place of **H. A. Tice**, who has been transferred to Pueblo, Colo. **C. E. Smyer**, trainmaster at Dodge City, Kan., has been promoted to division superintendent at Clovis, N. M., to succeed **A. Ewing**.

Financial, Legal and Accounting

D. A. Barton has been appointed auditor of freight receipts of the Denver & Rio Grande, with headquarters at Denver, Colo., succeeding **F. M. Dewees**, deceased. Effective October 16.

T. O. Edwards, general auditor of the Southern Pacific (lines south of Ashland), has been appointed federal auditor, with headquarters at San Francisco, Cal. The title of general auditor is abolished.

J. F. Evans, general auditor of the Western Pacific: the Tidewater Southern, and the Deep Creek, has been appointed federal auditor, with headquarters at San Francisco, Cal. The title of general auditor is abolished.

George Thompson, general solicitor of the Texas & Pacific and other roads under the authority of **J. L. Lancaster**, federal manager, with headquarters at Dallas, Texas, has had his jurisdiction extended over the Weatherford, Mineral Wells & Northwestern.

F. M. Hickman, acting federal treasurer of the Missouri Pacific, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Arkansas Central, the Natchez & Southern and the Natchez & Louisiana Railroad Transfer, with the same headquarters, effective October 15.

W. M. Edgar, general superintendent and treasurer of the Weatherford, Mineral Wells & Northwestern, has been appointed acting federal treasurer, with office at Weatherford, Texas. **S. B. Smith**, auditor and assistant general freight and passenger agent, has been appointed auditor, with office at Weatherford.

The title of the following officers of the Southern Pacific (lines south of Ashland, Ore.), are now as follows: **Robert Adams**, assistant federal auditor; **F. L. McCaffery**, auditor of disbursements; **F. W. Pope**, auditor of freight accounts; **O. F. Giffin**, auditor of passenger accounts, and **W. H. Dewey**, auditor of equipment service accounts, all with headquarters at San Francisco, Cal.

E. J. White, general solicitor of the Missouri Pacific, the St. Louis Southwestern, the Louisiana & Arkansas and the Memphis, Dallas & Gulf, and **F. P. Johnson**, general auditor of the Missouri Pacific and the Memphis, Dallas & Gulf, with headquarters at St. Louis, Mo., have had their jurisdictions extended over the Arkansas Central, the Natchez & Southern and the Natchez & Louisiana Railroad Transfer, effective October 15.

L. J. Hensley, general auditor of the Kansas City Southern and auditor of the Texarkana & Ft. Smith, with headquarters at Kansas City, Mo., has been appointed federal auditor of these roads, the Midland Valley, the Houston East & West Texas, the Vicksburg, Shreveport & Pacific, the Kansas City,



J. W. Allen

Mexico & Orient, the Missouri & North Arkansas and the Joplin Union Depot. All auditors for the individual lines appointed heretofore will be under the jurisdiction of the federal auditor.

A. J. Biard, general auditor of the Texas & Pacific and the Trans-Mississippi Terminal, with office at Dallas, Texas, has been appointed general auditor also of the St. Louis Southwestern of Texas; the International & Great Northern (excluding line from Spring to Ft. Worth and Madisonville branch); the Trinity Branch of Missouri, Kansas & Texas of Texas; the Beaumont & Great Northern; the Galveston, Houston & Henderson; the Houston & Brazos Valley, and the Weatherford, Mineral Wells & Northwestern, with headquarters at Dallas, Texas.

O. H. Bower, auditor of the Missouri, Kansas & Texas of Texas and the Union Terminal of Dallas, has been appointed general auditor of those lines and the Gulf, Colorado & Santa Fe; the St. Louis, San Francisco & Texas; the Ft. Worth & Rio Grande; the Brownwood, North & South; the Texas Midland; the International & Great Northern (from Spring to Ft. Worth & Madisonville branch); the Ft. Worth Belt; the Houston Belt & Terminal; the Wichita Falls & Northwestern; the Ft. Worth & Denver City; the Wichita Valley; the Houston & Texas Central; the Abilene & Southern, and the Ft. Worth union passenger station; effective October 16.

Traffic

The jurisdiction of **W. L. Martin**, traffic manager of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been extended over the Duluth, South Shore & Atlantic and the Mineral Range.

H. S. Smith has been appointed chief of tariff bureau of the Chesapeake & Ohio; the Ashland Coal & Iron Railroad; the Sandy Valley & Elkhorn, and the Long Fork Railroad, vice **R. A. Knightly**, deceased.

J. B. Payne, traffic manager of the Texas & Pacific and other roads under the authority of **J. L. Lancaster**, federal manager, with headquarters at Dallas, Texas, has had his authority extended over the Weatherford, Mineral Wells & Northwestern.

C. E. Perkins, freight traffic manager, and **C. L. Stone**, passenger traffic manager of the Missouri Pacific, the St. Louis Southwestern, the Louisiana & Arkansas and the Memphis, Dallas & Gulf, with headquarters at St. Louis, Mo., have had their jurisdictions extended over the Arkansas Central, Natchez & Southern and the Natchez & Louisiana Railroad Transfer, with the same headquarters, effective October 15.

The jurisdiction of the following officers of the Kansas City Southern has been extended over the Missouri & North Arkansas: **R. R. Mitchell**, general freight agent; **J. R. Mills**, assistant general freight agent; **S. G. Warner**, general passenger agent; **F. D. Downie**, general baggage agent, and **J. W. Spoor**, live stock agent, all with headquarters at Kansas City, Mo. **C. E. Veach**, general freight and passenger agent, has been appointed division freight and passenger agent, with headquarters at Harrison, Ark.

Engineering and Rolling Stock

J. L. Kirby, division engineer of the Seaboard Air Line, with office at Atlanta, Ga., has been appointed engineer maintenance of way, with office at Norfolk, Va., vice **J. C. Nelson**, deceased.

Silas Zwight, general master mechanic, and **W. J. Bohan**, mechanical engineer of the Northern Pacific, have been appointed assistant mechanical superintendents, both with headquarters at St. Paul, Minn.

E. F. Mitchell chief engineer of the Texas & Pacific and other lines under the authority of **J. L. Lancaster**, federal manager, with headquarters at Dallas, Texas, has had his authority extended over the Weatherford, Mineral Wells & Northwestern.

D. E. Helvern, division engineer on the Atchison, Topeka & Santa Fe, at Pueblo, Colo., has been promoted to engineer

of the northern district, western lines, with headquarters at La Junta, Colo., succeeding **J. A. Gillies**, appointed trainmaster at Dodge City, Kan.

S. A. Jordan, assistant division superintendent of the Baltimore & Ohio, with office at Brunswick, Md., has been appointed engineer maintenance of way of the Baltimore & Ohio Railroad, Eastern Lines, and the Coal & Coke Railroad, with headquarters at Baltimore, Md., vice **J. B. Myers**, assigned to other duties.

H. R. Carpenter, chief engineer of the Missouri Pacific, the St. Louis Southwestern, the Louisiana & Arkansas and the Memphis, Dallas & Gulf, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Arkansas Central, the Natchez & Southern and the Natchez & Louisiana Railroad Transfer, with the same headquarters, effective October 15.

Our statement in the issue of October 11, page 683, to the effect that the jurisdiction of **H. Rettinghouse**, chief engineer of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., was extended over the St. Paul Union Depot Company, succeeding **W. C. Armstrong**, was incorrect in that Mr. Armstrong remains chief engineer of the St. Paul Union Depot corporation, which is now engaged in the construction of the Union station at that point. Mr. Rettinghouse has taken over only those duties of Mr. Armstrong incident to the operation of the existing station.

Purchasing

C. S. Filler has been appointed storekeeper of the Baltimore & Ohio Railroad, Eastern Lines, with office at Keyser, W. Va., vice **E. A. Workman**, transferred.

R. L. Irwin, purchasing agent of the Texas & Pacific and all other lines under the authority of **J. L. Lancaster**, federal manager, with headquarters at Dallas, Texas, also becomes purchasing agent of the Weatherford, Mineral Wells & Northwestern.

Charles A. How, purchasing agent of the Missouri Pacific, the St. Louis Southwestern, the Louisiana & Arkansas and the Memphis, Dallas & Gulf, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Arkansas Central, the Natchez & Southern, and the Natchez & Louisiana Railroad Transfer, with the same headquarters, effective October 15.

The following officers have been appointed on the Baltimore & Ohio, Eastern Lines: **T. C. Hopkins**, assistant storekeeper, at Glenwood, Pa., appointed storekeeper, with the same headquarters, vice **T. H. Barker**, assigned to other duties; **T. B. Cushing**, appointed assistant storekeeper, at Foxburg, Pa., vice **A. D. Rosier**, assigned to other duties, and **L. A. Ahear**, appointed assistant storekeeper, at Allegheny, Pa., vice **S. W. Adams**, assigned to other duties.

J. H. Clemmitt, whose appointment as purchasing agent of the Norfolk & Western, with office at Roanoke, Va., was announced in the *Railway Age* of October 11, was born November 20, 1881, in Richmond, Va. He was educated in the public schools and entered the service of the Norfolk & Western in November, 1896, filling various positions in the office of the purchasing agent. His entire railroad and business experience has been with the Norfolk & Western. On December 1, 1913, he was appointed chief clerk, which position he held until his recent appointment as purchasing agent as above noted.

Corporate

Executive, Financial, Legal and Accounting

J. F. Aitchison, special auditor of the Grand Trunk and Grand Trunk Pacific, has been appointed acting auditor of disbursements on the Grand Trunk and the Grand Trunk Pacific.

J. M. Rosevear, auditor of disbursements of the Grand Trunk and the Grand Trunk Pacific, with office at Montreal, Que., has been appointed general auditor, with the same headquarters.

W. D. Robb, vice-president of the Grand Trunk, with office at Montreal, Que., has assumed the duties of **U. E. Gillen**, vice-president in charge of transportation, who is absent on account of illness.

C. B. Ferry, vice-president and assistant secretary of the Chicago, Milwaukee & St. Paul, with headquarters at New York, has also been appointed corporate treasurer, with the same headquarters, succeeding **A. G. Loomis**, who is now federal treasurer.

D'Alton C. Coleman, assistant general manager of the Canadian Pacific Western Lines, has been appointed vice-president of the western lines, with headquarters at Winnipeg, Man., succeeding **Grant Hall**, promoted to vice-president in charge of operation of the Canadian Pacific system, with headquarters at Montreal, Que.

T. D. Heed, receiver of the Chicago & Eastern Illinois, with headquarters at Chicago, has been elected president, succeeding **W. J. Jackson**, who is now federal manager of that road. **Alvin W. Krech**, chairman of the board of directors of the Western Pacific and president of the Carolina & Yadkin River, with headquarters at New York, has been elected vice-president of the Chicago & Eastern Illinois, with headquarters at New York. **W. H. Lyford**, general counsel of the Chicago & Eastern Illinois, with headquarters at Chicago, has also been elected vice-president, with the same headquarters. **F. R. Austin**, assistant auditor, has been appointed secretary and auditor, with headquarters at Chicago, succeeding **H. J. Cronin**. **R. R. Hunter** has been appointed assistant secretary, with headquarters at New York.

Operating

C. H. Towle, assistant superintendent of the Canadian Pacific, with office at Sudbury, Ont., has been appointed assistant superintendent, Smith Falls Division.

J. K. Savage, superintendent of the Canadian Pacific, Ontario district, has been appointed assistant general superintendent, with headquarters at Toronto, Ont.

R. A. Sewell has been appointed assistant superintendent, Montreal Terminals Division of the Canadian Pacific, with office at Montreal, Que., vice **R. W. Scott**, promoted.

T. A. Wilson, assistant superintendent of the Canadian Pacific, with office at Smiths Falls, Ont., has been appointed superintendent, Smiths Falls division, vice **J. K. Savage**, promoted.

R. W. Scott, assistant superintendent of the Canadian Pacific, with office at Montreal, Que., has been appointed superintendent of the Trenton Division, with office at Toronto, Ont., in place of **W. J. Uren**, transferred.

Charles Murphy, general superintendent of the Manitoba district of the Canadian Pacific, has been promoted to general manager of the western lines, with headquarters at Winnipeg, Man., succeeding **D. C. Coleman**, promoted. **A. E. Stevens**, general superintendent of the Saskatchewan district, has been transferred to Winnipeg as general superintendent of the Manitoba district in place of Mr. Murphy. **W. A. Mather**, assistant general superintendent of the British Columbia district, has been promoted to general superintendent of the Saskatchewan district, with headquarters at Moose Jaw, Sask., to succeed Mr. Stevens. **C. A. Cotterell**, superintendent of the Medicine Hat division, has been promoted to assistant general superintendent of the British Columbia division, with headquarters at Vancouver, B. C., succeeding Mr. Mather.

Engineering and Rolling Stock

C. Gribbon has been appointed division master mechanic of the Canadian Pacific, London division, with office at London, Ont., in place of **A. Maynes**, transferred.

George W. Hand, valuation engineer of the Chicago & North Western, has been appointed corporate engineer of the same road and the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Chicago, effective November 1.

Obituary

Charles L. Thomas, chairman of the Cincinnati district freight traffic committee of the United States Railroad Administration and traffic manager of the Baltimore & Ohio, Western lines, with headquarters at Cincinnati, Ohio, died in that city on October 15. Mr. Thomas was born at Jersey City, N. J., on May 3, 1864, and began railway work in 1881 with the Chicago & Atlantic (now a part of the Erie) as bookkeeper and assistant paymaster in the construction department. He filled various minor positions in the freight department from May, 1883, to October, 1890, when he was made division freight agent. He was then successively assistant general freight agent and general freight agent until July, 1896, when he became general freight agent of the Erie lines west of Salamanca and Buffalo. In November, 1905, he was promoted to assistant freight traffic manager of those lines and the Cincinnati, Hamilton & Dayton, with headquarters at Cincinnati, Ohio. In December of that year he became general traffic manager of the Cincinnati, Hamilton & Dayton, and in March, 1911, was appointed freight traffic manager of that road and the Baltimore & Ohio Southwestern. He was also appointed general traffic assistant of the Baltimore & Ohio in January, 1915. In October, 1916, he became freight traffic manager of the Baltimore & Ohio at Cincinnati, Ohio, and in July of this year he was appointed traffic manager of the western lines, with headquarters at Cincinnati. When the Cincinnati district traffic committee was appointed in July, Mr. Thomas was made chairman of that committee also.

Robert M. Dixon, president of the Safety Car Heating & Lighting Company, and of the Pintsch Compressing Company, New York, died at his home in East Orange, N. J.,



R. M. Dixon

October 16, of heart disease. Mr. Dixon had been associated with the Safety Car Heating & Lighting Company or one of its predecessors since 1883. He was born September 19, 1860, at East Orange, N. J., in the house where he lived at the time of his death. He was educated in the public schools and graduated from Stevens Institute of Technology in the class of 1881 with the degree of mechanical engineer. For two years he was employed with the Delaware Bridge Company, of Trenton, N. J., leaving that company in March, 1883, to become assistant engineer of the Pintsch Lighting Company, which was merged with the Safety Car Heating & Lighting Company in 1887, with Mr. Dixon as chief engineer. He was elected vice-president of the company on January 15, 1902, and became its president in May, 1907, which office he held at the time of his death. Mr. Dixon spent the greater part of his life in the field of railway car heating and lighting, being identified with the first application of steam from the locomotive for heating railway passenger cars and with the development of gas and electricity for lighting railway cars. He was also active in the field of harbor and coast lighting. Mr. Dixon was a member of the American Society of Mechanical Engineers for 35 years. He was a trustee and a member of the finance committee of the United Engineering Societies from 1917 until the time of his death. He was also active as an executive officer of the New York Railroad Club from its early days. He served as treasurer since 1903, prior to which he was chairman of the financial committee. He was a member of the executive committee of the club for 35 years.

EDITORIAL

Railway Age

EDITORIAL

Announcement

THE *Railway Age* was badly delayed last week because of a general strike of printing pressmen and assistants in practically all the printing plants in New York City. The men were out for eight days. Without attempting to discuss the causes, it is worthy of mention that because of the strike the larger portion of the important business periodicals of this country were delayed at a time when they have achieved a new importance in American business life and when the news contained in them is of more than ordinary importance because of its war-time nature. This issue of the *Railway Age* is being made up on the usual schedule but it also may be slightly delayed because of the piling up of work ahead of it.

A speaker at a recent convention expressed the psychology of compensation most aptly when he said that the scale of living is largely a matter of comparison. A man and his family are in need of a larger income just as soon as their neighbors have more money to spend. This has been the principal

A Continuous Performance

difficulty of the Railroad Administration in dealing with the wages of employees and there is no doubt but that the wage commission was thoroughly cognizant of this fact in making the recommendations which afterward comprised Order No. 27. By proposing to make all increases entirely on a percentage basis it was expected to effect a minimum disturbance. That this plan was not a complete success is accounted for largely by the fact that the relationship had been destroyed after the date upon which the rates were based so that it was necessary to offer greater inducements to certain classes of employees than were provided by Order No. 27 to get them to stay in the service. Having once disturbed the balance of relative compensation as it had existed in the past, each class of employees in turn has presented evidence to show that it was the victim of discrimination, and in recognizing these inequalities in the successive supplemental orders, new inequalities have been introduced which give rise to new petitions for relief. Now come the brotherhoods with petitions for what they want. Whatever the terms of their present grievance there is no question but that the underlying cause for complaint is not so much a matter of the relation between their wages and the increased cost of living as it is that the advances accorded to other classes of railway employees have tended to destroy the prestige which they have enjoyed as a favored class. The end is not yet.

Fuel economy is not only a necessity at this time but it is vital to the success of this country and our Allies in winning the war.

Locating and Strengthening Weak Spots

The railroads are awakening to the important part that they have to play in the conservation program. Many officers and men who did not realize that they were important factors in the situation are giving the problem thoughtful consideration with excellent results. The enginemen can hardly be expected to put forth very great efforts if they do not see a disposition on the part of the management and the various

departments to back them up in any efforts that they may make. On the other hand, the engine crew is a very important factor in the situation so far as fuel economy on the engine itself is concerned. The draft and other causes have made it necessary to break in many new men. Under the most favorable conditions there is very wide variation in the performance of different crews on even one division. Some men are better trained for their work, have a higher conception of their duty, or are naturally better adapted for their work than are others. These men do not need very much attention; they will respond generously to an appeal such as is being made to them at the present time. Other men consistently make poor records and their standard of performance is low. The quickest results can be obtained by locating these men and concentrating efforts upon them. This is not such a very difficult problem even on roads where little attention is given to individual fuel performance. The important thing is to so organize the supervision and place such checks upon the individual performance that those who are making the poorest performance may be quickly located and coached so that they can at least be brought up to the present average performance.

There will not be much difficulty about dividing the credit for the excellent showing made by the railway men of this

The Fourth Liberty Loan

country during the Fourth Liberty Loan campaign. The results obtained were so excellent that there is honor and credit enough for everybody and perhaps still some to spare. Credit is due to the director general for the easy terms of payment he allowed, to the regional directors and officers who directed the campaigns in their regions or on their roads, to the committee chairman and members who signed up the subscriptions, and to the subscribers who came across so splendidly and helped raise the 100 per cent honor flags on so many railroads. The *Railway Age* doubts if there is any other industry which achieved as good results as the railways. The railwaymen subscribed for a total of about \$170,000,000 in bonds through their railroads. The total of \$106,000,000 made in the Third Loan was not doubled as many had hoped it would be, but when one considers the intensive campaign that was made in the Third Loan an increase of 60 per cent is something to feel proud of. The figures that appeal most, however, are the high proportion of subscribers and the high average amount subscribed. There are few other companies in any industry that can show 91,000 employees with every employee subscribing an average of \$106, as on the New York Central; every one of 22,162 employees subscribing on the average \$112 each as on the Lackawanna; or every one of 25,110 employees subscribing \$111 each on the average as on the Lehigh Valley. We would like to know how many other companies of any kind in this country can show such records as the Wheeling & Lake Erie, every one of 5,745 employees subscribing for an average of \$140 each, the Grand Rapids & Indiana with every one of 2,922 employees subscribing for an average of \$141 each, the Lehigh & Hudson River with 750 employees reaching \$150 each, and so on through a long list of roads. The drive was made for 100 per cent subscribers and subscriptions in 100 per cent amounts. It achieved both.

Efficiency of Freight Train Operation

THE STATISTICS of freight train operation since government control was adopted afford material for an interesting study. Government control was adopted largely, if not mainly, to increase efficiency of freight train operation. The proponents of government operation are making a strong effort to convince the public that this has been not merely accomplished, but accomplished to such a striking degree as to justify basing upon it arguments in favor of permanent government management.

Some of the statistics seem to support this view. Some of them seem to indicate a marked decline of efficiency. When it is possible to take part of the statistics bearing upon a subject, and apparently prove one thing with them, and to take others and apparently prove the opposite, either there is something wrong with the statistics, or in order intelligently to understand and interpret them it is necessary to ascertain carefully and give full weight to the conditions which have affected the operations whose results the statistics are supposed to reflect. There is nothing wrong with the statistics in this case. The explanation of their apparent inconsistency is to be found mainly in the changes in the conditions under which the railways are operated which have occurred since last year.

The statistics regarding freight operations in July, 1918, which are the latest available, illustrate this fact as well as any. They show in the first place, that the total ton-miles in that month were almost exactly the same as in July, 1917. They also show that the railways had more cars and locomotives than in July, 1917, and that therefore, ton-miles per car and per locomotive were less than a year ago. This would seem to indicate a decline of efficiency. But it does not necessarily for these reasons, among others:

First, the policy of the Railroad Administration is to send traffic as much as possible over the shortest available routes. This tends to reduce the average distance each ton is hauled. Therefore, the fact that ton miles were stationary may have been due, not to the fact that the tonnage hauled was stationary, but to a reduction of the length of the average haul. Now, this apparently was what it was due to. All the figures available indicate that there was a reduction in the average haul and some increase in the total tonnage handled.

Second, the statistics regarding the number of cars and locomotives, especially the number of cars, in service as compared with last year, are misleading. They indicate, for example, that there were 94,000 more freight cars in service in July, 1918, than in July, 1917. But there were not. Most of this apparent increase is due to the fact that the roads are now being required to report as in service many cars they were not so reporting last year. If the statistics were compiled on exactly the same basis as last year, they would show little or no increase in cars in service and might show an actual reduction.

Again the statistics show an increase of the percentage of empty car mileage to total car mileage. It was confidently expected in some quarters that unified operation would reduce empty car mileage. Why has it increased? Largely because of the reduction of the production and consumption of so-called non-essential commodities. The non-essentials are largely articles which are made in the East and shipped westward. The essentials are in the main, especially since we are shipping such vast quantities of supplies to Europe, things that move eastward. Because of the reduction of the non-essentials handled and the increase of the essentials handled, the preponderance of the westbound over the eastbound movement has grown extremely large on many lines, making it necessary to send an increased number of cars westward, empty. During recent months, for example, there were accumulated on the western lines approximately 60,000 cars to handle the grain crop. Most of these had to be sent west empty.

The statistics show an increase of 39 tons in the average train load. This is being held up as vindicating the policy of the Railroad Administration in loading cars and trains to capacity. The uninitiated might be led to conclude that it was not James J. Hill, but the Railroad Administration that first exploited the "tonnage" system. As a matter of fact the increase in tons per train in July, 1918, over July, 1917, was just about the same as in the year 1917 over 1916 and in the year 1916 over 1915. While in past years the increase in tons per train was due mainly to increase in the number of cars per train, for which the railroad managements deserved the credit, the increase in the average tons per train this year has been entirely due to an increase in the average loading per car, for which shippers deserve some credit. In July, 1917, the average number of cars per train was 37.7, while in July, 1918, it was only 36.9. On the other hand, in July, 1917, the average tons per loaded car was 27.3, while in July, 1918, it was 30.1. Now, it is obvious to anybody who looks beneath the surface that this increase in the average carload, and the consequent increase in the average trainload, are largely due to the same cause as the increase in empty car mileage, viz., to the change in the relative amounts of non-essential and essential traffic handled. The so-called non-essentials are usually manufactured articles which move in small carloads, while most of the essentials, such as coal, ore, lumber and grain, move in large carloads. Therefore anything which increases the relative amount of essential traffic handled will automatically increase the average carload and trainload.

The statistics show an increase of 27,300, or 19 per cent, in the number of freight cars in or awaiting shop. This would seem to indicate that freight cars had been allowed seriously to deteriorate. Undoubtedly there has been deterioration. The number of new cars delivered this year has been far below the number normally required for replacements. Furthermore, until adequate increases were made in the wages of shopmen, the railways were so short of shop employees that there was a large increase in cars needing repairs. But the situation is not so bad compared with last year as the figures seem to indicate. As already noted, the roads are now being required to report as "in service" many cars they did not formerly so report. Now, many of these cars which formerly were not reported were really in bad order, and of course, when they began to be reported the bad order figures began to grow rapidly. Recent orders will cause many of these cars to be scrapped which will have exactly the opposite effect on the statistics.

Again, statistics indicate that there has been a decline in miles per car per day from 27.9 in July, 1917, to 26.5 in July, 1918, or 5 per cent. It was confidently assumed by the strong believers in unified operation that it would increase this figure. Why, in spite of unified operation, has it been reduced? Partly because, as already shown, there has been an increase of the number of bad order cars reported as in service. Partly because the railways accumulated a large number of cars in the west, and held them there to move the grain crop. Partly because of the decrease of other traffic as compared with coal traffic, cars handling coal making on the average less miles per day than most other cars.

On the whole, in spite of the fact that there has been no such increase in the total traffic handled as there was in 1916 and 1917, it is clear there has been at least a normal increase in the efficiency of freight train operation. The evidence of this increase of efficiency is that the traffic is being handled with much less delays and congestion than last year at this time. Anybody who attempts to show, however, that the increase of efficiency is due to government operation, or unification, or that it is as great as has been for years predicted would result from government operation, will have a hard job on his hands. Director General Mc-

Adoo has kept able and experienced men trained and developed under private management in charge of operation. In the main, they have acted on the same principles and used the same methods they did under private management. Such new methods as they have used with good effect have been chiefly methods which they fully understood and would gladly have used under private operation, but which foolish laws, for which the government itself was responsible, forbade them to use. Under private management of the railroads, the government made the most efficient practicable operation impossible by overwhelming the roads with preference and priority orders and refusing to let them pool their earnings, traffic and facilities. The government itself has set aside its own preference and priority orders; it is ignoring its own laws prohibiting co-operation between the railways; and it is using methods and brains developed under private management. There is no apparent reason for doubting that equally good results could and would have been obtained under private management if the shackles imposed by the government on the railroads had been broken.

In other words, the results argue eloquently against the folly and injustice the government showed in dealing with the railways under private operation rather than in favor of permanent government operation. The most important thing the government has done thus far is to remove the obstacles to good railroading which it had itself set up; and, these obstacles out of the way, the able railroad men in its service have got increased efficiency—just as they got increased efficiency year by year under private management in spite of government interference.

The Short Line Railroad Contract

THE RAILROAD ADMINISTRATION has offered the short lines a form of contract under which some 600 or 700 small railroads are to be restored in a sense to federal control, from which they were relinquished just before July 1, but will not be "unified" or "scrambled" into the government railroad system. They will not be paid any compensation but they will be given a considerable degree of protection against the conditions which have placed many of them in such an unfortunate plight since the plan of government control was adopted. While the contract is said not to be as liberal as desired, it has been accepted by the committee of the American Short Line Railroad Association and will probably be accepted by the individual companies.

The contract provides that the short lines are to remain under the direction and management of their owners and shall be entitled to all the revenues and responsible for all the expenses and obligations of operation; but provision is made for a fair division of joint rates and there is a guarantee of the same proportion of competitive traffic as was enjoyed on the average for the three years ending December 31, 1917. The short lines are to receive an equitable allotment of cars (and where feasible of motive power), a reclaim of two days' per diem on cars for roads not more than 100 miles long; they are to have as far as practicable the benefit of the purchasing agencies of the director general in the purchase of materials and supplies, and of government prices; and may have car and locomotive repairs made at the shops of connecting lines upon the same terms as they enjoyed before federal control.

Director General McAdoo, in discussing the short line question before a congressional committee, said he thought the short lines would find the government at least as benevolent a master as the trunk lines had been. As his organization consists mainly of former officers of the trunk lines, the short line owners have felt heretofore that they have had very little change in masters, except that the latter are now more powerful than before; and certainly the con-

dition of many of the short lines since the first of the year has been much worse than it was before. The short lines have been regarded by the Railroad Administration as a liability rather than as an asset; in fact, John Barton Payne, general counsel of the administration, gave the House Committee an estimate that their operation would result in a deficit for 1918 of over \$20,000,000, exclusive of any compensation, and this undoubtedly represented one of the reasons why the Railroad Administration did not care to take them over. Another reason was that some of the short lines undoubtedly made unreasonable demands for compensation and it was much easier to deal with a road that was desired after it had been relinquished or when it was possible to threaten it with relinquishment.

One of the most unfortunate features of the short line situation heretofore has been the uncertainty in which these roads have been left. Although served with the same notice that they had been taken over that the larger roads received, and with the earlier orders and notices of the director general giving them instructions of various kinds, which most of them obeyed, particularly as there was a legal penalty provided for failure to do so, many roads were dumfounded to be told later that they had not been taken over and that no jurisdiction had been exercised over them. There has always been the greatest uncertainty as to which roads were regarded as taken over and which not; and not knowing whether they were to receive any guarantee of compensation, many roads naturally fell into great difficulties in handling their financial matters with their local banks, particularly when a large proportion of their traffic was in many cases diverted to the government controlled lines, after the right of the shipper to route his freight had been abolished.

The wage question also brought difficulties. The short lines as well as other roads were directed to bulletin the director general's circular practically promising an increase in wages for the employees, yet when the wage order was issued it applied only to a list of the larger roads which had been definitely taken over. The short lines had generally to meet the government scale of wages in order to retain their employees and they will continue to have to do so, in most cases, although they have neither the backing of the federal treasury nor the control over rates which made it possible for the director general to advance wages before earning the necessary money.

In the matter of priority in orders for materials and supplies the short lines not taken over have been discriminated against. Railroads under federal control were given a rating of Class A-4, but the roads not under government control were placed in Class B-1. Under the government contract the short lines will presumably be given the same priority rating as the other roads. They had already been given the benefit of the higher rates for freight and passenger service as an offset to their increased expenses and under federal control they will doubtless be protected in these against any possible action of the state commissions. They will be assured their former proportion of competitive traffic and with the increased volume of business and the higher rates many of them ought to do very well—in fact the better situated of the short lines may fare better under such an arrangement than if their earnings were pooled and they were left dependent upon a guarantee. It is understood that the plan for guaranteeing the proportion of competitive traffic is retroactive to July 1, and that the roads will be compensated for any diversion of traffic.

Some of these lines probably ought never to have been built and in cases where their condition is such that they could not hope to be profitable on any reasonable basis it is probable that arrangements may be made for their being torn up and scrapped; and the present prices for scrap materials are such that some companies could sell their property probably for more than it cost them originally.

Letters to the Editor

We Had Thought of That

TO THE EDITOR:

I have read the editorial in your issue of October 18 entitled "Is This Necessary to Winning the War?" Don't you think it a little mean to suggest motives that apparently stand out so plainly in the circulars you criticize when another motive less plainly outstanding may be in reality the inspiring cause of the objectionable document? You know there is to be an election after a bit.

QUERIST.

Replacements in Kind

ST. PAUL, MINN.

TO THE EDITOR:

I have read with interest the article by Owen Ely in the *Railway Age* of September 20, regarding the inadequacy of the present depreciation accounts. Mr. Ely's statement, however, that the standard of "replacement in kind" was adopted by the Interstate Commerce Commission in relation to additions and betterments, is hardly in accordance with our understanding.

It is true that from 1907 to July 1, 1914, (the beginning of federal control), the basis mentioned by Mr. Ely was that required by the accounting classification of the commission. Effective July 1, 1914, however, that basis was changed, and the present basis of writing into the accounts, the value of the new unit of property and writing out of the accounts the original or ledger value of the unit replaced has been in effect. The quotations below from the "Classification of Investment in Road and Equipment" bring this out very clearly.

"*Property Retired and Replaced.*—When a unit of property other than land or equipment—such as a section of road, side or yard track, shop or power plant machine, building, or other structure, is retired from service and replaced with property of like purpose, the ledger value of the retired property shall be credited to the appropriate accounts of this classification at the time that the property is retired from service."

"If, however, the property retired and replaced with property of like purpose is of minor importance, such as a small roadway building or other small structure, and is replaced in kind without betterment, the cost of the replacement shall be charged to operating expense accounts, and no adjustment made in the road and equipment accounts."

"When the renewals to be made to an important building or other structure will constitute the major portion of its value when renewed, the property, when taken out of service, shall be considered as retired and accounted for as provided above, and for the purposes of this classification the renewed property shall be considered as an addition, and the appraised cost thereof shall be included in the accounts of this classification, consideration being given to the second hand portions remaining therein. In no case shall the charge for the renewed property exceed the cost (at current market prices of labor and material) of new property of equal capacity and equal expectation of life in service, less a suitable allowance on account of the second hand parts remaining therein."

The only cases where the "replacement in kind" theory is now applied is in cases of minor replacements as mentioned above, and in the case of betterments as covered by the further quotation from the classification given below.

"Betterments and improvements of existing facilities through the substitution of superior parts for inferior parts retired, such as the substitution of steel-tired wheels for cast wheels under equipment, the application of heavier rail in tracks, and the strengthening of bridges by the substitution of heavier members. The cost chargeable to the accounts of this classification is the excess cost of new parts over the cost at current prices of new parts of the kind retired."

D. J. KERR,

Corporate Engineer, Great Northern.

Tractive Effort of Mallet Locomotives

TENNESSEE.

TO THE EDITOR:

There are in use at least three different formulae for calculating the tractive effort of four-cylinder compound locomotives, each of which, when applied, gives a different result from the others. In the present practice of shifting power from one road to another, with a rental charge of one mill per pound of tractive effort per day, it is evident that the rental instead of being based on the power of the locomotive, as is intended, is dependent on the formula which is used in calculating the tractive effort. Also in comparing published locomotive data the tractive force as shown may be misleading, not only when comparing Mallets, but when comparing Mallets with simple engines.

The three formulae which are being used for Mallet compound locomotives are:

$$(1) T = \frac{1.7 PD^2s}{(R + 1)W}$$

$$(2) T = \frac{CPD^2s}{W}$$

$$(3) T = \frac{2/3 PD^2s}{W} + \frac{1/4 PD^2s}{W}$$

in all of these formulae:

T = tractive effort working compound
P = boiler pressure
D = diameter of low pressure cylinders
d = diameter of high pressure cylinders
s = stroke of piston
W = diameter of driving wheels

$$R = \text{ratio of cylinder volumes} = \frac{1.2}{C^2}$$

C = constant, dependent upon cylinder volume ratio and cut-off.

Formula (1) is based on the assumption that equal work or power is developed in the high and low pressure cylinders; also that the total m. e. p. is 0.85 of the boiler pressure. This formula is a development of the well known formula used for simple locomotives and when used the results are comparable with the tractive effort of simple engines. The writer has always used this formula and has found it to agree very closely with the actual results obtained in service.

Formula (2) is also based on the assumption that equal power is developed in the high and low pressure cylinders. The ratio R of the cylinder volumes is taken care of in the constant C, but an analysis of the value used for C, which varies from about 0.500 to 0.575, develops that a much higher m. e. p. has been assumed than is used in formula (1) or in simple locomotives. There does not appear to be any justification of the assumption that the m. e. p. should be higher than for simple engines, and certainly not if the tractive effort is to be used as a measure of comparison.

Formula (3) is based on the assumption that the m. e. p. for the high pressure cylinder is 2/3 of the boiler pressure and the m. e. p. for the low pressure cylinder is 1/4 of the boiler pressure, the ratio of cylinder volumes not being considered.

An illustration of the application of formulae (1) and (2) to the heavy Mallet type locomotive described in the *Railway Age* of October 18, shows that the tractive effort by formula (1) is 135,200 lb., whereas by formula (2) it is 147,200 lb. The ratio of cylinder volumes is 2.56 and for 85 per cent cut-off in the high pressure cylinder the value of C is 0.526. To get 147,200 lb. tractive effort from these engines would require the assumption of a total m. e. p. of 92.5 per cent of the boiler pressure.

The writer desires to bring this to the attention of those interested through your columns, in the interest of uniformity, personally favoring the general adoption of formula (1).

W. S. M.

A Change in the Express Contract Suggested

Interstate Commerce Commission at Request of Director General Reports on Increase of Rates

THE INTERSTATE COMMERCE COMMISSION has replied to Director General McAduf's request for data and recommendations regarding the proposed increase in express rates with a suggestion that the amount which the express company declares it needs in additional revenue to pay increased wages might be obtained by a modification of its contract with the director general, reducing the percentage of express revenue paid to the director general for express privileges, or that the rates be increased by one-half the amount proposed, permitting all the revenue to accrue to the express company without giving an approximately equal amount to the railroads. The first of these suggestions was urged by counsel for the state commissioners at the recent hearing before the commission and in telegrams received from about 20 of the state commissions since the hearing, who proposed that the percentage of gross express revenues paid to the director general be reduced from 50.25 to 45.25.

In the opinion, which is by Commissioner Clark, the commission says the suggestion merits careful consideration if the financial condition admits of the possibility of adopting it and that the present basis of compensation of the railroads for express service is certainly not scientific; but the commission concludes that unless one of these suggestions be adopted the allocation of the increase proposed by the express company is proper and preferable to any other method that has been suggested.

The method proposed by the express company contemplated an increase of approximately \$23,679,000 in the gross express revenue by increasing the express rate schedules in zone one and between zone one and the other four zones, three scales on the first two classes and 10 cents per 100 pounds in commodity rates, and in and between the other four zones two scales on the first classes and 10 cents per 100 pounds in commodity rates. The commission was asked by the director general to advise him whether this method would produce the required amount and, if not, what basis of increase would; whether the proposed method is proper or if a different method of procuring the increase ought to be adopted; what should be the amount of the increase. Of the amount stated \$11,780,303, or 49.75 per cent., would be retained by the express company, while the remaining \$11,898,697, or 50.25 per cent. under the existing contract, would be paid to the director general for express privileges. The sum which would be retained by the express company was said by the director general to be required to meet wage increases that will have to be made in the near future and that cannot be provided for out of the present revenues, which already reveal an operating deficit. After discussing the effects of the proposed method, Commissioner Clark says in part:

It seems to be established that under the method of increase here proposed the greater increase in rate would be applied in the territory of lowest rates, of greatest cost of operation, and of greatest increase in those costs. The method would involve a departure from the original zone relationship established by us, but that departure seems, under the circumstances here presented, to be justified. As to the method of making the increase on the relative zone basis suggested, it must be borne in mind that the proposal here made is an emergency measure and that the need for prompt action, stressed by the director general in view of the deficit confronting the express company, to which reference has already been made, will not permit of

the extended investigations necessary to the working out, experimentally, of other possible forms of increase. At the hearing but two other plans were suggested as preferable to that advanced by the express company: (1) A straight percentage increase, and (2) modification of the contract between the express company and the director general, presently to be referred to. It is stated of record that under one plan thought of by the express company six months would be required to rework its tariffs. Here the tariff work is comparatively simple and will be rendered correspondingly simple in changing back to the lower basis if and when, as the express company hopes will come to pass in the not distant future, conditions will warrant taking off the increase. Contrasted with a straight percentage increase, even on a basis that would, like the proposed method, place the greater increase in the zone of greatest costs, it is preferable, in view of the nature of the demand now made upon the shipping public to meet a war emergency, to distribute the increase in the same amount to all shippers in the same zone, regardless of the length of haul, rather than to distribute it in varying amounts, according to the length of haul and the volume of rate.

It was strongly urged by counsel for state commissions at the hearing, and in telegrams received from about 20 of the state commissions since the hearing, that the desired increase in express revenue could, and more properly should, be procured by a modification of the express company's contract with the director general reducing the percentage of gross express revenues paid to the director general for express privileges from 50.25 to 45.25. In support of this suggestion it is said that, relatively, the approximately twelve millions of dollars now sought by the express company would constitute but an inconsiderable deduction from the recent increase in freight revenues, while at the same time it would adequately meet the present needs of the express company for additional revenue. It is conceded by the express company that such a modification of the contract would yield approximately the required amount, and it would be acceptable to the express company if the needed revenue should be provided in that way.

We have no data upon which to base an opinion as to whether or not 45.25 per cent. of the gross revenue from the express business would be remunerative for the service performed by the railroads. If it would be properly remunerative and the revenues from operation of the railroads will permit being drawn upon for the additional sum that would accrue to the express company under such a modification of the contract, it must be assumed that the burden of increased rates will not be laid upon the public. The suggestion merits careful consideration if the financial condition admits of the possibility of adopting it.

No question of needed additional revenue for the railroads has been presented or suggested here. It seems appropriate to point out that for the purpose of securing some twelve million dollars of needed additional revenue for the express company the proposed increased express rates will yield an additional total revenue of some twenty-four million dollars. Increasing the rates by one-half of the extent proposed would if the entire revenue from the increase accrued to the express company, secure the additional revenue which it needs. Contracts between express companies and railroads have long provided, as does the one between the express company and the director general, that the compensation of the railroad

shall be a certain percentage of the gross revenue of the express company. It results from this that it is impossible to reduce the rates of the express company without taking money from the railroad company and impossible to increase the rates of the express company without giving additional revenue to the railroad company. This basis of compensation is certainly not scientific, and under it the express company does not pay the railroad company for the service which the railroad performs upon any demonstrably appropriate basis.

The railroads have been and are compensated by the United States government for transporting the mails on the basis of the weight carried or of the space occupied in the cars or trains. A similar basis of charges by the railroad company to the express company would, we think, be preferable to the basis now and heretofore employed, and would obviate the embarrassments and inequities to which we have referred as growing out of the past and present basis of contract. The question of a different basis of compensation from the express company to the railroads is well worthy of study.

All things considered, we conclude that unless the suggestion to provide the needed revenue for the express company through a modification of its contract with the director general, or the suggestion to increase the rates by one-half the amount proposed and permit all the revenue therefrom to accrue to the express company, is adopted, the allocation of the increase proposed by the express company is proper and is preferable to any other method that has been suggested.

No view as to jurisdiction of the initiation of the proposed rates has been requested or considered, and no opinion on that point is expressed.

Navy Guns Mounted on Railway Cars

SECRETARY OF THE NAVY DANIELS has authorized the following statement regarding the use of the heavy naval guns mounted on railway cars:

Press despatches from France detailing the destruction wrought back of the German lines by huge naval guns operating with the French and American forces make it possible now to disclose some particulars of these guns and how they were built, which has been a jealously guarded secret.

These guns were originally intended for the new battle cruisers, but a change in the design of the cruisers left the guns available for other use, and as there was in the navy no immediate need for them afloat, Rear Admiral Ralph Earle, chief of the Navy Bureau of Ordnance recommended that they be placed on railway mountings for land service with the armies in France. He felt that if these guns could be placed upon railway mountings that would make them readily mobile like the British and French naval guns of smaller caliber, they would prove a valuable adjunct to our forces overseas. He was directed to proceed with the design and construction.

The American naval guns throw a heavier projectile and have a greater muzzle velocity than any previously placed on a mobile shore mounting. From the first it was seen that in order to make the project successful, the railway battery must be made completely mobile, so that it might operate without being based at any one particular spot. For this reason, it was necessary to provide not only the railway cars mounting the guns, but also locomotives and cars sufficient to accommodate all the operating personnel of the expedition, together with the ammunition, repair shops, cranes, stores and miscellaneous material.

The final plans and specifications which were prepared at the naval gun factory, Washington, under immediate supervision of the bureau, by Captain A. L. Willard, Commander Harvey Delano and the bureau's designing drafts-

man, G. A. Chadwick, were completed in less than 30 working days, being ready for submission to the bidders about January 25, 1918. Large mounts were to be built, capable of taking these big caliber guns, each mount with its accessories to be operated as an independent train. The equipment included locomotives, gun cars, ammunition cars, crane cars, construction, sand, timber, berthing and kitchen, fuel, workshop, and staff radio cars, cars for officers, battery headquarters and miscellaneous purpose cars. The locomotives built for this purpose were of the standard Consolidation type. The weight of the engine alone is approximately 83 tons and the weight of the tender approximately 56 tons.

A form of pit foundation is provided to enable the guns to be fired at high angles of elevation. The removal of the gun from over the pit formation and its restoration to complete mobility is but the work of a few minutes. The entire mount is covered with armor plate, 1,600 square feet of plate being required. By shifting the position of the gun-mount on the tracks the gun can be brought to bear on any desired target and the proper angle of train obtained. When the first gun car was completed last April, gun and mount were put through the severest tests and showed accurate fire at much further ranges than had ever before been possible with projectiles of such large size. There was then only one proving ground in the United States, that at Sandy Hook, N. J., owned by the war department, capable of permitting ranging at extreme distances, and this was, on request of Secretary Daniels, utilized for the proving tests.

The car equipment is unusually complete. One car is a complete machine shop, with every facility for repairs, with blacksmith forge and anvil, lathes, shapers, grinders, and drill presses. Ammunition cars are heavily armor plated. The kitchen cars have complete cooking and serving apparatus; the berthing cars have folding bunks for the men, and other cars carry complete sets of spare parts.

Every effort was made to secure rapid construction, work being begun the day the contracts were awarded. The Baldwin Locomotive Works built the engines and the Standard Steel Car Company, the box cars. The huge steel girders were fabricated by the American Bridge Company, some of the plates being so large they could not be produced at its Pencoyd works, and had to be manufactured in Pittsburgh. Work at all these plants proceeded night and day and the material and completed mounts and cars were produced in record time. Many of the important parts of the gun mounts were made at the naval gun factory, Washington, which worked under forced draft and had its part of the work done ahead of schedule, as did the other builders.

The first gun, mounted complete, left the Baldwin shops on April 25, 1918, in charge of Captain T. A. Kearney, assistant chief, Bureau of Ordnance, and Lieutenant Commander L. B. Bye, also of the Bureau, for the army proving ground at Sandy Hook, where the tests were made in the presence of officers of the army and navy and of the Allied governments. These guns are all manned and operated by officers and men of the U. S. Navy, under the command of Rear Admiral Charles P. Plunkett, former director of the Office of Gunnery Exercises and Engineering Performances.

As soon as the manufacture of the material was well under way, the task of assembling and training personnel for the expedition was begun. Rear Admiral Plunkett was placed in charge of the expedition, and under his direction the force of officers and men necessary was built up. The officers were drawn both from the regular navy and naval reserves, and the men, for the most part, were taken from the Great Lakes Training Station, Chicago.

The training of the men was carried on intensively and in a manner calculated to secure a thoroughly efficient force. The men responsible for the work of erection and operation of these mounts in France were trained by employing them

as inspectors at the various plants actually manufacturing the material for the project, so they became thoroughly familiar with every part and with the method of fabrication. The men serving the guns in action were trained at the naval proving ground in the proper method of handling the heavy projectiles and powder charges, as well as in the actual firing of the gun. Others were given training at the army proving ground at Sandy Hook, in the installation of the pit foundation; also in practical work in track laying, track repairing,

and other essentials of railroading that are necessary in the operation of the guns.

The first party of officers and men for this expeditionary force arrived in France June 9; the first shipment of material left the United States on June 20, and the entire organization was completed and ready to move to the battle front in France late in August. This battery was in action at the front for the first time on September 16, and has continued in active operation since that date.

Interstate Commerce Commission Asserts Itself

Holds Railroad Control Act Has Not Deprived It of Authority to Decide on Relations of Rates

THE INTERSTATE COMMERCE COMMISSION and the Railroad Administration have had their first open clash of authority in a rate case and the commission has overruled the contentions of the director general's legal department.

The commission on October 24 issued its decision in the case of the Willamette Valley Lumbermen's Association v. Southern Pacific Company, et al., ordering an equalization of the rates on lumber and forest products from points in the Willamette Valley in Oregon to various points in Montana, Wyoming, North Dakota, South Dakota, Nebraska, Minnesota, Wisconsin and Michigan, and Manitoba and Saskatchewan, with the rates from the coast group, including Portland, Ore., to the same destinations, on the basis of the coast rates. Incidentally, the commission denied the contention of representatives of the railroads and of the Railroad Administration that the rates which were increased 25 per cent by the director general's General Order No. 28 are presumed to be right in themselves and in their relation to each other and that they cannot be changed without an affirmative showing that they are wrong.

This is the first case in which the commission has had occasion to review rates increased by the director general's order and the opinion, by Commissioner McChord, decides an interesting question raised as to the comparative authority of the commission as conferred by the interstate commerce act and of the director general as conferred by the federal control law, holding that while the facts as to the amount of revenue needed by the government to operate the railroads for war purposes are with the director general, it is the function of the commission to deal with questions of the reasonableness and justice of rates as affected by their relationships.

The complaint of the Willamette Valley Lumbermen's Association, asking for an equalization of rates with Western Oregon was filed with the commission on March 6, 1917. The Department of Agriculture also intervened and filed a brief in support of the complaint. The evidence was heard and the tentative report of the commission's examiner was served on April 9, 1918, and the case was set for argument on June 15, 1918, but on June 5 the hearing was cancelled by the commission in order that the director general, who had announced a general increase in freight rates in General Order No. 28 might be made a party defendant. Neither the complainant nor the director general submitted any additional evidence. The complainants took the position that the relationship complained of still existed in aggravated form because of the increase of 25 per cent in both groups of rates, while an answer was filed on behalf of the director general stating that the rates in force and complained of were established in accordance with the general order, that the public interest required a general advance in freight rates

and that the alleged unlawfulness of the rates complained of is to be determined alone by the provisions of the federal control act. The answer also contained a denial that the rates as now in force are in violation of the provisions of that act. The argument was held at Washington on October 3 and in addition to the counsel for the individual railroads concerned, R. Walton Moore and B. W. Scandrett appeared for the director general of railroads. Their arguments Commissioner McChord in his opinion has condensed into the following main contentions:

1. That the words "just and reasonable" used in the control act, have meanings different from those applied to them in the act to regulate commerce.
2. That the evidence now in the record is irrelevant to the issues presented by the supplemental complaint and is insufficient for their determination.
3. That the rates initiated by the director general in themselves, and in their relation to each other, are presumed to be right, and they can not be changed without an affirmative showing that they are wrong.

These contentions, Commissioner McChord says, raise questions of the utmost importance with respect to the commission's power to determine the issues presented on the record in this case.

After quoting section 10 of the control act, he continues: This law requires that the commission in determining questions concerning rates initiated by the President shall take into consideration the fact that the defendant carriers are being operated as a unified and co-ordinated national system and not in competition; that the rates were initiated under a certificate of the President; and that consideration shall be given to that certificate and to any recommendation the President may make with respect to such rates. In other words, Congress intended that the commission is not to interfere by any action it may take, or any order it may make, with the operation of the railroads of the country for purposes for which government control was assumed, or reduce rates initiated by the President without carefully weighing all the circumstances under which they were initiated and fully considering the reasons therefor and the purpose sought thereby.

The words "just and reasonable" as used in the control act obviously bear a similar or closely analogous meaning to that attaching to their use in the act to regulate commerce; in both cases they are to be construed in the light of all the circumstances and conditions; certainly they are not to be more narrowly construed. Rates made by the President must be reasonable in and of themselves and they must be relatively just in view of all the conditions enumerated in the control act and in view of other circumstances and conditions.

The second contention, that the evidence already taken in

this case is irrelevant and insufficient to support the issues raised in the supplemental complaint, is untenable. It is to be remembered that the real issue in the case is now, and was when it was heard and first submitted, one of relationship. In his argument counsel for complainant stated that no complaint is made of the increase in the rates from Portland. The allegation is that the rate adjustment is unduly prejudicial to complainant's members in favor of other shippers of lumber from north coast points. The complainant also asks for the establishment of joint rates. The rate situation was developed on the record, and its effect on shippers from the Willamette Valley was shown. On argument it was stated by a representative of the director general that there had been no change in the situation so far as the physical movement of, and the rate adjustment applicable to, shipments by complainant's members to the territory involved are concerned, since the director general assumed control of the principal defendants, except the increase in the rates.

Increased rates on forest products prescribed in General Order No. 28 have been published and are now in effect so as to make the situation of complainant's members more unfavorable than when the case was heard.

Rates from Portland to points in the territory involved on lines of the defendants were increased 5 cents per 100 lb. Because of the rates initiated by the director general, the alleged undue prejudice against complainant's members has been increased. What additional evidence need the complainant offer except the fact of the increase in the discrimination? That appears from the rates on file, and they are proper to be taken into account. Even if the old relationship had been maintained by an increase of 25 per cent in the through charges no new evidence is needed, nor could any well be submitted by complainant that would enable the commission better to determine the questions at issue than the evidence now in the record. In simple justice to complainant it should not now be called upon to make further expenditures to show simply what the commission already has before it.

Commissioner McChord then refers to the public statement issued by the director general at the time the general rate order was issued, that the commission would doubtless find it proper to make readjustments to effect equalization as between the numerous interests necessarily affected and that the director general would co-operate heartily with the commission in any readjustments needed to accomplish still further the object of avoiding undue preferences which may develop upon detailed consideration by the commission. The opinion continues:

It is thus contemporaneously stated by the authority initiating the increased rates that the question of their reasonableness and justness might be dealt with by this commission, and doubtless the commission would find undue preferences in some rate adjustments which should and would be corrected. There is no authority in the control act for perpetuating during the period of federal control a rate adjustment that is unlawful under the act to regulate commerce.

If it should be shown to us that to grant the prayer of the complainant would interfere with the operation of the railroads as a unit, or would deprive the government of needed revenue to operate the railroads for war purposes, a different situation would be presented from that now under review. The facts with respect to such showing are with the director general. It is not even suggested on the record that what the complainant seeks in this case, if granted, would in any manner interfere with the operation or maintenance of the defendant railroads under federal control for the purposes that dictated the assumption of their control by the federal government.

The evidence shows that the defendant, on the lines of which the traffic originates, had attempted for a number of

years to secure an agreement from the northern lines to the establishment and maintenance of joint rates on lumber and forest products to points in the destination territory described in the report of the examiner, but was unable to do so. The reasons given by the northern lines for a refusal to enter into the arrangement were that they considered it their duty to serve lumber mills on their own lines to the exclusion of mills on other and competing lines, and that they were unwilling to shrink their revenues below the Portland rates on traffic from connections.

It has long been well settled that no carrier has the right so to adjust rates on its own lines as unduly to prejudice shippers on other lines, or to deprive such shippers of reasonable and just rates, merely through a desire to serve shippers on its own lines. It is also a rule of well-nigh universal application that shippers may not be deprived of just through rates merely because carriers can not agree upon a division of joint rates.

On the face of this record, and under existing conditions, there appears to be no good reason why shippers of the complaining association should not have such relatively reasonable rates to points on defendants' lines as will insure them against undue prejudice as compared with their competitors. It does not appear that the establishment of the joint rates prayed for will in any way interfere with the operation of the federally-controlled defendants as a unit. Indeed, so far as appears from this record it will serve to effectuate the purpose of unified operation. Heretofore because of the rate adjustment complainant's shippers have practically been unable to make shipments to points east of Missoula, Mont., on the northern lines. In so far as a proper rate adjustment will permit them to make increased shipments there will be an addition to the total receipts of the railroads.

The third contention made on behalf of the defendants is that there is a presumption that the rates and relations of rates initiated by the director general are just and reasonable and can not be changed with propriety except on affirmative evidence by the complainant to the contrary.

One obvious answer to this contention is that the director general did not initiate the inequality in the rates which evoked the complaint. The increases initiated by him were superimposed on the then existing basis. That basis was initiated by the defendants and had been maintained by them for many years before federal control. At the hearing the complainant assumed the burden of showing that the rate adjustment was unreasonable and unjust. All the facts are now in the record with respect to that adjustment. It is inconceivable, in our opinion, that the Congress did a vain thing in conferring upon this commission power to determine whether or not the rates initiated by the director general are just and reasonable. The same force and effect must be given to that part of the law as to its other provisions. The simple fact is that if the rates were unlawful because unduly prejudicial when the evidence was submitted, the changes in rates since federal control have increased the prejudice.

From a consideration of the entire record, including the changes brought about by federal control and taking into account the provisions of the control act, together with the exceptions of the defendants, we find that the rates on lumber and forest products in carloads, from points in Oregon located on the main line and branch lines of the Southern Pacific Company south of Portland to and including Leona, to points on the lines of defendants in the states of Montana, Wyoming, North Dakota, South Dakota, Nebraska, Minnesota, Wisconsin, and Michigan, and the provinces of Manitoba and Saskatchewan, Canada, to which the present rates contemporaneously maintained from the coast group, including Portland, Ore., are 40 cents per 100 pounds or greater, are and for the future will be relatively unjust and unreasonable and unduly prejudicial to the extent that they exceed the rates contemporaneously maintained from the coast group,

including Portland, to the same destinations. We further find that joint rates should be established on the basis found lawful.

An order will be issued to carry out the findings herein made.

Pacific Type Locomotives for the Central of New Jersey

SIX LARGE PACIFIC LOCOMOTIVES, designed for fast passenger service, have recently been built by the Baldwin Locomotive Works for the Central of New Jersey. These locomotives have driving wheels 79 in. in diameter; and with 26-in. by 28-in. cylinders, and a steam pressure of 210 lb. the maximum tractive effort exerted is 42,770 lb. As the weight on drivers is 181,400 lb., the ratio of adhesion is 4.24. The locomotives are therefore able to handle heavy trains, while at the same time their proportions fit them for sustained running at high speed.

The boiler is of the Wootten type, with a conical ring in the middle of the barrel, and a combustion chamber 36 in. long. Flexible bolts are used exclusively in the throat, sides and back-head, and in the water-space under the combustion chamber; and three rows of expansion stays support the forward end of the combustion chamber crown. The grate is composed of three groups of rocking bars, each group being arranged to shake in two sections; and separat-

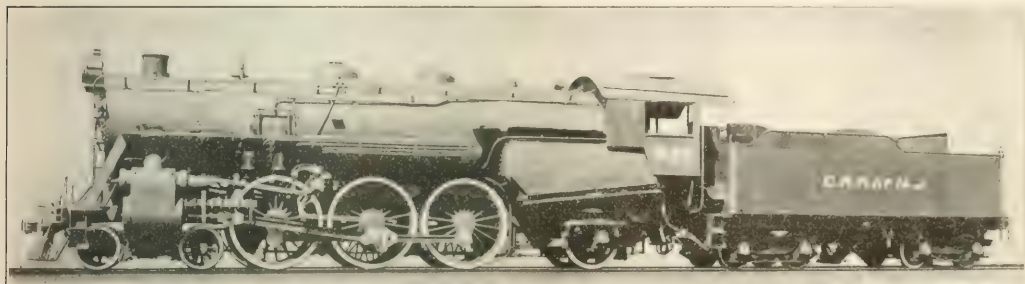
head pins and main crank pins are hollow-bored. A light design of valve gear is used, with the pins working in phosphor bronze bushings. The gears are controlled by the Ragonnet type *B* power reverse mechanism.

The main frames are of most substantial construction, being 5½ in. wide, and 7½ in. deep over the pedestals. The pedestal shoes and wedges are of gun iron, and the shoe and wedge bearing surfaces of the driving-boxes are fitted with phosphor bronze liners. The Commonwealth rear frame cradle is applied to these locomotives in combination with the Cole design of trailing truck.

The tender has a one-piece, cast steel frame, and is equipped with an air-operated water scoop.

Further particulars are given in the following table of dimensions:

General Data	
Gage	4 ft. 8½ in.
Service	Passenger
Fuel	Mixed anth and bit.
Tractive effort	42,770 lb.
Weight in working order	229,400 lb.
Weight on drivers	181,400 lb.
Weight on leading truck	50,600 lb.
Weight on trailing truck	54,400 lb.
Weight of engine and tender in working order	460,000 lb.
Wheel base, driving	13 ft. 10 in.
Wheel base, total	35 ft. 8 in.
Wheel base, engine and tender	72 ft. 0½ in.
Ratios	
Weight on drivers ÷ tractive effort	4.2
Total weight ÷ tractive effort	6.8
Tractive effort × diam. drivers ÷ equivalent heating surface*	628.3
Equivalent heating surface* ÷ grate area	52.5
Firebox heating surface ÷ equivalent heating surface*, per cent.	6.1
Weight on drivers ÷ equivalent heating surface*	36.4
Total weight ÷ equivalent heating surface*	58.5



A Neat Design of Pacific Type Locomotive for the Central of New Jersey

ing these groups are two groups of drop-plates, which run lengthwise of the firebox. With a grate area of 94.8 sq. ft., this firebox is suitable for burning either lump anthracite or a mixture of fine anthracite and bituminous coal. There are two round fire-doors, whose centers are 38 in. apart measured transversely.

The reciprocating and revolving parts are comparatively light in weight, and are of a design which is specially suitable for a high-speed locomotive. The piston heads are steel castings of dished section, fitted with gun iron bull rings bolted on. The packing rings are also of gun iron, and are of the Dunbar type. Gun iron is also used for the cylinder and steam chest bushings, and for the valve bull rings and packing rings. The last named are turned with a shoulder, to keep them from working out in case of breakage. The piston rods are of heat-treated steel hollow-bored. The crosshead is a one-piece steel casting, with a wide shoe on the top. It is lined with babbitt and slides in a box-shaped guide. It has a short lug, to which the union link of the Walschaert valve gear is attached. This style of crosshead has a comparatively small bearing area on the guide when backing up, but this cannot be considered a disadvantage on a fast passenger locomotive. The cross-

Volume both cylinders	4.2 cu. ft.
Equivalent heating surface	86 sq. ft.
Grate area	94.8 sq. ft.
Cylinders	
Kind	Simple
Diameter and stroke	26 in. by 28 in.
Tires	
Kind	Plain
Diameter	79 in.
Frames	
Driving, diameter over tires	76 in.
Driving, thickness of tires	3½ in.
Driving journals, main, diameter and length	4 in. by 14 in.
Driving journals, others, diameter and length	10½ in. by 14 in.
Engine truck wheels, diameter	39 in.
Engine truck, journals	6½ in. by 12 in.
Trailing truck wheels, diameter	48 in.
Trailing truck, journals	38 in. by 12 in.
Boiler	
Style	Wootten
Working pressure	210 lb.
Outside diameter of first ring	78 in.
Firebox, length and width	10 ft. by 14 ft.
Firebox plates, thickness	5/16 in.
Firebox, water space	14 sq. ft.
Tubes, number and section	110 of 2 in.
Tubes, number and section	110 of 2 in.
Heating surface, tubes and flues	3,454 sq. ft.
Heating surface, firebox	86 sq. ft.
Heating surface, total	3,540 sq. ft.
Superheater heating surface	216 sq. ft.
Equivalent heating surface*	4,981 sq. ft.
Grate area	94.8 sq. ft.

Tender	
Tank	Water bottom
Frame	Cast steel
Weight	178,600 lb.
Wheels, diameter	36 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	9,000 gal.
Coal capacity	12 tons

*Equivalent heating surface—total evaporative heating surface + 1.5 times the superheating surface.

Wartime Standardization of Railroad Track Scales*

By C. A. Briggs

Associate Physicist, Bureau of Standards, Washington, D. C.

IN MEETING the present demand for physical resources and man power very profound changes are being made and it is by the elimination of the unessential both in the number of things produced and the variety in their design and by added efficiency that our military effectiveness must be maintained and increased. Many manufacturers of various staple articles have studied their catalogues and products to determine what could be eliminated and the results were generally surprising.

It is stated that one-third of the styles and patterns of scales now carried can be eliminated as unessential. At the present time a large number of railroad track scale designs are on the market, and there is, as a result, a great expenditure of time and effort in selecting a scale to meet any particular service. It is now necessary to reduce this number to the fullest practicable extent. This spells railroad track scale standardization.

Seven or eight years ago, the bureau of standards took up the question of railroad track scales to determine the methods and equipment required to maintain such large scales in proper working condition and in this undertaking, it had the assistance and co-operation of several scale companies, railroads and others. It was soon apparent that scales were not, in general, constructed on an engineering basis. For instance in respect to the important subject of scale capacities it was found that the nominal capacities given to scales were greatly exaggerated, and had no relation whatever to the work which could reasonably be expected of them. This is a trouble which has not yet been entirely eliminated.

As a result of a careful study of the problem, the Bureau of Standards soon adopted for the definition of the capacity of the scale the following:

The capacity of the scale is the weight of the heaviest car it will weigh, provided that the scale will support a train of such cars passing over it without stresses being developed in the members of the scale which are in excess of those hereafter specified.

This definition can be understood alike by the engineer and by the layman, and gives to the layman at once the essence of his concern in the matter in purchasing a scale.

On comparing the construction of scales with the work required of them, a very surprising condition appeared to exist.

The working stresses employed were, as a rule, considerably in excess of those associated with other structures without reference to the fact that a scale is not merely a device for supporting a load but an instrument which has to perform the exacting functions of weighing loads while supporting them.

More surprising still, the scales were for the most part reputed to be giving satisfactory results. The subsequent work of the bureau with its testing equipment demonstrated the unreliability of such contentions, and showed that the

conclusions in the case of many of the scales were due to the lack of proper testing facilities with a corresponding ignorance of the actual conditions of the scale.

In preparing these specifications, the bureau was very careful not to place unnecessary restrictions on the scales in reference to types and details of construction, as it was desired to permit the greatest possible development in their construction and if the restrictions were made as to details, it was felt that opportunities for invention and improvement would be narrowed and benefits thereby lost.

In this circular considerable attention was devoted to capacity rating. It is believed that this is the first comprehensive and logical basis for determining the capacity of scales in a systematic manner that has been presented. This circular together with the tolerances adopted by the bureau for railroad track scales served to bring out many facts and viewpoints.

Objections have been raised to the working stresses specified and among the various motives which this bureau has found prompting the desire to have more liberal specifications adopted has been a wish on the part of those manufacturing scales to have old designs or imperfect new designs come under the most approved specifications. This, of course, was a natural tendency but it has had a very adverse effect on the adoption of proper specifications, and caused some very fundamental defects to be incorporated in many proposed changes in the specifications. This has had a very serious effect which should be given careful consideration in reference to the present problem.

As a result of the comments and criticisms received, it appears that most of the provisions of this circular are well founded. However, in regard to the working stresses, the bureau felt that a change might be justified and decided, when the circular was reissued, to provide for two classes of scales, in one of which the working stresses for knife-edges, and for the cast iron intension in transverse bending were increased.

Another important factor must receive consideration. Since the Government has taken over the management of the railroads it has guaranteed their revenues. An important percentage of the revenue is collected from weighings made over railroad track scales and if they are neglected the government will have to suffer as a consequence in the amount of uncollected revenues which it will eventually be called upon to make up.

To summarize:

1. The government has a peculiar interest in the accuracy of railroad track scales.
2. Numerous designs for scales on the market arise from the natural activities of competition, and several sets of specifications from different sources for purchasing scales are in existence.
3. There is a need for limiting the number of designs to those which are essential.
4. The designs available have suffered on account of the conditions outlined.

The bureau has to propose:

1. That a number of standard railroad track scales not to exceed six should be established, representing all possible combinations of lengths and capacities; and that except for very unusual cases all demands for new scales be met by selecting one of these types.
2. That insofar as is practical the scales be selected in accordance with proper specifications. These specifications should be based on sound engineering principles in order to make them as permanent as possible.
3. That in the accepted types produced by any given manufacturer, the details for that manufacturer be fixed and not changed unless the change is incorporated in all subsequent scales produced by him.

*Abstract of a paper presented before a meeting of the Scale Manufacturers' Association, September 10, 1918.

Repairing a Bascule Bridge Trunnion Bearing

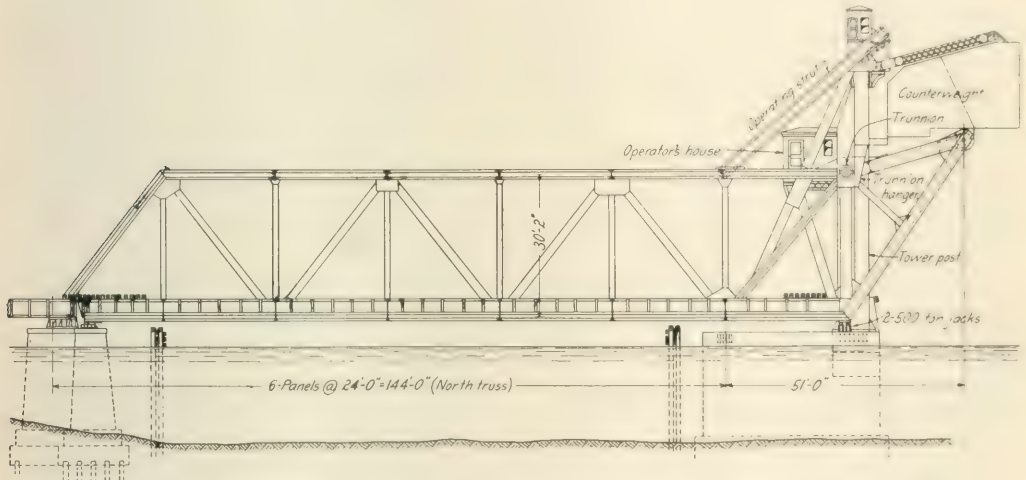
To Insert a New Bushing It Was Necessary to Lift an Entire Span, Weighing About 800 Tons

THE PARTIAL FAILURE of a bearing for one of the main trunnions of the Chicago & North Western's bascule bridge over the north branch of the Chicago river near Kinzie street, Chicago, presented a number of features of interest, particularly the behavior of the bridge after the failure occurred and the manner in which the trouble was overcome. The bridge is a single-leaf bascule span of the Strauss type, carrying double track. It crosses the river on a skew so that provision for a clear waterway of 100 ft. required a span 170 ft. for the north truss and one of 162 ft. for the south truss, the trusses being of the through riveted sub-panel Warren type.

The main trunnions are located at the level of the top chords of the trusses and transmit the weight of the entire span, including the counterweight, to the tower. They are 21 in. in diameter. The tower consists essentially of two

structures of this kind, except that the power input required to open and close the bridge proved somewhat excessive. In January, 1917, the bushing in the hanger bearing on the north side of the bridge developed such excessive friction with the trunnion that it turned with the latter when the bridge was being opened until it was in a position directly above the trunnion as shown in one of the drawings, and having once assumed this position, it was impossible for it to return to its proper place under the trunnion. To accomplish this displacement, it had forced off the cast iron cap by breaking the bolts on the west side and tearing off the corners of the bolt flange on the east side.

At the breaking away of the cast iron cap a jar was felt by the bridge tender, and there was some difficulty in closing and locking the bridge due to a slight lateral displacement of the free end of the bridge, and to a very slight settlement of



Sectional Elevation of the Bridge Showing Method of Jacking Up to Repair the Trunnion Bearings

main vertical legs rising outside of the trusses on each side and connected above them by a heavy deep transverse girder. The latter serves as a support for the trunnion hangers, two heavy box-shaped members having their lower ends approximately level with the top chords of the trusses, so that the truss chords pass between the tower legs and the hangers, while each of the trunnions, passing through all three members, serves to suspend the truss between the adjacent tower leg and the hanger. In other words, the trunnions act in double shear. As the trunnions are securely anchored against turning in the chords they turn in the hangers and the tower legs for which purpose phosphor bronze bushings were provided under the trunnions in those members. As shown in the drawing these consist of half of a hollow cylinder $\frac{7}{8}$ in. thick, placed between the trunnion and the cylindrical surface of the cast steel bearings which are framed into the members. These bushings are held in place by cast iron caps which fit over the trunnions and are bolted to the bearing castings.

The bridge was built in 1907 and its operation entailed no more than the usual difficulties incident to the operation of

the north truss at the trunnion. The difficulties from these displacements were readily overcome by adjusting the rails at the end of the bridge, and the wedge in the bearing under the rear end of the north truss. It was noted that the bridge operated more freely, requiring less power after the bushing was out.

An inspection was made immediately after the accident occurred. It was found that while a slight settlement of the north truss had occurred, the trunnion was not down on the steel bearing block. A bar bent to the diameter of the bushing could be passed freely around the trunnion and moved along the trunnion in the space formerly occupied by the bushing.

An attempt was made, a few days after the accident, to replace the bushing, using the power of the bridge to force it into place. The bushing was broken in the attempt and this method was dismissed as impracticable. A new bronze bushing was ordered immediately. It was impossible to secure early delivery of a bronze bushing, and a steel bushing was ordered also for temporary use, to be put in before the

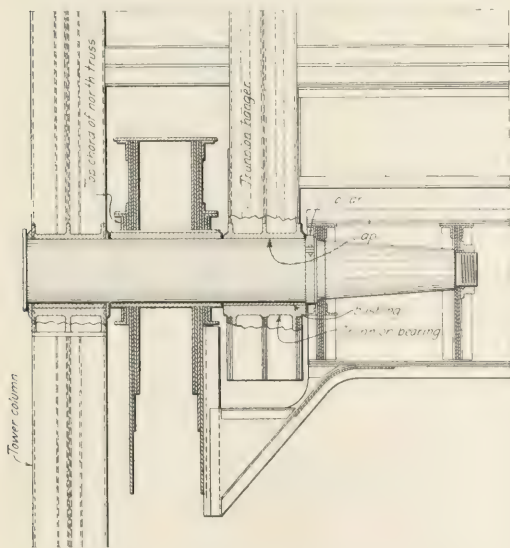
bronze bushing was delivered, if conditions made it necessary. This steel bushing was not used. The bridge continued to operate throughout 1917 so freely that no apprehension was felt about carrying it through the winter without the new bushing, which was on hand late in 1917.

It had been concluded from a study of the problem that the trouble was caused by inaccurate alignment of the trunnion and its bearing. Accordingly the new bushing was designed to correct the condition by making it 13/16 in. thick at one edge and 11/16 in. thick at the other edge. The difficulty, however, lay in inserting the new bushing since it would be necessary to lift the entire north half of the span a sufficient amount to afford a working clearance under the trunnion. The load amounted to about 800 tons.

The manner in which this span was lifted is illustrated in the general elevation. Two 500-ton hydraulic jacks were placed on the pier under the east end of the north truss directly below the trunnion. As this could not be done without taking the structure out of service, it was necessary to carry out this operation at a time when the bridge could best be spared, and navigation on river could be interrupted. The bridge was originally built to carry all of the traffic entering the old Kinzie street passenger terminal of the Chicago & North Western, as well as the freight movements over what is known as the North Water street line, but the completion of the new passenger terminal on Madison street relieved the structure of a large proportion of the traffic, although the use of the old

stalled at a point near the east end of the bridge. The jacks, however, could not be put into place until the river was closed against traffic since they interfered with the opening of the bridge.

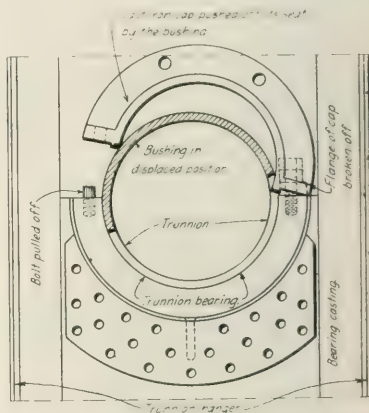
The bridge was taken out of service and the river was closed to traffic shortly after 5 o'clock when the jacks were shifted into place and connected to the piping. A switch engine was placed on the north track close to the east end of the structure so that a steam line could be run to the pressure pump. All nuts holding the caps in place were loosened up before the bridge was lifted, so the caps could rise as the trunnion was lifted out of its bearings. The bridge was also unlocked and the free end raised from the north pier a distance of about eight inches, to insure that there would be no



Sectional View of the Trunnion in Its Bearings

terminal site as a coach yard results in frequent movement across the bridge. It was found that interruption to rail and river traffic for a few hours would cause least inconvenience immediately after 5 o'clock on a Sunday morning and accordingly the time was set for Sunday, June 9.

Arrangements were made with the American Bridge Company to furnish the lifting equipment and do the work. Preliminary operations included the preparation of a bearing on the masonry to receive the jacks, cutting down some angles on the heel of the north truss and also applying a bearing plate at that point to facilitate the application of the load to the jacks. The high-pressure piping and pump were also in-



Approximate Position of the Bearing Fittings After the Bushing Was Displaced

binding at the end, when bridge was let down on the new bushing. The brake was then applied to the operating machinery to insure that no turning movement of the bridge could take place while the lifting was in progress. About 6:15 a. m. all the preparations were completed, the pump was started at 6:25 and by 6:45 the north trunnion was raised the required 1 3/8 in.

The annular space between the trunnion and the bearing casting in the north trunnion was thoroughly cleaned out and scraped. A jet of compressed air was used to blow out any dust and fine materials, and a curved rod was used to explore the entire space to insure that there were no large obstacles in the cavity. Following this the trunnion and the bearing were thoroughly covered with grease, the new bushing was laid on top of the trunnion, concave side down, and slid around the trunnion into the correct position underneath. This operation was completed by 7 o'clock. The pressure was then slowly released from the jacks and the bridge returned to bearing on the trunnions at 7:13. After replacing the caps it was found that the bridge operated freely. The new bearings produced a displacement of about 1/4 in. to the north at the free end of the span.

As a precaution against any recurrence of this trouble two pairs of 5-in. by 3 1/2-in. by 3/4-in. angles were bolted to the diaphragm of the hanger above the trunnion in a position that brought their lower ends in direct bearing upon the retaining cap. This work was done by the erecting department of the American Bridge Company under the general direction of O. F. Dalstrom, bridge engineer of the Chicago & North Western.

Importance of Unit Operation of Large Terminals*

"Savings in Expense Aggregating a Value of Millions Annually in Some of the Larger Terminals"

By H. J. Pfeifer

Chief Engineer, St. Louis-East St. Louis Terminal District, St. Louis, Mo.

THE RAILWAY FACILITIES existing at the convergence of a considerable number of railway lines, almost always a large city and its environs, constitute a large terminal. It is spread out over an area of 200 to 1,000 square miles in extent, and is usually an industrial center of magnitude. Into, out of and through it pass both passenger and freight traffic.

In a number of large terminals, passenger facilities and operations are already at least partly unified, through the establishment of union stations, and where they are not, the cost in money and time of bringing about unification is so great that consideration of the subject, under war conditions, is hardly worth while. Therefore thought and attention should be centered on the unit operation of large freight terminals, with a view to determining what, if any, economies can be secured by this means.

Terminal handling of freight involves two distinct processes, the movement of a car loaded or empty, and its loading or unloading at warehouses, team-tracks, stations, stock-yards, industrial plants, etc. This discussion will be confined to an attempt to determine the basic principles governing terminal car movement. Assuming that a large terminal is the center of a circle with railway lines radiating toward it, almost invariably, for topographic or other reasons, they approach the terminal in groups and are not uniformly spaced around the circle.

Without unified operation little or no advantage can be taken of this, because under individual operation each line brings its trains into its own yard, where they are broken up and reassembled with cars from other trains for delivery to intermediate or direct connections, or for final delivery for loading or unloading on the line itself. Outbound trains are assembled ready for the road by reversing the process just outlined. As every line entering the terminal handles its traffic on the same general basis, much intermediate switching is necessary to secure car interchange between lines, which accounts for the existence of the belt and switching lines and yards in every large terminal.

The process of moving a car through a large terminal individually operated is briefly as follows: The inbound train containing the car enters the yard of the initial line, where it is broken up. The cars of which it consists are regrouped with those of other inbound trains and delivered to local points for loading or unloading, to direct connections, and to intermediate connections, where the regrouping process is repeated one or more times until the car is either in a train ready for movement beyond the terminal limits, or placed for loading or unloading. As cars cannot be moved economically except in trains of considerable size, no group of cars can ordinarily be transferred from one yard to another until the necessary time has elapsed to accumulate a train large enough for movement.

Intermediate switching, which almost always involves extra car mileage, as well as delay and expense, is necessary, because many, in fact most lines, do not interchange enough cars with each other to justify direct handling, for the reason that trains of sufficient length for transfer do not accumulate

rapidly enough. The intermediate line takes cars from and for all, and, by reclassifying, accumulates trains of sufficient size for economical handling much more quickly than the individual line.

In a system of completely unified freight terminals the control by an individual railroad over its inbound freight train ceases with its delivery on a receiving track in an assigned yard, within the terminal limits, and does not begin over its outbound train until it is built up complete in readiness for road movement; all intermediate service of every nature is performed by the terminal organization. It can readily be seen that the more railroads there are, and the greater the extent of the industrial district served, the greater and more complicated is the service to be performed.

With unified terminal operation, facilities are so arranged that a number of lines deliver and receive their trains with road power in the same yards. For example, roads A and B are so close to each other that the trains of one can enter the yards of the other with little if any excess mileage or expense. Each road has its own inbound and outbound yard system. By assigning the yards of one for inbound, and of the other for outbound movements, the following will result: The volume of traffic between the consolidated yards and every other point in the terminal is the sum of that between the individual yards and those points. The number of classifications to and from the consolidated yards will be reduced 50 per cent, and as a consequence the number of cars assembled in each classification in a given time will on the average be doubled. As each road now builds up its trains in its own yard for road haul, after delivery of cars by connecting lines, there is no increase in the number of classifications required for outbound movement. If three or more lines are consolidated into one yard the number of classifications will be proportionately decreased and the number of cars assembled in each classification proportionately increased.

If roads A and B consolidate their yards and C and D do likewise, the number of classifications moving between them will be in the ratio of 1 for the consolidated yards to 4 for the individual yards, and the number of cars assembled in each classification in a given time will be 4 times as great. If 6 or more lines consolidate in pairs, the ratio of classification will still be 1 to 4, and the number of cars in each classification 4 to 1. If, however, 6, 9, or more lines consolidate in groups of 3 each, the ratios become 1 to 9 and 9 to 1, respectively, and with groups of 4, 1 to 16 and 16 to 1, respectively, and so on.

It can readily be seen from what has just been said, that if a large terminal is arranged so that the number of yards between which cars are transferred is reduced, the number of cars moving in transfer, between each pair of yards in a given time, is increased; provided the volume of traffic remains constant. It is also true that the number of cars, moving in any transfer route in a given time, is approximately inversely proportionate to the square of the number of yards served by them. In other words, if a given car movement is handled through 5 yards, there will be 16 times as many cars in each transfer between yards in a given time as if the same volume of traffic were handled through 20 yards.

A consolidation as great as this would practically eliminate

*From an appendix to a preliminary report of the yards and terminals committee of the American Railway Engineering Association, published in Bulletin 708.

all intermediate switching and make possible the passing of cars through the terminals with two classifications—one to break up the train as it comes from the road or local point, and the other to build up the train ready for the road or delivery to the local point.

Economies from Consolidation

The economies in time and expense resulting from such a consolidation are many and varied, as follows:

Elimination of one or more intermediate classifications, resulting in a saving of car days, car damage, extra switching expense, locomotive hours and many other sources of delay and expense. The money value of these savings depends, of course, on the size of the terminal and the reduction in complexity of service it is possible to bring about through yard consolidations. That it will involve savings in time and expense aggregating a value of millions annually in some of the largest terminals is not an unreasonable expectation.

A unified terminal, such as is suggested, may be compared to the telephone system of a large city. Each classifying yard corresponds to a central exchange—the yard forces to the telephone operators; the yard itself and the locomotives to the switchboard; the transfer tracks between yards to the main trunk lines between exchanges and the cars to the messages. Here, however, the comparison ends, because cars cannot be transferred singly, but must be held until a sufficient number have accumulated to make a train of proper size.

As the movement of a car through a terminal, or over a road, is governed by its destination, regardless of its origin, the following general principles governing the expeditious and economical movement of freight cars through a large terminal, are suggested:

A—The train being the unit in which car movement is conducted between two points, cars moving to common points should be gotten together at as early a stage in their movement as possible, and kept together as long as possible. Therefore, if two or more lines come into a terminal from the same general direction their trains should enter a common yard, so that cars moving to common points in the terminal can be put together.

B—As cars can be kept more closely together in a small group of yards, the number of classifying yards should be maintained at the minimum, consistent with the movement of cars by reasonably direct routes.

C—As a given number of cars will accumulate in trains of proper size, to be moved, more rapidly with a small number of classifications, the minimum number consistent with securing the required separations should be used.

D—As intermediate switching involves loss of time and extra expense, car movement should be consolidated as much as possible to reduce it to a minimum.

The system of terminal operation above outlined is susceptible of indefinite expansion as the traffic increases, without adding yards in new locations with resultant changes in the routing of cars, provided that the general direction of flow of traffic remains the same. The classifying yards may be duplicated again and again in the same manner that additional units are added to sectional bookcases and filing systems, if one unit is too small.

If extensive new territory is developed or a distinct group of new lines enters the terminal, yards in new locations may become necessary.

The suggested system of operation reduces the number of yards in which classifying service is performed, and a number of yards in every large terminal will be abandoned as classifying yards. They can be used for the storage of cars classified or unclassified if that is necessary; the holding of cars for prospective loading or for any similar purpose.

It would seem possible to so arrange and consolidate the use of existing yards and other facilities in every large terminal without incurring any large construction expense, and

thus bring about a great saving in car handling and classifying expense. These savings mean a reduction in locomotive hours, car damage, clerical expense, car days consumed and in many other ways.

A careful and detailed study of each large terminal, with a view of determining what can be done toward securing operating economies along the lines above described, would, in the opinion of the writer, be fruitful of results of enormous value to the government and the transportation interests of this country.

Revised Annual Report Forms for 1918

REVISED ANNUAL REPORT FORMS for steam railroads for 1918, consisting of two reports for each carrier, a corporate annual report to be returned by officers of the corporation, and an annual report of operations to be returned by the federal auditor, were agreed upon at a meeting of the committee on general accounts of the Railway Accounting Officers' Association with the statistician and other accounting representatives of the Interstate Commerce Commission in New York on October 9. A tentative conclusion had been reached by the commission's representatives that there should be a separate report for federal and other corporate transactions for the year 1918 and Statistician M. O. Lorenz had submitted a detailed statement of the proposed contents of the two reports for consideration. The committee also considered an informal suggestion that had been made, to the effect that one report might be rendered for each road, covering both corporate and federal matters, but it was its opinion that it will be impracticable during the period of federal control to make one report covering both purposes, for the following reasons:

"The corporation will not conduct any operations, and its officers will have only indirect knowledge of the results. A corporate officer, therefore, could merely transmit such information, and could neither certify to, nor be responsible for, the accuracy of such reports.

"The results of operation as conducted by the federal administration will be affected as to the accuracy of comparison with previous similar results by many changes in methods, and the corporation is neither responsible for, nor especially interested in, the results.

"The federal officers conducting the operations are responsible to the director general for results, and the administration should direct and control such reports of current operations as it decides should be made to the Interstate Commerce Commission.

"The figures cannot be combined for purposes of a consolidated report, so as to state facts without considerable elimination of duplications, and would then combine assets and liabilities of two distinct interests. The income account could not be combined without the insertion of an item for which provision is not now made, namely, a reconciliation between the net results of federal operation and the compensation paid to the owners."

Therefore, the committee recommended that two separate and distinct reports should be made, if it is decided that the operating results of the Railroad Administration are to be reported to the commission, and the following schedule for the two reports, representing the memorandum submitted, modified in accordance with suggestions made by the committee, was proposed and will be used.

The committee also considered the matter of accounting on the corporate books of the carriers whose property is being operated under federal control, for the salaries and expenses of the corporate organization and of lap-over items of revenues and expenses prior to January 1. The commission's accounting organization had tentatively recommended that the salaries and expenses of the corporate organization be

Schedule Page No.	Subject	Corporate Annual Report	Annual Report of Federal Operations
101	101 Identity of respondent.....	Retain	Change to provide for a brief statement of the property covered by the report.
102	103 Directors	Retain	Omit
103	103 Principal general officers.....	Retain	Omit
104-A	105 Corporations controlled	Retain	Federal officers.
104-B	108 Control over respondent	Retain	Omit
108	109 Voting power and elections	Retain	Omit
109	110 Guarantee and suretyships	Retain	Omit
200-A	200 Balance sheet	Retain in present form, but add lines for the following accounts: Inv. in Rd. and Eq. through U. S. Govt. Approved Not approved Total	Retain in present form (items not applicable being left blank by Federal Auditor), but add lines for the following accounts: Compan. Deferred Liabilities Company Deferred Assets Company Unadjusted Debits Company Unadjusted Credits
200-L	201	U. S. Govt. Deferred Liabilities. U. S. Govt. Unadjusted Debits. U. S. Govt. Unadjusted Credits. The above four accounts in each report are to be detailed on a separate page under heads such as the following: Cash, December 31, 1917. Assets and Conductors' balances, December 31, 1917. Materials and Supplies, December 31, 1917. Other Working Assets (or Liabilities), December 31, 1917. Additions and Deductions.	
211	202 Investment in road and equipment	To be divided into three parts: (a) Road and Equipment, including investment through U. S. Government, approved; (b) Road and Equipment, through U. S. Government, not approved; (c) Total Road and Equipment. To be detailed in a manner similar to the preceding.	Investments made by the U. S. Government on lines owned by the Company and assumed by the Government.
211-L	204 Investments on leased lines	Retain	Improvements, finally assumed by U. S. Government and made on lines leased by the Company.
211-Z	205 Securities included in investment	Retain	Retain
214	210 Sinking funds	Retain	Retain
215	211 Deposits in lieu of mortgaged property sold	Retain	Retain
216	211 Special deposits	Retain	Retain
217	213 Investment in securities	Retain	Omit
218	214 Investment in securities	Retain	Omit
219	216 Investment in securities of non-affiliated companies	Retain	Retain (Liberty Loan Bond-).
221	217 Investment in securities	Retain	Omit
220	218 Investment advances	Retain	Retain
223	218 Loans and bills receivable	Retain	Retain
228	218 Other unadjusted debits	Retain	Retain
236	219 Insurance and other funds	Retain	Retain
251	224		
10	20 Stock and debt	Retain	Omit
263	230		
271-275	235 Sundry current liabilities	Retain	Retain
284, 286	235 Sundry unadjusted credits	Retain	Retain
285-A	238 Depreciation	Retain	Retain
300-P	300 Profit and loss account	Retain	Retain
300-D	300 Dividend	Retain	Omit
300-I	301 Income account	Retain	Retain
310	302 Revenues	Omit	Retain
330	302 Miscellaneous operations	Retain	Retain
320	303		
10	30		
322	309 Operating expenses	Retain—Salaries of corporate employees to be charged to appropriate operating expense accounts. Retain	Retain
350	310 Taxes	Retain	Retain
	(To be expanded somewhat to distinguish taxes of various kinds assessed by the Federal Government.)		
371	311 Income from lease of road	Retain	Omit
371-A	311 Abstract of leases	Retain	Omit
	(Corporation to give leading features of its contract with U. S. R. R. Adm. peculiar to each road.)		
373	312 Joint facilities	Omit	Retain
375	313 Separately operated properties	Retain	Omit
376	313 Hire of freight cars	Omit	Retain
381	318 Joint facilities	Omit	Retain
383	321 Rent for lease of road	Retain	Omit
383-A	321 Abstracts of leases	Retain	Omit
381-395	322 Income appropriations	Retain	Retain
396	323 Miscellaneous profit and loss items	Retain	Omit
411	400 Road operated	Retain	Retain
412	401 Miles of road by States	Retain Cols. (i) and (j).	Retain Cols. (b) to (h); also (k).
413	401 Miscellaneous physical properties	Retain	Retain
414	402 Tracks operated	Omit	Retain
415	403 Miles of track by States	Retain Cols. (i) and (j).	Retain Cols. (b) to (h); also (k).
417-A	404 Equipment	Omit	Retain (See Note)
	(Note.—Federal Auditor to report company equipment in service of U. S. R. R. Administration and assigned to the particular road and also to report separately equipment owned by the U. S. Government and assigned to the particular company on December 31, 1918.)		
417-B	405 Equipment not in service of U.S.R.R. Adm. nor of respondent	Retain	Omit
419	408 Electric locomotive equipment	Omit	Retain (See Note under 417-A)
513	501 Ties laid	Omit	Retain
515	504 Rail laid	Omit	Retain
531-3	506 Statistics of operations	Omit	Retain
541	508 Tonnage by commodities	Omit	Retain
561-A	510 Employees	Retain	Retain
561-B	512 Women and trainmen	Omit	Retain
571	514 Consumption of fuel	Omit	Retain
581	515 Contracts	Retain	Retain
591	516 Changes during year	Retain	Retain
...	517 Verification	Retain	Retain first oath only.

charged to the account, "Maintenance of Investment Organization," but the committee recommended that such expenses shall be charged to the appropriate primary accounts under the commission's classification of operating expenses, on the ground that to charge them to investment account would represent an improper distribution, and in order that proper comparison of the operating expenses might be available in later years, and this position was approved by the commission's representatives. The latter had tentatively suggested that lap-over items of revenues clearly applicable to the period prior to January 1, 1918, shall be credited to income account, "Miscellaneous Income," and charged to general balance sheet account, "Other Deferred Assets," and that similar items of expenses should be charged to "Miscellaneous Income Charges" and credited to "Other Deferred Liabilities." The committee recommended that the items be so handled.

A question as to the accounting for scrap rails sold at prices in excess of original cost had been submitted by the chief examiner of accounts of the commission, who stated that the high prices now being realized in the sale of scrap rail and the fact that a number of carriers are crediting to operating expenses the entire proceeds of such sales, indicates the necessity of bringing the matter to the attention of carriers in such a way as will result in uniform accounting consistent with the principles of the classifications. The committee adopted a resolution that the principles which should govern the credits for scrap rail really are no different from those which should govern the credits for other scrap derived from renewals and replacements, but that to attempt to ascertain or estimate carefully the original cost of scrap removed in each instance would involve a large amount of labor at a time when the demand for conserving man-power is at the maximum. As the increases in the prices of scrap are in a large degree consistent with the increases in the prices of corresponding new material and the apparent abnormal conditions with regard to scrap really are due to the fact that because many carriers had wisely contracted ahead for new rail requirements, the prices of scrap have temporarily advanced ahead of the advances in the prices of new rail purchased. Therefore, it was resolved that no change should be made at this time in the existing methods of accounting for the scrap rail derived from renewals or replacements, but the committee suggested that the whole matter should be taken

up by the Interstate Commerce Commissions representatives with the Railroad Administration for consideration.

The committee also considered a suggestion made to the commission by W. J. Cunningham, manager of the operating statistics section of the Railroad Administration, that a saving of accounting labor would result if carriers in reporting net ton-miles to the commission were allowed to utilize certain complications made from the wheel reports for operating purposes, whereas the net ton-miles reported to the commission have generally been made from waybill abstracts. The committee expressed itself as being in favor of the compilation of net ton-miles from the wheel reports and requested the chairman to so advise Statistician Lorenz.

Accounting Officers to Co-operate with Railroad Administration

AT THE REQUEST of the advisory accounting committee of the United States Railroad Administration, transmitted through its chairman, A. H. Plant, President R. E. Berger of the Railway Accounting Officers' Association, has created various sub-committees, composed of members of the Railway Accounting Officers' Association, to co-operate with the advisory accounting committee in any way that it may designate. This action is part of the offer extended by the association to aid the director of the Division of Accounting of the Railroad Administration in accounting matters and to be of the utmost service in every possible way to the government in winning the war.

On July 1 the director of Public Service and Accounting directed the advisory accounting committee to take steps to simplify and standardize railway accounting methods as far as possible. In the furtherance of that idea, President Berger appointed certain territorial sub-committees of freight, freight station, passenger, passenger station, and disbursement accounts to co-operate with the administration through the advisory accounting committee, and the necessity has now become apparent for a sub-committee on general accounts for a like purpose and to deal with matters of general accounts coming up for decision.

Proceeding upon the assumption that many of the questions which may be expected to arise will affect both the federal roads and the corporate companies, it was considered proper and desirable to give both of these interests representation on this sub-committee and the following committee of seven has been appointed:

SUB-COMMITTEE ON GENERAL ACCOUNTS

F. A. Barnes (chairman), federal auditor, Great Northern, St. Paul, Minn.
W. D. Beymer, federal auditor, Illinois Central, Chicago.
A. B. Bierck, federal auditor, Philadelphia & Reading, Philadelphia, Pa.
W. B. McKinstry, federal auditor, Central of Georgia, Savannah, Ga.
C. I. Sturgis, controller, Chicago, Burlington & Quincy, Chicago.
H. T. Evans, auditor, Chicago, Indianapolis & Louisville R. R. Co., Chicago.
W. H. Smith, auditor, Atlanta & West Point R. R. Co., Atlanta, Ga.

Other sub-committees also have been appointed as follows:

FREIGHT ACCOUNTS

J. A. Robinson, general chairman (chairman, Committee on Freight Accounts R. A. O. A.).

Eastern Sub-Committee

F. E. Shallenberger (chairman), auditor through freight traffic, Pennsylvania System Lines, Pittsburgh, Pa.
J. A. Moran, auditor of freight accounts, Erie, New York City.
W. T. McCulloch, auditor of revenue, New York Central, New York City.
J. P. O'Malley, auditor of merchandise receipts, Baltimore & Ohio, Baltimore, Md.
N. H. Kicker, auditor of freight receipts, Boston & Maine, Boston, Mass.
A. S. Sutton, auditor of freight accounts, Michigan Central, Detroit, Mich.

Western Sub-Committee

W. W. Strickland (chairman), freight auditor, Atchison, Topeka & Santa Fe, Topeka, Kan.
Paul Peters, auditor freight traffic, Chicago, Rock Island & Pacific, Chicago.
F. B. Sherwood, auditor freight receipts, Illinois Central, Chicago.
W. J. Wright, auditor freight receipts, Missouri Pacific, St. Louis, Mo.

H. B. Ochiltree, auditor freight accounts, Union Pacific, Omaha, Neb.
P. E. Bramon, auditor freight accounts, Chicago, Burlington & Quincy, Chicago.

Southern Sub-Committee

J. A. Robinson (chairman), assistant auditor, Southern, Washington, D. C.
W. H. Smith, auditor, Atlanta & West Point, Atlanta, Ga.
George Becker, auditor receipts, Louisville & Nashville, Louisville, Ky.
E. L. Prince, auditor of freight receipts, Atlantic Coast Line, Wilmington, N. C.
W. A. Rooks, auditor of traffic, Central of Georgia, Savannah, Ga.
B. B. McCaa, auditor freight accounts, Seaboard Air Line, Portsmouth, Va.

DISBURSEMENT ACCOUNTS

A. P. Disbrow, general chairman (chairman, Committee on Disbursement Accounts R. A. O. A.).

Eastern Sub-Committee

A. P. Disbrow (chairman), auditor of disbursement, Erie, New York City.
G. H. Pryor, auditor of disbursement, Baltimore & Ohio, Baltimore, Md.
R. R. Ferguson, auditor, Delaware, Lackawanna & Western, New York City.
J. F. Reynolds, auditor, Pennsylvania, Philadelphia, Pa.
E. Deschenes, federal auditor, Central Vermont, St. Albans, Vt.
M. R. Council, auditor of disbursement, New York Central, New York.

Western Sub-Committee

E. H. Bunnell (chairman), auditor of disbursement, Atchison, Topeka & Santa Fe, Topeka, Kan.
F. A. Barnes, federal auditor, Great Northern, St. Paul, Minn.
P. E. Purcell, auditor of disbursement, Wabash, St. Louis, Mo.
H. W. Johnson, auditor of expenditures, Chicago, Burlington & Quincy, Chicago.
A. Hermans, auditor of disbursement, Chicago, Rock Island & Pacific, Chicago.
T. M. Niven, assistant federal auditor, Missouri Pacific, St. Louis, Mo.

Southern Sub-Committee

F. C. Uhlman (chairman), auditor, Western Maryland, Baltimore, Md.
A. E. Fowler, auditor, Southern, Washington, D. C.
C. W. Danner, assistant federal auditor, Texas & Pacific, Dallas, Texas.
W. H. Wilson, auditor of disbursement, Norfolk & Western, Roanoke, Va.
J. H. McEwen, auditor of disbursement, Nashville, Chattanooga & St. Louis, Nashville, Tenn.
J. F. Dartt, auditor of disbursement, Illinois Central, Chicago.

PASSENGER ACCOUNTS

C. G. Weaver, general chairman (chairman, Committee on Passenger Accounts, R. A. O. A.).

Eastern Sub-Committee

J. L. Ferris (chairman), auditor of passenger accounts, New York Central, New York City.
C. S. Covert, auditor of passenger accounts, Pennsylvania Lines West of Pittsburgh, Pittsburgh, Pa.
H. W. Snow, auditor of passenger receipts, New York, New Haven & Hartford, New Haven, Conn.
J. F. Reilly, auditor of passenger accounts, Erie, New York City.
C. H. Pounmairat, auditor of passenger receipts, Baltimore & Ohio, Baltimore, Md.
H. J. Broderick, auditor of passenger accounts, Michigan Central, Detroit, Mich.

Western Sub-Committee

C. G. Weaver (chairman), auditor of passenger traffic, Chicago, Rock Island & Pacific, Chicago.
J. F. Mitchell, ticket auditor, Atchison, Topeka & Santa Fe, Topeka, Kan.
O. F. Giffin, auditor passenger accounts, Southern Pacific, San Francisco, Cal.
J. C. Briggs, auditor of passenger accounts, St. Louis-San Francisco, St. Louis, Mo.
F. E. Southard, auditor of passenger accounts, Union Pacific, Omaha, Neb.
W. F. VanBergen, auditor of passenger accounts, Chicago & North Western, Chicago.

Southern Sub-Committee

H. B. Cutter (chairman), assistant auditor of receipts, Louisville & Nashville, Louisville, Ky.
S. D. Locke, Jr., auditor of passenger accounts, Seaboard Air Line, Portsmouth, Va.
L. D. Lacy, auditor of passenger traffic, Chesapeake & Ohio, Richmond, Va.
W. P. Kerrigan, assistant auditor of receipts, Nashville, Chattanooga & St. Louis, Nashville, Tenn.
C. D. Coleman, auditor of passenger accounts, Galveston, Harrisburg & San Antonio, Houston, Texas.
T. W. Kennedy, auditor, Merchants' & Miners' Transportation Company, Baltimore, Md.

FREIGHT STATION ACCOUNTS

T. L. Shelton, general chairman.

Eastern Sub-Committee

L. K. Luff (chairman), federal auditor, Delaware & Hudson, Albany, N. Y.
J. J. Deneritt, auditor of agencies, Roston & Maine, Boston, Mass.
P. L. Overman, auditor of freight and passenger accounts, Western Maryland, Baltimore, Md.
F. E. Briggs, auditor of freight accounts, New York Central, New York.
J. M. Watkins, auditor of revenue, Baltimore & Ohio, Baltimore, Md.
W. B. Kraft, auditor of freight traffic, Pennsylvania, Philadelphia, Pa.

Western Sub-Committee

H. J. Sterling (chairman), federal auditor, Union Pacific, Omaha, Neb.
E. A. Murphy, assistant auditor, Chicago, Milwaukee & St. Paul, Chicago, Ill.
H. C. Abbey, auditor of station accounts, Missouri Pacific, St. Louis, Mo.
J. O. Clifford, auditor of freight accounts, Chicago & North Western, Chicago.

F. C. Freiburgh, auditor of freight accounts, St. Louis-San Francisco, St. Louis, Mo.
 F. W. Pope, auditor of freight accounts, Southern Pacific, San Francisco, Cal.

Southern Sub-Committee

T. L. Shelton (chairman), auditor of station accounts, Southern, Washington, D. C.

Roy W. Smith, auditor of receipts, Nashville, Chattanooga & St. Louis, Nashville, Tenn.

O. D. James, auditor of freight traffic, Chesapeake & Ohio, Richmond, Va.
 Walter MacDowell, auditor of receipts, Norfolk & Western, Roanoke, Va.
 L. B. Butts, auditor of station accounts, Illinois Central, Chicago.

V. T. Boardman, assistant auditor of freight accounts, Seaboard Air Line, Portsmouth, Va.

The Short Line Contract Is Finally Agreed Upon

American Short Line Railroad Association Committee Offers Co-operation in Arranging Details

AFTER SEVERAL WEEKS of negotiations between the representatives of the Railroad Administration and a committee of the American Short Line Railroad Association, Director General McAdoo on October 25 approved a form of contract to be entered into with the short lines, which provides for taking back under a modified form of federal control lines relinquished shortly before July 1, but without compensation and without taking over their operation unless the director general shall consider it desirable to do so later in any case for war purposes.

While the form of contract represents many modifications from the form which the short line committee had proposed to the Railroad Administration, the committee has accepted it and it is expected that the companies will execute it for the degree of protection it affords and in order to remove the uncertainty of the status in which they have been left.

The contract provides that until it is necessary for the director general to exercise control over the short line roads for war purposes, they are to remain under the management and direction of their owners and are entitled to all the revenues and responsible for all expenses and obligations; that the rates, fares, and charges for transportation services performed jointly by the short lines and the trunk lines shall be divided fairly between the director general and the company. The arbitraries and percentages of joint rates received by the short lines on January 1, 1918, shall not be reduced, and when joint rates are increased, the short lines shall receive their proportion of such increased rate in the same ratio, differences to be settled by the Interstate Commerce Commission. The short lines are to receive an equitable allotment of cars (and where feasible motive power), and for the equipment furnished by the director General they shall pay the same rental as the director general pays for their equipment used by him, and an allowance of two days' free time on cars for loading and unloading is made on lines of road of 100 miles in length or less.

Such arrangement shall be made for the routing of competitive traffic over the short line as will guarantee to it the same amount of competitive traffic as was enjoyed for the average of the three years ending December 31, 1917, and the short line as far as practicable is to have the benefit of the purchasing agencies of the director general in the purchase of material and supplies, and at the prices paid by him; and have its repairs made at the shops of its connecting lines upon the same terms as before federal control.

There shall be no discrimination against the company in the matter of publishing tariffs and routing. Short lines are to be treated in the same manner as the trunk lines, except that nothing in the contract shall be construed to require the establishment of joint rates where joint rates were not in effect at the beginning of federal control.

The order of relinquishment issued in June is to be set aside, and the roads restored to federal control on the basis of the contract, and the right is given to the director general to take over the operation of any road if in his opinion a war necessity arises.

The director general will formulate definite rules and regulations governing exchange transportation which shall apply to the short lines without discrimination.

No definite list of the railroads relinquished in June has ever been given out by the Railroad Administration, but a list has been made of 753 railroads, operating 27,319 miles, or an average of 36 miles each, which have not been included among the roads operated by the Railroad Administration, exclusive of the 1,734 industrial or plant facility roads that were relinquished. The list of short lines includes 70 roads, operating over 2,300 miles of narrow-gauge line.

A Perplexing Problem

The question of the treatment of the short line railroads has been a perplexing one ever since the government took over the railroads. A large number of them received the official notice that they had been taken over, around the first of the year, but the Railroad Administration soon made it known that many of them were not considered as desirable or useful parts of the national transportation system for war purposes and that it proposed to relinquish many of them. While some of the short lines were relinquished at their own request, most of them declared that they would be ruined if left outside the government system and that Congress clearly intended them to be taken over.

After the federal control act was passed on March 21, the director general directed the three regional directors, A. H. Smith, R. H. Aishton and C. H. Markham, to make a study of the short line situation and to report as to each road, individually, whether it was in their opinion needful or desirable for the purposes of the national government. The regional directors recommended a large number for relinquishment and many for retention, but when the question of contracts with the short lines came up difficulties were encountered and the Railroad Administration proposed to Congress an extension from July 1 to January 1 of the time within which it might relinquish such roads as were proposed to be relinquished. The short lines proposed an amendment that no road should be relinquished unless its connecting and competing lines were relinquished at the same time and this was adopted by Congress, but not until after the Railroad Administration had forestalled the action by sending out notices formally relinquishing most of the short lines. The administration apparently felt that it did not want to take over all the short lines and also that it would be able to make contracts much more easily with a line after it had been relinquished than if it were definitely taken over. This position was approved by President Wilson, who vetoed the amendment adopted by Congress in a message in which he said that most of the short lines except the industrial roads ought to be retained, but that the government should not be required to deal in the same way with all of them but should be left free to enter into arrangements with them "which will in each case be to the interest alike of the roads dealt with and of the local public."

When it appeared that a large number of the lines were

to be relinquished, the executive committee of the short line association proposed to Director General McAdoo that the "matured" lines be taken over under the standard contract and that the "unmatured" roads be taken under the protection of the government by a contract without compensation. They also submitted a proposed form of contract which has been the basis of subsequent negotiations.

Recently the short line committee rejected the contract in the form the administration proposed to offer it, but after a number of Congressmen had called on Mr. McAdoo on the subject negotiations were resumed at their request.

Short Line Association Co-operates

The committee of the American Short Line Railroad Association which has handled the negotiations with the Railroad Administration has written to Director General McAdoo offering its co-operation in the making of the individual contracts and promising to make an investigation of the condition of each line with a view to recommending the scrapping of any line which may be deemed not sufficiently useful to warrant its being made a party to the proposed contract. The association also proposes to hold a series of meetings in various cities with the various short line owners for the purpose of explaining the contract to him.

The notice issued by Director General McAdoo says the contract follows the general principles announced by the President at the time he vetoed the short line resolution and that "it is believed that this will be satisfactory to short line owners and will enable them to continue in operation as successfully as before federal control."

Text of Proposed Agreement

The Standard clauses of the contract for short line railroads in which the director general reserves the right to make changes or insist on other provisions as the facts of the particular case make the same necessary, are as follows:

This agreement was made the day of 1918, between William C. McAdoo, director general of railroads (hereinafter called the director general), acting on behalf of the United States and the President, under the powers conferred on him by the proclamation of the President, hereinafter referred to, and the Company, a corporation duly organized under the laws of the state(s) of (hereinafter called the company);

Witnesseth that,

(a) WHEREAS, by a proclamation dated December 26, 1917, the President, acting under the powers conferred on him by the Constitution and Laws of the United States, by virtue of the joint resolutions of the Senate and House of Representatives bearing date April 6 and December 7, 1917, and approved August 29, 1916, and by virtue of Section 1 of the act of Congress approved August 29, 1916, entitled "An act making appropriations for the support of the army for the fiscal year ending June 30, 1917, and for other purposes," took possession of and assumed control at 12 o'clock noon on December 28, 1917, for war purposes of certain railroads, containing certain systems or systems of transportation (notwithstanding the fact that the same are not described herein), and appointed W. G. McAdoo director general of said railroads; and

(b) WHEREAS, that act of Congress called herein the Federal Control Act, approved by the President March 21, 1918, brought under federal control the railroad hereinafter described under the following provision: That "any railroad not under control of the Government and not owned or controlled by the Government and not having been heretofore exempted for traffic with a railroad or railroads of which the President has taken the possession, use and control, or which connects with such railroads and is engaged as a common carrier in general transportation, shall be held and considered necessary to the prosecution of the war, and shall be deemed to be necessary to the prosecution of the war, and shall be entitled to the benefit of all the provisions of this act"; and,

(c) WHEREAS, by resolution, dated March 29, 1918, the President, pursuant to said Federal Control Act, authorized the said W. G. McAdoo, as director general, either personally or through such divisions, agencies or officers as he might appoint, to make such agreements in the name of such divisions, agencies or persons, or in the name of the President, to make with the carriers, or any of them, such agreements as may be necessary and expedient respecting any matter concerning which it may be necessary or expedient for the President to make such agreements with the carriers, and

ments of the other herein contained, do hereby covenant and agree to and

privilege or benefit against either party hereto in favor of any state or any subdivision thereof, or of any individual or corporation other than the

they shall be understood as designating William G. McAdoo, or such other person as the President may from time to time appoint to exercise the powers conferred on him by law with relation to federal control.

SECTION 2. The company's said railroad affected by this agreement shall be considered as including the following roads and properties:

Federal Control Act and the terms of this agreement, and expressly accepts the covenants and obligations of the director general in this agreement set out and the rights arising thereunder in full adjustment, settlement, satisfaction, and discharge of any and all claims and rights, at law or in equity, which it now has or hereafter can have against the United States, the President, the director general, or any other agency thereof by virtue of anything done or omitted, pursuant to the acts of Congress herein referred to.

This is not intended to affect any claim said company may have against the United States for carrying the mails or for other services rendered not pertaining to or based upon the Federal Control Act.

(b) The company, on its own initiative or upon the request of the director general, shall take all appropriate and necessary corporate action to carry out the obligations assumed by it in this agreement or lawfully imposed upon it by or pursuant to the Federal Control Act.

that the said clause 11 is expressly intended and understood that the said accession and use of the railroad property herein described subject to the right of the director general to take the said property into actual possession as hereinafter provided, as a war emergency, shall remain in the company, and the company shall continue to operate the same, and all revenues accruing from the operation thereof shall belong to the company, and all expenses arising out of or incident thereto, and all taxes of whatsoever character imposed thereon, or upon the company shall be paid and borne by the company, it being expressly agreed that until and until the director general shall as hereinbefore provided take over the actual possession and operation of said railroad, assumes no obligation for the payment of any expenses or charges in connection therewith, nor of any risk or accident in connection with the operation or control of said property.

SECTION 5. All rates, fares and charges for transportation services performed jointly by the company and any transportation system in the possession of, and operated by, the director general shall be divided fairly between the director general and the company. It is agreed that the arbitrators and percentages of joint rates, both passenger and freight, received by the company as of January 1, 1918, shall not be reduced, and whenever the rates received shall be increased, the company shall receive the same proportion of such increased joint rates amounts in the same ratio as its arbitrators or percentages bore to the joint rates before they were increased.

SECTION 6. The company shall receive an equitable allotment of the cars (and, where feasible, motive power) in the possession or under the control of the director general. For the equipment thus furnished it shall pay the per diem rentals now in effect or as they may be established from time to time by the director general, and like rentals shall be paid by the director general to the company for any of the company's equipment used by him: provided, that the company shall be allowed to claim allowances for roads of 100 miles or less in length, of two days, which will be assumed by the delivering road.

SECTION 7. Such arrangements shall be made for the routing over the company's line of competitive traffic as shall insure to the company in any month the same proportion of such competitive traffic as it had of the total of such traffic for the average of the three-year period ending December 31, 1911 and 1912, taking into account both class and quantity of tonnage, it being understood and agreed that if in any month such proportion of competitive traffic delivered to the company shall be less than that based on the average for the three-year period, the director general will, at the option of the company, make up the deficiency by routing an additional amount of competitive traffic as shall make up the required amount.

SECTION 8. If differences arise as to any matter arising under this contract, either party may refer the question to the Interstate Commerce Commission, and its decision shall be final and binding.

SECTION 9. The company, so far as practicable, shall have the right to use the purchasing agencies of the director general in the purchase of materials and supplies at the prices which the director general shall pay therefor, and to have its repairs done in the shops of its connecting lines to the same extent and upon the same terms as were enjoyed before federal control, and the roads have heretofore not had the repairs done at the shops of the connecting line, but at private shops which have since been closed, they may have their repairs done at the shops of the connecting line upon fair terms.

SECTION 10. There shall be no discrimination against the company in the matter of publishing tariffs and routing. In all publication of rates, tariffs and routing, covering the territory in which the company's road is situated, the company shall be treated in the same manner as the trunk lines, except that nothing in this section shall be construed to require the establishment of joint rates where joint rates were not in effect at the commencement of federal control.

SECTION 11. It is expressly agreed that if in the opinion of the director general a necessity shall arise making it necessary or desirable for any purpose connected with the war, for the director general to take into his possession and control any real estate, railroad, or other property or properties herein described he shall have the right to do so, and upon the expiration of this contract shall be terminated and a new contract made providing for the payment of compensation as provided by the Federal Control Act; and if in the meantime it becomes necessary in his opinion to issue any orders or instructions to the said railroad or other property or to its crews or war supplies, and company shall obey such orders or directions.

subject thereto, the order of relinquishment issued on the day of June, 1918, is hereby rescinded and set aside as of the date when the same was issued; and the said railroad and the properties herein described are hereby brought fully within the terms and under the control of the said Federal Control Act, the same in all respects as if the said order of relinquishment had not been issued.

SECTION 13. The director general will formulate definite rules and regulations governing exchange transportation, which rules and regulations shall be made applicable to the company without discrimination.

Orders Issued by the Regional Directors

These Are of Special Interest Because in Many Cases They Interpret or Amplify General Orders

PRIVACY FOR TRAIN DESPATCHERS.—In Circular 118 the Southwestern regional director recommends that steps be taken at opportune times, or when it becomes necessary for any reason to rearrange offices, to place train despatchers in a room by themselves. He states that on a number of roads in this region it is quite a prevalent practice to locate train despatchers in the same room with the chief despatcher, telegraphers and clerks. He asserts that from a safety first standpoint it is highly desirable that the despatchers be located so that they will be subject to as little intrusion and interruption when on duty as possible.

Shipments for Account of War Work Council Y. M. C. A.—The Southwestern regional director in Circular 121 and the Eastern regional director in Order 3000-429 announce that the director general has notified the general secretary of the National War Work Council of the Y. M. C. A. that the provisions of General Order No. 25 and circulars bearing upon credits and bonds do not apply to shipments for their account.

Number of cars in Troop Trains.—Order 97, Southwestern regional director—same as Supplement 1 to Circular 22 of Northwestern regional director. See page 732 of *Railway Age* of October 25.

Denomination of Bills Tendered in Payment for Tickets.—In Order 98 the Southwestern regional director states that the Bureau of Suggestions and Complaints has received a number of complaints by reason of disputes concerning the denomination of bills tendered in payment for tickets. Hereafter all ticket clerks, particularly in the larger offices, will announce to passengers definitely and audibly the denomination of bills at the time they are presented in payment for tickets.

Posting of Printed Matter on Railroad Premises.—Order 3000-430 of the Eastern regional director refers as follows to his letter of October 1, in regard to posting of printed matter on railroad premises:

Recently a request has been made on one of the railroads by the United States Employment Service to post a sign in a depot reading, "United States Employment Service," with the street number and the name of the town. The Department of Labor has a distinct understanding with the Railroad Administration that requests for the posting of signs in depots or elsewhere will not be presented to the individual roads, but that all such requests must be presented at Washington. Every request of this character, therefore, should be denied.

Maintenance of Air Brakes on Freight Cars.—In Order 99 the Southwestern regional director states that the general condition of air brakes on freight cars is such as to require immediate and continued careful attention. The following instructions are effective at once:

1. After the air brakes are cleaned and tested the air pipe should be properly fastened in place to prevent the rattling and breaking of joints and all leaks made tight.
2. Trains made up in transportation yards should have the brakes tested and all leaks remedied before departure. This should also be done on all cars passing over shop tracks.
3. Railroads should endeavor to clean, rest and put in good condition, all automatic brake equipment on freight cars. The number of brakes thus repaired each month should be equal to at least one-tenth of the equipment owned by that road.
4. Federal managers should see to it that a record is maintained by the mechanical department to show the amount of this work that is done, and be prepared to make complete reports to the office of the regional director upon request.

Interpretation of General Order 15—Industry Tracks.—In Circular 119 the Southwestern regional director quotes an interpretation by Walker D. Hines, assistant director general, of paragraph (e) of General Order 15. General Order 15 requires industries to pay for, own and maintain that part of

an industry track beyond the right-of-way of the railroad company. Paragraph (e) gives the railroad the right to use the industry track when not to the detriment of the industry. With reference to paragraph (e) Mr. Hines states that in cases where federal managers are satisfied that the plant deals in a commodity which in itself presents an inherent hazard of fire or explosion of exceptional character, or that other permanent conditions connected with the plant present hazards of fire or explosion to such an extent that it is permanently and constantly to the "detriment of the industry" to permit operations upon the track which are not required for the industries' own business, paragraph (e) need not be insisted upon.

Diversion of Carload Freight in Transit.—The Southern regional director in circular letter No. 404, dated October 22, gives instructions to govern where carload freight is diverted en route to direct routes or because of embargoes or congestions. A notation should be made on waybills showing that the routing was changed by direction of the regional director, under authority of the director general's order No. 1, and a postal advice card should be sent to the consignee on a prescribed form. On arrival at destination of shipments which have been diverted in transit, agents, in addition to notifying consignee, will notify agent of the line by which shipment was originally routed and indicate it on the waybill. This is necessary to insure against delay where consignee or consignor has placed instructions for delivery or reconsignment in advance of arrival of order with the line over which it was expected shipments would move.

Incandescent Electric Lamps.—The Eastern regional director in Order 3000-431 states that the United States Fuel Administration has formulated a program of fuel conservation through the discriminating use of the most efficient types and the most suitable sizes of incandescent electric lamps. The following features are embodied in the suggested program:

1. Abandon the manufacture of standard 20-watt (\$14), 60 and 120-watt carbon filament lamps of the 100-130 volt range.
2. Abandon the manufacture of 30 and 60-watt standard round bulb multiple carbon filament lamps.
3. Abandon the manufacture of standard 120-130-volt range carbon filament lamps of types used principally for decorative purposes.
4. Discourage the use of carbon filament lamps except where the tungsten filament lamp cannot be used.
5. Abandon the use of metallized carbon filament (Gem) lamps.
6. In industrial and commercial installations use a smaller number of large high efficiency gas filled tungsten lamps instead of smaller less efficient lamps.
7. Use lamps of sizes which will provide no more than the necessary illumination.
8. Use gas filled tungsten lamps where practicable instead of a vacuum tungsten lamp of 100-watts and larger.
9. Exchange lamps where necessary with the same and smaller.
10. Eliminate extravagant and wasteful lighting.

It has been decided that the Railroad Administration shall adopt the suggestions of the Fuel Administration quoted above, in so far as they apply to the railroads.

Routes for Perishable Traffic.—The Southern regional director has issued a circular to fruit and vegetable shippers describing new arrangements for the routing of perishable traffic to eastern and western gateways, modifying the rules established in March in the hope of still further expediting this important traffic. Prior to last season many routes were available for the movement of perishable traffic from Florida to eastern and western markets, almost all of which were utilized. This resulted in the business being divided so that some of the lines were unable to give such special service as would otherwise be obtained. In March some of these routes

were discontinued with the view that so far as possible the perishable traffic might be moved to destination by particular routes and in trainload quantities. The result of this change was gratifying and overcame to a large extent the complaints which had previously been made with regard to delays in traffic. The new routes are outlined in detail in the circular. A service bureau has been established at Jacksonville, Fla., which will keep informed as to the movements of fruit and vegetables and will arrange for diversion or reconsignment of shipments and special agents have been appointed at 12 cities which will furnish the Jacksonville Service Bureau with such passing reports as may be required and will arrange for such reconsignments and diversions as may be directed.

Protection of Perishable Freight.—The Northwestern and Southwestern regional directors have issued Circulars 50 and 100 respectively, containing a number of suggestions in connection with the handling of perishable freight during the winter. The circular was issued both as a food conservation and as a claim prevention measure. Attention is called to the enormous loss of perishable food products through freezing in transit. Agents are requested to discourage shippers from forwarding perishable freight during unfavorable weather conditions or when advance weather reports indicate cold temperatures even though refrigerator cars may be available for loading. Exposure in warehouses and on open platforms should be avoided wherever possible and preference should be given to the loading of such l. c. l. shipments when accepted for transportation. Prompt delivery at destination should be rigidly enforced. Train crews should be warned of the necessity of keeping the train despatchers advised of carload perishable freight in trains, especially during the approach of low temperatures so that protection may be arranged for when possible. A close check should be kept on all cars of perishable freight passing terminals and of deliveries to connections to avoid delays and mishandling to the utmost.

Working Relations with Relinquished Short Lines.—The Southwestern regional director in Order 96 and the Eastern regional director in Order 3000-428 announce that the same recognition will be given to the short lines as to the government-controlled lines in the matter of routing as well as in the closing of unduly circuitous routes. Officers of federal lines will respect routing via non-controlled lines when desired by shippers or indicated on bills-of-lading or on connecting lines' billing, when such routing is not unduly circuitous. If, for the sake of efficiency, it is desirable to divert the traffic from private lines, a careful record of such diversion will be kept with a view of reimbursing those lines with other traffic.

Advances or reductions in the non-controlled lines' proportions of the existing joint rates will not be made without first securing the authority of the regional director. If, however, in the judgment of any officer of an administration line, the non-controlled proportions are unfair, the facts, accompanied by a statement containing the reasons for this opinion, should be forwarded promptly to the regional director.

In case a non-controlled line has only one trunk line connection, it should be accorded the same treatment as a shipper of freight local to the latter line and should receive its pro rata of available cars. In case it has two or more trunk line connections, the latter should analyze the freight movement and agree upon a plan whereby each line will furnish its share of equipment to the short line.

TO ELECTRIFY SWISS ROADS.—Press despatches report an announcement by the Lausanne Revue that the United States has offered to make a loan of 750,000,000 francs (\$150,000,000) to Switzerland in order to electrify the railways. Switzerland thus would become independent of German coal.

A New Floor Surface for Slopes

THE STUDIES made incident to the installation and maintenance of the ramps and stairs in the Grand Central Terminal at New York have constituted a very interesting problem. Preceding and during the construction of the station ramps finished with different wearing surfaces were laid on various grades and the effect of these various installations on the public using them was observed to determine as nearly as possible the most suitable grades and surfaces. The primary object of these experiments was to secure a wearing surface in both the ramps and stairs that would ensure safety to pedestrians. Fast walking surfaces were of hardly less importance because of the great number of people passing through the station daily; and because of the large area embraced in the ramps and stairs, long wearing qualities were essential.

Since the completion of the station the traffic has increased at a rate of approximately 9.0 per cent per year. This percentage of increase is based on the number of passengers carried, excluding the traffic arising from the use of the building by the public having occasion to pass through the station for reasons other than a train journey. Based on actual count more than 60,000 persons pass over certain of the more important ramps daily and more than 20,000 persons have occasion to use certain of the stairways every 24 hours. Because of the increasing importance of handling



A View of One of the Ramps in the Grand Central Terminal, New York

this traffic with as little delay as possible and the fact that some of the surfaces adopted as a result of the preliminary experiments became worn or slippery or both, with the passage of time the experimentation with different materials has been kept up constantly.

In connection with these continuous experiments, a test installation of 100 per cent non-slip Solry tile on a 10 per cent ramp for pedestrians was made about five years ago. This material is manufactured in four or five colors as required and furnished with or without the non-slip feature. In the ramps at Grand Central the non-slip surface was essential. Since its application no accidents from slipping have occurred and careful counts of pedestrians passing indicate that in addition to the non-slip feature the surface is fast, or in other words, its use makes for rapid handling of the traffic. The excellent results obtained from the test installation led to its use in other ramps and for stair treads and landings.

The material is a combination of cement, grit and an abra-

sive. It is manufactured in squares of 6 in., 18 in. or 24 in. in tile made by pouring the mixture into forms and letting it set, or it may be laid in plastic form and cut to the size required. It is used in both forms at the Grand Central Terminal.

When put down in plastic form the joints are cut to any width specified and filled in with the same material so that an even wearing surface is presented. The joints are cut through to the base to take care of expansion and contraction, and then the surface is cut to produce any form or shape required. In plastic form the risk of tile working loose is avoided and the cutting of tile to fit along walls and curves which generally results in an unsatisfactory condition is done away with. The plastic method is also less expensive than tile.

The experiments in the Grand Central Terminal have demonstrated the importance of continuing non-slip surfaces

beyond the end of the ramp and stair. By so doing the pedestrian leads right from the ramp or stair and picks up speed rapidly when passing to the level surface. It has been found that the Solry surface presents the same favorable features on flat surfaces as on grades.

This surface has also given satisfactory service at Grand Central on ramps and platforms used jointly by pedestrians and trucks, the material giving no indication of raveling under the action of truck wheels. It is further claimed for the surface that it is dustless, thus reducing the expenses for cleaning.

In addition to its use in the Grand Central Terminal, installations of this surface have been made by the Interborough Rapid Transit Co., in New York; in the Union Station at Toronto and in the Union Station at Richmond, Va. It is manufactured by the Solry Tile Co., Inc., Brooklyn, New York City.

Standard Scales of Class Rates Are Proposed

Government Control and Absence of Competition May Allow Adoption of a Scientific System

THE RAILROAD ADMINISTRATION is proposing to standardize class freight rates on a basis intended to eliminate the discriminations and inequalities resulting from differences between the rates in various states and between state and interstate rates and to bring about a greater degree of uniformity in those sections of the country where conditions of transportation, density of traffic and of population, etc., are similar.

Director General McAdoo has submitted to the Interstate Commerce Commission and the state railroad commissions

are related to each other on a percentage basis. These are the 100 per cent scale, the 75 per cent scale, the 120 per cent scale and an alternative scale proposed as a possible substitute for the 100 per cent scale for southern territory.

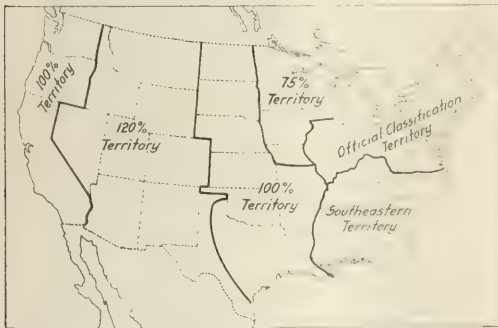
The plan contemplates a division of the territory west of the Mississippi into zones within which it is proposed to apply the scales to both intrastate and interstate traffic as follows: In Iowa, Wisconsin, Minnesota and Missouri north of the Missouri river, the 75 per cent scale; in North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Arkansas, Missouri, south of the Missouri river, Louisiana west of the Mississippi river and Texas common point territory, the 100 per cent scale; in California, Oregon and Washington also the 100 per cent scale. For Arizona, New Mexico, Colorado, Utah, Wyoming, Idaho, Montana and Texas differential territory the 120 per cent scale is suggested.

The line dividing Texas common point territory from Texas differential territory is drawn through Amarillo, Lubbock, Big Spring, San Angelo, San Antonio and Corpus Christi the common point territory being east and differential territory west of that line.

The 100 per cent scale is exactly the same, except for its extension to 1,000 miles, as that recently agreed upon for application in the state of Oklahoma as a result of a conference between Director General McAdoo and the railroad commissioners and some representative shippers of that state, to whom it was entirely satisfactory.

For the southeastern territory two alternative scales are suggested, the first being the same as that offered for application in 100 per cent western territory for use with the Western Classification, and the second being a special scale designed to be used in connection with the Southern Classification. It is hoped that the people of the southeast may find it advantageous to adopt the western scale and the Western Classification in place of the Southern, which the Railroad Administration traffic officials feel would not only prove a great convenience to the shipping public but also a long step toward a uniform classification.

The four scales of proposed rates are reproduced herewith. They range up to 1,000 miles, except that for 75 per cent western territory, which runs only up to 600 miles. It will be noted that the rates are graduated by 5-mile stages up to



Zones for Proposed Standard Scales of Class Rates

a system of tentative class rate scales, graded according to mileage, for adoption in place of existing scales in southeastern territory, east of the Mississippi river and south of the Ohio river and the main line of the Norfolk & Western; also in all of the state west of the Mississippi river and Wisconsin and Minnesota. No new scale is proposed at present for Official Classification territory, north of the Ohio and east of the Mississippi, because the rates in that territory are already on a more uniform basis than in other parts of the country and have been approved by the Interstate Commerce Commission, which has itself prescribed a distance scale for Central Freight Association territory.

Four scales of class rates are proposed, three of which

150 miles, by 10 mile stages from 150 to 210 miles, by 15 mile stages from 210 to 300 miles, and by 25 mile stages from 300 to 1,000 miles. The rates for the various classes bear the recognized and approved percentage relation to each other and the rates for the various zones have the same percentage relation to each other for each distance as the percentage relation of the zones, except as this is modified by the disregard of fractions.

The plan does not contemplate that the scales should be applied to traffic moving from one territory to another except within the state of Texas but that the present inter-territorial rates shall be continued.

Scales Are Only Tentative

The proposed scales have been sent to the chairmen of the state railroad commissions with letters explaining them over the signature of the director general, and also to commercial organizations. Emphasis is laid on the fact that they are only tentative and that there is no purpose to force any particular plan or schedule of rates, but that suggestions and criticisms are invited. The advice of the Interstate Commerce Commission is being sought as provided for in the

The director general's letter to the chairman of a state commission in the proposed 100 per cent western territory is as follows:

"I have long felt that the rates of transportation, state and interstate, should be uniform in those sections where the conditions of transportation are substantially identical. Certainly when the Government of the United States is performing the service there should be no discrimination between citizens as to the compensation paid. Apparently this can only be accomplished by prescribing uniform sched-

Percentages Classes	100	85	70	60	47	51	40	30	25	20
Miles.	1	1	1	1	1	1	1	1	1	1
5	25	21	18	15	12	13	10	8	6	5
10	27	23	19	16	13	14	11	8	7	5
15	29	25	20	17	14	15	12	9	7	6
20	31	26	22	19	15	16	13	10	8	7
25	33	28	23	20	16	17	13	10	8	7
30	35	30	25	22	17	18	14	11	9	7
35	37	31	26	22	17	19	15	11	9	7
40	39	33	27	23	18	20	16	12	10	8
45	41	35	29	24	19	21	17	13	11	9
50	43	37	30	26	20	22	17	14	11	9
55	45	39	32	27	21	23	18	14	11	9
60	46	39	32	28	22	23	18	14	12	9
65	48	41	34	29	23	24	19	15	12	10
70	49	42	34	29	23	25	20	15	12	10
75	51	43	35	31	24	26	20	15	13	10
80	52	44	36	31	24	27	21	16	13	10
85	54	46	38	32	25	28	22	16	14	11
90	56	47	39	33	26	29	23	17	14	11
95	57	48	40	34	27	29	23	17	14	11
100	59	49	41	35	28	30	24	18	15	12
105	60	51	42	36	28	31	24	18	15	12
110	61	52	43	37	29	31	24	18	15	12
115	64	54	44	38	30	32	25	19	16	13
120	66	56	46	40	31	34	26	20	17	14
125	67	57	47	40	31	34	26	20	17	14
130	69	59	48	41	32	35	26	21	17	14
135	70	60	49	42	33	36	26	21	17	14
140	72	61	50	43	34	37	27	22	18	14
145	73	62	51	44	34	37	27	22	18	14
150	75	65	53	46	36	39	30	23	19	15
155	77	67	55	47	37	40	31	24	20	16
160	78	67	55	47	37	40	31	24	20	16
165	80	70	57	49	39	42	33	25	21	16
170	82	72	60	51	40	43	34	26	21	17
175	84	74	62	53	42	45	36	28	22	18
180	86	76	64	55	43	46	36	27	23	18
185	88	77	65	56	44	47	37	28	24	19
190	89	84	69	59	47	50	40	30	25	20
195	91	86	72	62	50	52	42	31	26	21
200	93	88	74	64	52	54	44	33	27	22
205	95	90	76	66	54	56	46	35	28	23
210	97	92	78	68	56	58	48	37	29	24
215	99	94	80	70	58	60	50	39	30	25
220	100	96	82	72	60	62	52	41	31	26
225	102	98	84	74	62	64	54	43	33	27
230	104	100	86	76	64	66	56	45	35	29
235	106	102	88	78	66	68	58	47	37	31
240	108	104	90	80	68	70	60	49	39	33
245	110	106	92	82	70	72	62	51	41	35
250	112	108	94	84	72	74	64	53	43	37
255	114	110	96	86	74	76	66	55	45	39
260	116	112	98	88	76	78	68	57	47	41
265	118	114	100	90	78	80	70	59	49	43
270	120	116	102	92	80	82	72	61	51	45
275	122	118	104	94	82	84	74	63	53	47
280	124	120	106	96	84	86	76	65	55	49
285	126	122	108	98	86	88	78	67	57	51
290	128	124	110	100	88	90	80	69	59	53
295	130	126	112	102	90	92	82	71	61	55
300	132	128	114	104	92	94	84	73	63	57
305	134	130	116	106	94	96	86	75	65	59
310	136	132	118	108	96	98	88	77	67	61
315	138	134	120	110	98	100	90	79	69	63
320	140	136	122	112	100	102	92	81	71	65
325	142	138	124	114	102	104	94	83	73	67
330	144	140	126	116	104	106	96	85	75	69
335	146	142	128	118	106	108	98	87	77	71
340	148	144	130	120	108	110	100	89	79	73
345	150	146	132	122	110	112	102	91	81	75
350	152	148	134	124	112	114	104	93	83	77
355	154	150	136	126	114	116	106	95	85	79
360	156	152	138	128	116	118	108	97	87	81
365	158	154	140	130	118	120	110	99	89	83
370	160	156	142	132	120	122	112	101	91	85
375	162	158	144	134	122	124	114	103	93	87
380	164	160	146	136	124	126	116	105	95	89
385	166	162	148	138	126	128	118	107	97	91
390	168	164	150	140	128	130	120	109	99	93
395	170	166	152	142	130	132	122	111	101	95
400	172	168	154	144	132	134	124	113	103	97
405	174	170	156	146	134	136	126	115	105	99
410	176	172	158	148	136	138	128	117	107	101
415	178	174	160	150	138	140	130	119	109	103
420	180	176	162	152	140	142	132	121	111	105
425	182	178	164	154	142	144	134	123	113	107
430	184	180	166	156	144	146	136	125	115	109
435	186	182	168	158	146	148	138	127	117	111
440	188	184	170	160	148	150	140	129	119	113
445	190	186	172	162	150	152	142	131	121	115
450	192	188	174	164	152	154	144	133	123	117
455	194	190	176	166	154	156	146	135	125	119
460	196	192	178	168	156	158	148	137	127	121
465	198	194	180	170	158	160	150	139	129	123
470	200	196	182	172	160	162	152	141	131	125
475	202	198	184	174	162	164	154	143	133	127
480	204	200	186	176	164	166	156	145	135	129
485	206	202	188	178	166	168	158	147	137	131
490	208	204	190	180	168	170	160	149	139	133
495	210	206	192	182	170	172	162	151	141	135
500	212	208	194	184	172	174	164	153	143	137

Percentages Classes	100	85	70	60	47	51	40	30	25	20
Miles.	1	1	1	1	1	1	1	1	1	1
5	25	21	18	15	12	13	10	8	6	5
10	27	23	19	16	13	14	11	8	7	5
15	29	25	21	18	15	15	12	9	7	6
20	31	26	22	19	16	16	13	10	8	7
25	33	28	23	20	17	17	13	10	8	7
30	35	30	25	22	17	18	14	11	9	7
35	37	31	26	22	17	19	15	11	9	7
40	39	33	27	23	18	20	16	12	10	8
45	41	35	29	24	19	21	17	13	11	9
50	43	37	30	26	20	22	17	14	11	9
55	45	39	32	27	21	23	18	14	11	9
60	46	39	32	28	22	23	18	14	12	9
65	48	41	34	29	23	24	19	15	12	10
70	49	42	34	29	23	25	20	15	12	10
75	51	43	35	31	24	26	20	15	13	10
80	52	44	36	31	24	27	21	16	13	10
85	54	46	38	32	25	28	22	16	14	11
90	56	47	39	33	26	29	23	17	14	11
95	57	48	40	34	27	29	23	17	14	11
100	59	49	41	35	28	30	24	18	15	12
105	60	51	42	36	28	31	24	18	15	12
110	61	52	43	37	29	31	24	18	15	12
115	64	54	44	38	30	32	25	19	16	13
120	66	56	46	40	31	34	26	20	17	14
125	67	57	47	40	31	34	26	20	17	14
130	69	59	48	41	32	35	26	21	17	14
135	70	60	49	42	33	36	26	21	17	14
140	72	61	50	43	34	37	27	22	18	14
145	73	62	51	44	34	37	27	22	18	14
150	75	65	53	46	36	39	30	23	19	15
155	77	67	55	47	37	40	31	24	20	16
160	78	67	55	47	37	40	31	24	20	16
165	80	70	57	49	39	42	33	25	21	16
170	81	71	59	50	40	43	34	26	21	17
175	83	75	62	53	41	45	35	26	22	18
180	85	78	64	55	43	47	37	28	23	19
185	87	81	67	57	45	48	38	29	24	19
190	89	84	69	59	47	50	40	30	25	20
195	90	86	71	62	48	51	41	31	26	21
200	91	87	72	63	49	52	42	32	27	22
205	92	88	73	64	50	53	43	33	28	23
210	93	89	74	65	51	54	44	34	29	24
215	94	90	75	66	52	55	45	35	30	25
220	95	91	76	67	53	56	46	36	31	26
225	96	92	77	68	54	57	47	37	32	27
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235	98	94	79	70	56	59	49	39	34	29
240	99	95	80	71	57	60	50	40	35	30
245	100	96	81	72	58	61	51	41	36	31
250	101	97	82	73	59	62	52	42	37	32
255	102	98	83	74	60	63	53	43	38	33
260	103	99	84	75	61	64	54	44	39	34
265	104	100	85	76	62	65	55	45	40	35
270	105	101	86	77	63	66	56	46	41	36
275	106	102	87	78	64	67	57	47	42	37
280	107	103	88	79	65	68	58	48	43	38
285	108	104	89	80	66	69	59	49	44	39
290	109	105	90	81	67	70	60	50	45	40
295	110	106	91	82	68	71	61	51	46	41
300	111	107	92	83	69	72	62	52	47	42
305	112	108	93	84	70	73	63	53	48	43
310	113	109	94	85	71	74	64	54	49	44
315	114	110	95	86	72	75	65	55	50	45
320	115	111	96	87	73	76	66	56	51	46
325	116	112	97	88	74	77	67	57	52	47
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335	118	114	99	90	76	79	69	59	54	49
340	119	115	100	91	77	80	70	60	55	50
345	120	116	101	92	78	81	71	61	56	51
350	121	117	102	93	79	82	72	62	57	52
355	122	118	103	94	80	83	73	63	58	53
360	123	119	104	95	81	84	74	64	59	54
365	124	120	105	96	82	85	75	65	60	55
370	125	121	106	97	83	86	76	66	61	56
375	126	122	107	98	84	87	77	67	62	57
380	127	123	108	99	85	88	78	68	63	58
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390	129	125	110	101	87	90	80	70	65	60
395	130	126	111	102	88	91	81	71	66	61
400	131	127	112	103	89	92	82	72	67	62
405	132	128	113	104	90	93	83	73	68	63
410	133	129	114	105	91	94	84	74	69	64
415	134	130	115	106	92	95	85	75	70	65
420	135	131	116	107	93	96	86	76	71	66
425	136	132	117	108	94	97	87	77	72	67
430	137	133	118	109	95	98	88	78	73	68
435	138	134	119	110	96	99	89	79	74	69
440	139	135	120	111	97	100	90	80	75	70
445	140	136	121	112	98	101	91	81	76	71
450	141	137	122	113	99	102	92	82	77	72
455	142	138	123	114	100	103	93	83	78	73
460	143	139	124	115	101	104	94	84	79	74
465	144	140	125	116	102	105	95	85	80	75
470	145	141	126	117	103	106	96	86	81	76
475	146	142	127	118	104	107	97	87	82	77
480	147	143	128	119	105	108	98	88	83	78
485	148	144	129	120	106	109	99	89	84	79
490	149	145	130	121	107	110	100	90	85	80
495	150	146	131	122	108	111	101	91	86	81
500	151	147	132	123	109	112	102	92	87	82
505	152	148	133	124	110	113	103	93	88	83
510	153	149	134	125	111	114	104	94	89	84
515	154	150	135	126	112	115	105	95	90	85
520	155	151	136	127	113	116	106	96	91	86
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530	157	153	138	129	115	118	108	98	93	88
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540	159	155	140	131	117	120	110	100	95	90
545	160	156	141	132	118	121	111	101	96	91
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555	162	158	143	134	120	123	113	103	98	93
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570	165	161	146	137	123	126	116	106	101	96
575	166	162	147	138	124	127	117	107	102	97
580	167	163	148	139	125	128	118	108	103	98
585	168	164	149	140	126	129	119	109	104	99
590	169	165	150	141	127	130	120	110	105	100
595	170	166	151	142	128	131	121	111	106	101
600	171	167	152	143	129	132	122	112	107	102
605	172	168	153	144	130	133	123	113	108	103
610	173	169	154	145	131	134	124	114	109	104
615	174	170	155	146	132	135	125	115	110	105
620	175	171	156	147	133	136	126	116	111	106
625	176	172	157	148	134	137	127	117	112	107
630	177	173	158	149	135	138	128	118	113	108
635	178	174	159	150	136	139	129	119	114	109
640	179	175	160	151	137	140	130	120	115	110
645	180	176	161	152	138	141	131	121	116	111
650	181	177	162	153	139	142	132	122	117	112
655	182	178	163	154	140	143	133	123	118	113
660	183	179	164	155	141	144	134	124	119	114
665	184	180	165	156	142	145	135	125	120	115
670	185	181	166	157	143	146	136	126	121	116
675	186	182	167	158	144	147	137	127	122	117
680	187	183	168	159	145	148	138	128	123	118
685	188	184	169	160	146	149	139	129	124	119
690	189	185	170	161	147	150	140	130	125	120
695	190	186	171	162	148	151	141	131	126	121
700	191	187	172	163	149	152	142	132	127	122
705	192	188	173	164	150	153	143	133	128	123
710	193	189	174	165	151	154	144	134	129	124
715	194	190	175	166	152	155				

actly the same manner and to the same extent as is provided for in the above mentioned order of the Interstate Commerce Commission. It is believed the overhead or specific rates, which will be continued in effect, will amply protect inter-territorial traffic, as well as the few interstate movements beyond the maximum distance for which the proposed schedule is fixed within 100 per cent territory.

"You are requested to consider whether the scale proposed is properly constructed and inherently reasonable for application within your state. Of course, you will understand that the prescribing of a uniform scale of class rates does not mean the discontinuance of all commodity rates, nor

is to bring on a full and intelligent discussion of this whole subject, to the end that what is right and in the public interests may prevail. Similar schedules will be presented in other parts of the country."

Breaking Down Rate Walls

The same letter, with the exception of the description of the territory in the second paragraph, was sent to the other commissions.

In working out the plan for a revision of class rates it has been the purpose of the Railroad Administration traffic officials to take advantage of the fact of government control and the absence of competition between railroads to bring about the adoption of a "scientific" system of rates, based on cost of service as measured by distance, and to take advantage of the freedom from the control of the state commissions to do away with the confusion and discriminations resulting from the multiplicity of rate regulating bodies and the conflicts between state and interstate jurisdiction. While it is desired not to antagonize the state commissions but to secure their co-operation, it is hoped to break down some of the "rate walls" erected at the state boundaries in many instances by the efforts of state commissions to favor the shippers of their states as against those from outside. While some communities would be deprived of advantages they have had over others, it is believed that the loss of these will be compensated

	100	85	70	50	30	15	0	30	45	60	75	85	100
Percentages Classes	1	2	3	4	5	6	7	8	9	10	11	12	13
Miles	1	2	3	4	5	6	7	8	9	10	11	12	13
5	25	21	18	15	12	10	8	6	5	4	3	2	1
10	25	21	18	15	12	10	8	6	5	4	3	2	1
15	31	26	23	20	17	15	13	10	8	7	6	5	4
20	31	26	23	20	17	15	13	10	8	7	6	5	4
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Doings of the United States Railroad Administration

Some of the More Important Activities This Week Are Covered in Separate Articles

WASHINGTON, D. C.

DIRECTOR GENERAL McADOO left Washington on Sunday for an inspection trip over the lines of the Norfolk & Western and lines in the central west and as far as Duluth, Minn. He was at Roanoke, Va., on Monday and was accompanied over the Norfolk & Western by Regional Director Maher of the Pocahontas Region and officers of the road. He arrived at Columbus, O., Monday night and left Tuesday morning over the Pennsylvania lines for St. Louis. He was expected to be at Chicago on Wednesday, at Duluth on Thursday and at Chicago again on Saturday, returning to Washington after an absence of about eight days. The itinerary, in addition to the roads named, included the Illinois Central, the Soo Line, the Great Northern, the Duluth, Missabe & Northern, the Chicago, St. Paul, Minneapolis & Omaha and the Chicago & North Western. The director general was accompanied by C. R. Gray, director of the Division of Operation.

Suits to Be Brought Against Director General

Director General McAdoo in General Order No. 50 states that since he assumed control of the railroads suits are being brought and judgments and decrees rendered against carrier corporations on matters based on causes of action arising during federal control for which the carrier corporations are not responsible, and that it is right and proper that actions, suits and proceedings based on causes of action arising during or out of federal control should be brought directly against the director general of railroads and not against the corporations:

It is therefore ordered, "that actions at law, suits in equity, and proceedings in admiralty hereafter brought in any court based on contract, binding upon the director general of railroads, claim for death or injury to person, or for loss and damage to property, arising since December 31, 1917, and growing out of the possession, use, control or operation of any railroad system of transportation by the director general of railroads, which action, suit, or proceeding but for federal control might have been brought against the carrier company, shall be brought against William G. McAdoo, director general of railroads, and not otherwise; provided, however, that this order shall not apply to actions, suits, or proceedings for the recovery of fines, penalties, and forfeitures.

"Subject to the provisions of General Orders numbered 18, 18-A and 26, heretofore issued by the director general of railroads, service of process in any such action, suit or proceeding may be made upon operating officials operating for the director general of railroads, the railroad or other carrier in respect of which the cause of action arises in the same way as service was heretofore made upon like operating officials for such railroad or other carrier company.

"The pleadings in all such actions at law, suits in equity, or proceedings in admiralty, now pending against any carrier company for a cause of action arising since December 31, 1917, based upon a cause of action arising from or out of the operation of any railroad or other carrier, may on application be amended by substituting the director general of railroads for the carrier company as party defendant and dismissing the company therefrom.

"The undersigned director general of railroads is acting herein by authority of the President for and on behalf of the United States of America; therefore no supersedeas bond or other security shall be required of the director general of railroads in any court for the taking of or in connection with an

appeal, writ of error, supersedeas, or other process in law, equity, or in admiralty, as a condition precedent to the prosecution of any such appeal, writ or error, supersedeas, or other process, or otherwise in respect of any such cause of action or proceeding."

Mr. McAdoo Prescribes More Direct Contact Between Railway Officers and Public

Director General McAdoo has written to the regional directors that it is very desirable that they shall arrange occasionally for direct contact between the officers of the railroad and the public served by its line. This contact, he says, should be arranged for not only at the larger cities which were formerly regarded as highly competitive points, but also at those points which are local to and served only by the one line of railroad.

Without limiting their discretion, the director general suggests that they may successfully accomplish this object by once in a while arranging trips of operating, accounting and traffic officers together, who shall visit city officials, boards of trade, chambers of commerce and important industries of each city or town for the purpose of informing the public why it was necessary, in order to meet war necessity, to do things in a certain way; also to explain "the advantages which have accrued and will accrue in the future by the improvements in transportation conditions worked out by the Railroad Administration and which are bound to be continued permanently because of their efficiency, economy and expedition in the handling of traffic."

An opportunity will thus also be afforded, Mr. McAdoo says, for advising the public as to the organization in each region for the conduct of business and for directing them to the proper office with which to take up the various matters of rates, claims, car supply, service or other needs which may from time to time arise, impressing them with the fact that the local officers are prepared and anxious to handle all matters of mutual interest between the communities and the railroad companies, and that it is not necessary to appeal to Washington in the transaction of the ordinary business of the railroad.

The local officers, he suggests, should be impressed with the importance of giving every consideration and attention to matters that may be brought before them, and all suggestions should have careful consideration; "and there is no doubt that the stimulation of the local railroad agents and employees, as well as the satisfaction of the public, will amply prove the wisdom of this procedure."

Data to Be Furnished Corporate Officers

P. S. & A. Circular No. 32 provides that officers of railroad corporations whose property is operated under federal control may make requests upon accounting officers of lines so operated for operating statements, statistics of operation, etc. Accounting officers of all Class I lines under Federal control shall, upon request of corporate officers for operating data, furnish them with a limited number of copies of the monthly reports of revenues and expenses rendered to the Interstate Commerce Commission. Accounting officers of other lines under federal control shall likewise furnish copies of monthly statements of revenues and expenses which are prepared for the information of the federal or general managers of such lines.

All reasonable requests by officers of the corporations for

information in explanation of charges or credits to the corporations upon the federal books shall also be complied with. Requests for data in addition to those authorized shall first be submitted to Director Prouty. Arrangements should also be made for co-operation between federal and corporate accounting officers with respect to making the records of addition and betterment expenditures available to reasonable inspection by accredited representatives of the corporation.

Old Car Wheels in Demand

Condemned freight cars, of which large numbers are stored in out of the way places, are to be required to contribute something to the war-time necessities of the country by furnishing old car wheels to be melted up and mixed with new metal to make new wheels. There is a shortage of the charcoal pig iron needed for making new car wheels and a drive is being made by the Railroad Administration to round up the old wheels, which represent a satisfactory substitute for it. The old wheels now command a market price of \$30 a ton, or about \$85 per car, but special efforts are being required to get them out because of the demand for other purposes of the labor required to dismantle the old cars, which have been allowed to accumulate for that reason and in some cases because the roads were not prepared to write them off the books yet. The mechanical department of the Railroad Administration had an idea of where thousands of such cars could be found, however, and by calling upon its inspectors and the inspectors of the Interstate Commerce Commission is receiving scores of reports of bunches of old cars which the regional directors and federal managers are then asked to turn in. This will result in clearing the storage tracks of many cars which for a long time have been fit only for dismantling.

Companies Must Pay for Standard Equipment

Director General McAdoo has decided to adhere to his original decision that the railroad companies must pay for the cars and locomotives ordered for them by the Railroad Administration and he has so advised the committee representing the Railway Executives Advisory Committee that called on him on October 14 to protest against this plan and to ask that the Railroad Administration itself finance the purchase of the standard equipment. The director general has notified the committee and the railroad companies that after full consideration of the matter by members of his staff to which the question was referred it has been decided that the federal control act authorizes the director general to require the companies to pay for cars and locomotives and that no other course would be expedient or proper than to require the companies to pay for such equipment as in the opinion of the director general is necessary to provide for the traffic. He proposed, however, that the Railroad Administration should pay to the companies the amounts which would accrue in accordance with the Interstate Commerce Commission rules for depreciation and retirements, which would help the companies in financing the equipment, if they will apply such amounts to the payment of instalments on the cars or toward their indebtedness to the government, or to the payment of maturing obligations on equipment bought before federal control. With this assistance he expects the companies promptly to accept the allocations which have been made and to take the necessary steps to finance the equipment.

The delivery of the standard cars which are being built has been somewhat delayed by the question of allocation because more cars have been built than have been accepted by the railroads, but the cars will now be lettered as originally allocated, with the exception of such changes as have been made at the request of the roads in a few instances. Of the 70 companies to which cars were allocated only about a dozen have made specific protests against the types of

cars and in about half the cases a readjustment has been made, while the other cases are yet undecided. For instance, the allocation of cars to the Northern Pacific was withdrawn for the reason that cars it had previously ordered had not been fully taken into consideration. The number allocated to the El Paso & Southwestern and the Central of New Jersey has been reduced and in some cases single sheathed cars have been substituted for double sheathed cars, or vice versa, or changes have been made as between box cars and coal cars. An exchange was made between the Southern and the Southern Pacific of double sheathed and single sheathed cars in equal numbers. Most of the companies have filed formal protests against accepting the equipment and others are expected to do so, and the question as to whether the companies can be legally required to pay for the equipment will be referred to the Interstate Commerce Commission, as provision for this is made in the contracts. The protests have been particularly against accepting the cars. There have been practically no protests against accepting the locomotives, although there have been some changes as to types.

Piece-Work

The course to be followed in relation to the piece-work system in railroad shops was discussed at a conference at New York on Tuesday of mechanical officers from each region delegated by the regional directors. The recent changes in the wages of shop employees and in the methods of computing them, resulting from the wage orders of the director general, have caused much dissatisfaction with the piece-work system among the employees by reducing the difference between what may be earned at piece-work and the day rates, and also, it is said, have affected the effectiveness of the system as an incentive to increased output. General Order No. 27 increased the wages of the piece-workers and day-workers proportionately but Supplement No. 4 to that order increased the day wages in the car and locomotive departments without corresponding increases in piece-work rates, although the piece-workers were guaranteed a wage as great as they would have received at the hourly rates. The piece-workers have been protesting and it was decided to make an investigation of piece-work, which now prevails in about one-fourth of the shops, with a view to determining whether the results in efficiency and economy warrant its further extension or its discontinuance in the interest of uniformity.

Mr. McManamy had called a similar conference at Washington for Wednesday and some of the mechanical officers attended, but in view of the New York meeting they returned to New York where the whole question will be discussed further and recommendations made to the regional directors.

Standard Report Forms Prescribed

In General Order No. 49, issued by the director general, there are prescribed standard forms of monthly ticket and excess baggage reports to be used by agents in reporting to the accounting officer, also a form for reporting transportation requests exchanged for tickets. These are to be used for October business. All other reports of these transactions are to be discontinued, except that special periodical reports of tickets furnished governmental departments, or other reports of a special nature necessary for accounting purposes, may be compiled and furnished.

The order is accompanied by samples. The forms for reporting local ticket sales and local excess baggage collections are to be printed on paper of light canary color, and forms for reporting interline ticket sales and interline excess baggage collections will be printed on white paper; but the color scheme may be disregarded in preparing the duplicates to be retained by agents.

These reports will be introduced at the consolidated ticket offices on the date named, and at all other agencies as soon as

the stock of forms at present in use becomes exhausted, but in any event not later than January 1, 1919.

Increased Car Loading

Director General McAdoo has issued a comparative statement of the traffic handled by the railways under federal control during the week ending September 21, 1917 and 1918, at 25 of the more important railroad termini of the country. The purpose of the statement, which will be issued regularly hereafter, is to provide the public with information which will assist in measuring the business activity of the United States as shown by the traffic handled and at the same time give an idea of the efficiency or inefficiency with which the railroads are functioning in so far as the car loading is concerned. The subjoined statement is noteworthy in that it shows an increase of 5.30 per cent in the tonnage and a decrease of one fifth of one per cent in the cars used to carry this increase in the tonnage.

The average car load this year is 36 tons as against 34.1 tons in 1917.

	Cars		Tons	
	1917	1918	1917	1918
Atlanta	1,713	2,071	58,055	57,332
Birmingham	4,278	5,207	199,086	241,282
Boston	8,678	7,835	137,641	161,407
Buffalo	8,406	8,699	291,916	315,801
Chicago	49,368	49,480	2,043,298	2,085,268
Charleston	1,046	1,114	19,360	40,319
Cleveland	4,822	9,837	306,163	367,844
Duluth & Superior	9,366	28,102	1,301,451	1,227,966
Galveston	1,130	1,397	26,864	34,259
Hammond Road	11,435	14,223	500,687	604,061
Kansas City	7,827	10,031	173,033	244,084
Los Angeles	7,858	1,464	44,276	34,779
New York	28,571	25,547	685,342	678,802
New Orleans	4,783	4,803	129,668	142,992
Oakland	7,704	4,311	119,283	145,877
Portland	1,838	2,394	39,776	62,935
Philadelphia	20,251	15,373	543,883	485,004
Pittsburgh	8,860	7,857	264,070	275,048
Seattle	2,933	2,446	69,012	76,641
St. Louis	12,390	12,892	413,229	451,423
San Francisco	3,551	2,526	109,166	71,475
Savannah	1,066	1,656	32,226	38,547
Tacoma	1,066	1,282	25,511	38,495
Trenton	1,270	12,420	316,543	375,368
Tulsa	10,718	10,807	492,325	517,801
Total	943,992	743,494	8,332,864	8,774,805
Increase				441,941 =
Decrease	498 =			5.30%
Average tons per car	0.20%		34.1	36

Universal Transit to Be Established

The Division of Traffic has issued the following instructions to the freight and traffic committees:

"As an aid in the efforts of the Railroad Administration to secure the maximum in transportation efficiency of the carriers under federal control, it would seem necessary to, at the very earliest possible date, establish what might be termed 'universal' transit, i. e., outbound shipments from a transit point to be allowed to move via any road regardless of the one hauling the inbound or raw product to the transit point, providing that such arrangements be confined to direct routes, and that nothing under such extension shall create circuitous or unduly out-of-route transportation.

"Tariffs restricting the application of outbound shipments to the roads hauling the inbound, or tariffs in any wise in conflict with the foregoing, shall be corrected, and where necessary to establish joint rates in order to apply the 'universal' transit system, such joint rates are to be established as soon as possible.

"Existing transit arrangements involving circuitous routes and backhauled shall be abrogated, or a proper charge therefor made, before doing which, however, associations or individuals enjoying such privileges are to be consulted, so that the abrogation, or the making of a charge, may be brought about with the least possible interruption to current business and the matter worked out harmoniously.

"It should be understood that where there is a transit charge in effect today it is not to be disturbed at this time, the question of applying a charge for transit service generally throughout the country, or the elimination of the existing transit charges, being a matter for future consideration."

Formerly the granting of transit privileges was based on commercial necessities existing at certain points, but carried a restriction which forced the outbound product to move via the same railroad that handled the raw product into the transit point. Under conditions that exist today, with unified control, the restrictions that operated under private control could not be continued without a material loss in transportation, such as switching at transit points, loss in car days,

and the use of circuitous routes in order to force the outbound product to the railroad or system that handled the inbound product.

Inspection of Ashpans and Spark Arresters

Mechanical Department Circular No. 5 provides that the following rules will govern in the care and inspection of ashpans and spark-arresting appliances in locomotives used on railroads under federal control:

1. A careful and thorough inspection of every part of the spark-arresting appliances in the front end of locomotives must be made every time the front end door is opened for whatever purpose; but at intervals of not more than seven days, and at the same time the ashpans, hoppers, slides or other apparatus for dumping cinders, and dampers, must also be inspected. Observe if the slide or hopper operates properly and closes tight. When conditions such as extreme drought or the state of adjoining property or crops require it, this inspection must be made at least once every 24 hours.

A record of condition on arrival must be made under the proper heading on an approved form, immediately following each inspection, with the date made, together with a complete statement of any repairs or renewals required. The above record to be made and signed by the person who made the inspection.

3. Nettings and spark arresters must be put in perfectly tight and serviceable condition before the locomotive is put into service. Renew netting and plates in front end when worn thin or defective, instead of patching them. Ashpans and hoppers must be tight, and dampers, slides or apparatus for dumping cinders must be in good working order, closing tight.

4. Record of repairs and renewals must be made entered under the proper heading on an approved form when repairs have been made, with the date; the entry to be made and signed by the person doing the work.

5. These are the minimum requirements, and local conditions or regulations requiring additional precautions are not affected hereby.

Rules for Telegraph and Telephone Economy

To relieve the railroad telephone and telegraph facilities from unnecessary business the director general has issued the following rules in circular No. 61:

1. Use the telegraph and telephone *only* when the mail will not answer the purpose.

2. Send by mail messages written late in the day, on Saturday afternoons, Sundays or holidays which cannot be acted upon at once, and which will reach their destination by mail in ample time for action.

3. Omit superfluous words; avoid unnecessary file numbers and references *be brief*.

4. Use telegraph code systems where it will effect a saving.

5. Limit the use of telephone facilities, both railroad and commercial, to railroad business and to the shortest time practicable.

6. The Telegraph Section, Division of Operation, will establish an effective system of censoring with a view of reducing the number and length of telegraphic communications.

Handling of Remittances

John Skelton Williams, director of the division of finance and purchases, in circular No. 1 orders that the practice which has been brought to his attention in the case of a few carriers of permitting funds collected by agents and conductors to be remitted direct to the federal treasurer must be discontinued. Such remittances must be made direct to banks as instructed by the federal treasurer of each carrier, except that if more convenient, the following may be remitted direct to federal treasurers: Special collections for miscellaneous items, including rents, etc., company paper, such as vouchers, pay checks, etc.; non-bankable paper, including discharge certificates and other evidences of disbursements made by agents under direction of federal treasurer.

Marine Insurance Section

As previously noted, the Marine Insurance Section has been established in the Division of Finance and Purchases and William C. De Lanoy was appointed manager. In supervising this section John Skelton Williams, the director of the division, will be assisted by Theodore H. Price, actuary of the Railroad Administration. The Marine Insurance Section will be charged with the duty of providing for such insurance as the director general may desire against marine and war risks on vessels and floating equipment under the control of the Railroad Administration, and on the contents of such vessels and floating equipment, and with adjustment of marine insurance losses, and shall perform such other duties as may be assigned to it by the director general as to

insurable risks connected with the operation of such vessels and floating equipment.

The name of the Insurance and Fire Protection Section has been changed to the Fire Loss and Protection Section.

Bad-Order Cars Down to 6 Per Cent

The number of bad order freight cars is being gradually reduced and is now down to about 6 per cent, or 149,000 cars, whereas in July it was 6.9 per cent. Forty-eight per cent of the railroads under federal control have reduced their percentage of bad order cars to 4 or less.

Freight Bills on Stored Freight

P. S. & A. Circular No. 25-A provides that transportation charges are due and payable when carload or l. c. l. freight is placed in storage, either on the property of the railroad company or in private warehouses. If charges are not collected from the warehouse company, they should be collected from the consignee under the terms of General Order No. 25 at or immediately succeeding the time of placement in storage and not after final delivery to consignee. The provision in Circular No. 25 with respect to industrial railroads applies to so-called plant facility industrial railroads. It does not apply to "common carrier" industrial railroads so long as in good faith deliveries are promptly made by them to consignees and the trunk line carriers' agent is furnished with adequate information with respect to such deliveries so as to permit the prompt rendition of the freight bills.

Collection of Per Diem

P. S. & A. Circular No. 33 provides that beginning October 1, lines under federal control delivering cars direct to lines not under federal control (not including Canadian and Mexican lines) will be held responsible for collection of per diem accruing on all federal controlled cars so delivered. Per diem collections made as so directed shall be credited to the appropriate income account of the line making collection and not apportioned among other carriers under federal control. Federal controlled lines making use of equipment of non-controlled lines will render statements to and make settlement with such lines in the same manner as heretofore. Canadian and Mexican lines will report per diem direct to car owners in the same manner as heretofore.

Care of Journal Boxes

The Mechanical Department has issued Circular No. 4 as follows:

1. It is desired that all freight car journal boxes be repacked with properly prepared packing at least once every 12 months, at which time all packing will be removed from the boxes and the boxes cleaned; fast guards to be renewed when wheels are changed.
2. The date and place where the work is done must be stenciled on the car body in one-inch figures and letters, using the same station initial that is used for air brake stencil.
3. This work to be done as far possible when cars are on repair track undergoing heavy repairs. When on repair track for heavy repairs, cars which have not had boxes repacked within nine months will have all boxes repacked and the record stenciled on the car as above.
4. This does not contemplate any change in the intermediate packing of boxes when it is necessary to do so. No change should be made in the stenciling unless all boxes are repacked.

Orders and Circulars Compiled in Pamphlet

The Railroad Administration has compiled and published in pamphlet form all of the general orders and circulars issued by Director General McAdoo up to July 1, with an index for each, together with the text of the laws under authority of which the President acted in taking over the railroads, his proclamation of December 26, 1917, taking over the roads, the federal control law, the President's proclamation authorizing the director general to exercise the powers conferred by Congress on the President, and the proclamation taking over the coastwise transportation lines. It is proposed to issue later editions from time to time.

Another Supplement to Order No. 27

The director general has issued supplement No. 6 A to General Order No. 27 by which Supplement No. 6 to General Order No. 27 is amended by adding thereto the following:

Where differences of opinion arise necessitating a formal interpretation of any wage order issued by the director general, and where the question involved is of general application and covers a large number of railroads, application for such interpretation may be made either by a regional director or by the chief executive of the railroad organization representing the class of employees involved or the chairman of any railway board of adjustment or the director of the Division of Labor. Such application shall be sent to the office of the director of labor, and he will record and transmit it to the Board of Railroad Wages and Working Conditions, which will promptly investigate and make recommendation to the director general. Upon the receipt of interpretation from the director general, the director of labor will send such interpretation to the railway boards of adjustment for their information and guidance.

Supervising Cost Accountants

The division of public service and accounting has appointed a force of supervising cost accountants and assistants who have been assigned to the various plants building cars and locomotives for the Railroad Administration to check up manufacturing costs. There are seven of the supervising cost accountants assigned to seven districts as follows: New York, N. Y., J. J. Decent; Pittsburgh, Pa., E. L. Staats; Columbus, O., E. J. Huston; Chicago, Ill., C. C. Pfeffer; Chicago, Ill., W. J. Babcock; St. Louis, Mo., G. O. Baird; Seattle, Wash., M. H. Reasoner.

Semi-Monthly Paydays

The director general has issued orders to the regional directors that beginning not later than January 1, 1919, all railroad payrolls which are now being paid on a monthly basis shall be paid semi-monthly.

American Railroad Methods a Revelation in France

ACCORDING TO CHARLES N. WHEELER, special correspondent in France for the Chicago Tribune, the American railroad regiments are producing record results through the introduction of operating methods unfamiliar to the French. For instance, the French did not understand how two independent railroads could be operated over the same line until they saw American trains running regularly over their roads without in the least interfering with French traffic. The car record system was also a novelty. On the French roads which are operated by the state, a new car starting on its maiden journey may not be located for a year or more or may never be heard of again at the point of original departure. In war times, however, this practice could not continue. If a car happened to be loaded with "75s" it was essential to know that it reached its destination and was not lost somewhere in transit. Therefore, the Americans inaugurated a system of car accounting, through which a careful record is kept of the movement of every car.

Another innovation to the French was gravity switching. Some of these French switchmen evidently had never seen a hump, and when they first saw cars released at the top for distribution they could not understand why a smash-up did not result. They were soon convinced of the value of this method of switching, however, when they witnessed the clearing in six hours of a yard where ordinarily the French took three days.

In July, 1917, plans were drawn for making one big port in France handle the American importations. At the present time 11 French ports are handling this traffic, and in a comparatively short time there will be 25 great unloading ports in France.

The establishment of a car ferry system between England and France has also greatly improved transportation efficiency. For instance, a car loaded with coal in Wales is put on a vessel at an eastern British port, brought across to France with as little concern, apparently, as transporting a ferry load from Jersey City to Manhattan Island, and is then run off on the proper track and coupled to a train for its final destination, which may be many miles inland in France. This scheme results in handling the coal only twice, namely, when loaded in the west of England and when unloaded somewhere in France.

The Americans have also constructed many new lines, new bridges, stations, railroad yards, etc. About 3,000 miles of American tracks have been laid so far.

What Some of the Officers Are Doing

Brig. Gen. W. W. Atterbury, formerly vice-president of the Pennsylvania Railroad, eastern lines, is the head of the American operating system in France. Col. W. J. Wilgus, formerly consulting engineer and previous to that vice-president of the New York Central, is, in the language of Mr. Wheeler, "a system shark," who reduces everything to percentages. Col. J. A. McCrea, formerly general manager of the Long Island, is general manager of the railroad operating system in France under Gen. Atterbury. Col. M. C. Kennedy, formerly president of the Cumberland Valley, is deputy director general of railroads for England. Col. H. H. Maxfield, formerly superintendent of motive power on the Pennsylvania Railroad, eastern lines, is working in a similar capacity in France.

Col. C. M. Bunting, formerly controller on the Pennsylvania Railroad, eastern lines, is business manager of the American railroad system in France. Lieut.-Col. H. M. Waite, formerly city manager of Dayton, Ohio, is chief engineer. Lieut.-Col. V. R. C. King, formerly superintendent on the Atlantic Coast Lines, is in the operating department. Lieut.-Col. H. H. Adams, formerly president of the Kansas City Terminal, is representative of the transportation system on the general staff of the American Army. Among the division superintendents are Lieut.-Col. H. J. Slifer, formerly consulting engineer at Chicago, and previously general manager of the Chicago Great Western; Major F. G. Robbins, formerly general superintendent of the Erie at Chicago; Lieut.-Col. G. T. Slade, formerly vice-president of the Northern Pacific, and Major C. L. Hinkle, formerly general superintendent of the Toledo, St. Louis & Western. Other railroad men in service in France, mentioned by Mr. Wheeler, are Major R. K. Rochester, formerly division superintendent of the Pennsylvania Lines at Cleveland, Ohio, who is manager of the regulating station; Major F. W. Green, formerly assistant to the president of the St. Louis Southwestern, and Major E. B. Cushing, formerly assistant general manager of the Southern Pacific Lines in Louisiana and Texas, who are port superintendents.

Other division superintendents include Major Thomas A. Dooley, Jr., formerly assistant district engineer of the American Car & Foundry Company; Major Thomas R. Ryan, formerly general manager of the Brazilian Railway, and Major John S. Douglas, formerly superintendent of machinery of the Standard Steel Car Company.

News Concerning the Thirteenth Engineers

A recent cable to the Chicago Daily News from Junius B. Wood, war correspondent, contained some interesting information concerning the Thirteenth Engineers (Railways), the officers and men of which were recruited from railroads entering Chicago. Verdun, he says, now has an American station agent who is the most important man in the city aside from the military commander. This railroad officer is Captain V. H. Hagelbarger, formerly trainmaster on the Chicago, Rock Island & Pacific, at Bureau, Ill. The regiment of which

Captain Hagelbarger is a member operates more than one hundred miles of railroad, a large part of which is under shell fire so that a night seldom passes without the tracks being cut in some place.

The French have gradually turned over more and more lines of track, doubling that which the organization originally operated. The men hailed with joy the acquisition of the Verdun terminal a few weeks ago. The latest acquisition is the old Commercy-Verdun line which was again opened to traffic when the Germans were driven from the St. Mihiel salient. The colonel of the regiment is Nathaniel L. Howard, formerly division superintendent on the Chicago, Burlington & Quincy, at Hannibal, Mo. The lieutenant-colonel is Charles L. Whiting, formerly division superintendent of the Chicago, Milwaukee & St. Paul at Lewistown, Mont.

One of the greatest exploits of the regiment was the ballasting of 1,400 meters (about one mile) of standard gauge railroad and laying 90-lb. rails within 24 hours. The French military authorities could not believe that such rapid work was possible until they were told that trains were already running on the new line. The work was performed by French and Chinese laborers with American foremen. The road has handled as many as 70 trains in a day.

Each railroad station is surrounded by truck gardens. More than 30 of these gardens are tended by railroaders between trains and they furnish fresh vegetables three months in the year.

Final Liberty Loan Figures in West

The final statement of subscriptions to the Fourth Liberty Loan by employees in the Northwestern region showed that 23 out of 38 roads made 100 per cent records and that the average for the entire territory was 97.92 per cent with an average subscription per person of \$112.24. The aggregate amount of subscriptions taken by employees and officers in the region was \$27,853,750. The officers and general office employees made the best percentage record achieved by any class of employees in the region, with 99.59 per cent. Mechanical employees were second with a percentage of 99.38, while they were first from the standpoint of the aggregate amount of subscriptions, with a total of \$7,815,300. The Chicago & North Western led the individual lines of the region in the aggregate amount of subscriptions with a total of \$5,483,900. The Copper Range, a 100 per cent line, had the highest average subscription per subscriber with \$313.11.

Final returns on liberty loan subscriptions in the Central Western region showed 21 out of 42 roads in the 100 per cent class and 96.7 per cent of all the officers and employees in the region in the list of subscribers. A total of 36,016,550 was subscribed by the employees of all roads in the region, while the average subscription per person was \$117.14. Among the individual lines, the largest subscription was by the Southern Pacific, namely \$6,369,350. The Atchison, Topeka & Santa Fe was second with \$5,505,700, and the Chicago, Burlington & Quincy third, with \$5,426,300. The Union Terminal (St. Joseph, Mo.) was first among the roads from the standpoint of the average subscription per subscriber, this average being \$369.40. The Chicago, Rock Island & Pacific had the largest subscription total of any of the 100 per cent roads, reporting that \$3,168,300 worth of bonds had been taken by its officers and employees in the Central Western region.

Corporation Subscriptions to the Liberty Loan

In addition to the subscriptions made by the railroad corporations noted in recent issues of the *Railway Age*, others were made as follows:

Delaware & Hudson	\$500,000
DuPont & Schenck	100,000
Missouri Pacific	1,000,000
Kansas City Southern	350,000
Baltimore & Ohio	1,000,000
Wabash	500,000
Buffalo, Rochester & Pittsburgh	250,000
Seaboard Air Line	500,000
Southern Railway	2,000,000
Nashville, Chattanooga & St. Louis	200,000

General News Department

Officers and employees of the Alaska Engineering Commission employed on the construction of the government's railroad in Alaska, subscribed for \$317,500 of the Fourth Liberty Loan, about \$100,000 more than they subscribed for the Third Loan.

At the thirteenth annual meeting of the Associated Business Papers, held in New York last week, officers were elected as follows: president, A. C. Pearson, Dry Goods Economist, New York; vice-president, Samuel O. Dunn, editor, Railway Age, and treasurer, Fred D. Porter, National Builder, Chicago.

The Federal Labor Bureau at Altoona, Pa., has calls constantly for large numbers of artisans, mechanics and laborers. The last list received from the Pennsylvania Railroad specifies 8,087 positions which need to be filled on that road. More than 200 men are wanted in the shops in that city, and 350 laborers on track work. The Cambria Steel Company is looking for 1,100 men, mostly laborers.

The price of steel rails is an unsettled question which is still under consideration by the price-fixing committee of the War Industries Board. The committee some time ago recommended a price of \$56 a ton, based on a cost figure which would allow a profit to the less efficient mills, but the Railroad Administration objected on the ground that this would represent too large a profit on most of the product. Apparently this position was supported by the President, to whom Mr. McAdoo referred the matter several weeks ago.

A central hay inspection yard for eastern and southern lines was opened on the Pennsylvania Lines in Chicago at Thirty-third street on September 24. Formerly hay inspection took place on the team tracks of the individual lines, but on account of congestion this outer yard was established. The centralization of hay inspection is proving of great convenience not only to hay dealers, but to the Forage Bureau of the War Department. The Forty-seventh street team track of the Pennsylvania Lines is being used as an auxiliary inspection point.

Fire Prevention Day

Director General McAdoo has asked all railroad employees to seriously celebrate National Fire Prevention Day (November 2). He calls attention to the fact that the annual fire waste in the United States is from \$300,000,000 to \$400,000,000. "Bad housekeeping," in the words of the fire prevention engineers, is the cause of many fires, and fire prevention day is intended to be a reminder of our duty in this matter.

The American "Train Control"

The automatic train stop and cab signal made by the American Train Control Company, of Baltimore, Md., has now been applied to 32 locomotives of the Chesapeake & Ohio, and the system is being operated on the line between Gordonsville, Va., and Cobham, 7 miles. Apparatus is now being installed for the operation of the system for 15 miles additional, Cobham to Charlottesville.

Women in Railroad Service

Miss E. M. Vensel, block signal operator on the Pennsylvania Railroad at Gist, Pa., on the Southwest branch, near Connellsville, fills a man's place in emergencies as well as in routine duties. On the afternoon of October 12 she held off a gang of train wreckers until help arrived. Noticing three

men tampering with a switch she ordered them away, but their response was a show of pistols. But she also had a revolver, and she opened fire; and she returned shot for shot until a freight train came along and frightened the men away. Miss Vensel stopped the train, and the trainmen found some ties ready to be piled on the track.

St. Paul Road's Bond Bureau

H. E. Byram, federal manager of the Chicago, Milwaukee & St. Paul, has organized a Liberty Loan bureau which will handle all work pertaining to bonds purchased by officers and employees of that road. T. W. Proctor, assistant general freight agent, at Chicago, has been appointed chairman of the new organization. Approximately \$9,000,000 worth of Liberty Bonds of the four issues have been bought by St. Paul employees, the major part of them on the installment plan. The bureau will take over all the work in connection with the collection of installments, which was formerly handled by the federal treasurer and the auditor. All accounts will be kept by the bureau, and receipts will be issued and bonds delivered by it upon the completion of payments.

Railway Electrical Engineers' Convention

The opening session of the tenth annual convention of the Association of Railway Electrical Engineers was held on the morning of October 29 at the Hotel LaSalle, Chicago. C. J. Causland of the Pennsylvania Lines west of Pittsburgh, president of the association, made the opening address in which he outlined briefly the principal activities of the organization and called attention to the importance of the work of the committees this year. Following the president's address the report of the secretary was presented, which covered the two years since the last convention, in 1916. The registration at the opening session included 35 members and 27 associates.

Bootlegging in Baltimore

So extensive has become the "bootlegging" between Baltimore and Washington since the last-named place became dry that the Washington, Baltimore & Annapolis Railway has been obliged to increase the number of trains, particularly on Saturday and Sunday, and has added special cars to some trains. There are now five trains leaving the city each day, largely for the accommodation of those who convey supplies of liquor for themselves or their friends. Most of the trains are well filled with passengers with one or more satchels.

The assumption is that these satchels contain the needed refreshment for parched throats; but this is a matter of conjecture, so far as the railway officials are concerned. It has been estimated that as many as 1,000 passengers sometimes use these trains; and another guess is that the minimum amount of booze transported in this way will reach from 20 to 50 barrels a day. The passengers are of all colors and both sexes.

To correct an evil complained of when these "bootleggers" first commenced to make their pilgrimages to Baltimore, the company sought to prevent those unduly under the influence of liquor from taking the same cars as the sober patrons; and those who are now carrying on this underground liquor traffic are required to board the extra trains (or cars) at Eutaw and Pratt streets.

This road is not the only one which has to contend with the bootlegging traffic. Both the Baltimore & Ohio and the Pennsylvania have had experience with the element. The business is also carried on by automobile.—*Baltimore Sun*.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST, 1918.

MONTH OF AUGUST, 1918 (CONTINUED)

Vaccinate Employees to Curb Epidemic

The Chicago & North Western has secured 25,000 doses of an anti-influenza serum from the Mayo Foundation, Rochester, Minn., for the purpose of vaccinating its employees and officers. Approximately 700 of the 750 employees in the general offices at Chicago have received their first inoculation and about 6,000 on the entire system have been vaccinated. The treatment calls for the administration of three doses, seven days apart. The vaccination is optional with North Western employees, but so many seem to desire it that efforts are being made to secure an additional supply of the serum. The vaccine was prepared by Dr. E. C. Rosenow and is furnished free to the railroad by the Mayo Foundation. The use of the serum is still an experiment and a careful record is being kept by the roads of the course of each treatment. The decision to try out the vaccine followed the apparently unimpeded inroads of the epidemic among the employees of the system, particularly on the western lines, and the resultant bad effect on railroad operation.

Pointed Reminders for Lines of Scant Clearance

Since American railway men have been operating railroads in France, it has become necessary for them to issue warnings to the American soldiers riding on military trains. In this connection three of the railway clearance cards used for this purpose have been received by some of the Northern Pacific officials from Corporal Andolph Rudeen, a former employee, who is now a member of the 25th Engineers. Some of the placards read as follows:

127 AMERICAN SOLDIERS KILLED

Riding on Tops and Sides of Railway Cars.

KEEP INSIDE

There is Only Six Inches Clearance Between Tops and Sides of Cars and Tunnel Arches and Bridges and Signal Towers.

KEEP INSIDE

WAIT UNTIL YOU GET TO A TRENCH TO STICK YOUR HEAD OUT
LOTS OF TIME

YOUR HEAD MAY BE HARD

But Not as Hard as Bridges and Tunnel Arches. Only Six Inches Clearance. Don't Ride on Tops or Sides of Cars.

RAILWAY COMPANY WILL HOLD YOU RESPONSIBLE FOR DAMAGES TO BRIDGES AND TUNNELS AND SIGNAL TOWERS—THEY ARE NOT INSURED—KEEP YOUR BLOCK INSIDE

THREE KINDS OF FOOLS

1—Fools.

2—Damned Fools.

3—SOLDIERS WHO RIDE ON TOPS AND SIDES OF CARS.

There Is Only a Slight Clearance Between Sides of Cars and Signal Towers. IF YOU EXPECT TO SEE THE NEXT BLOCK, KEEP YOURS INSIDE

Canadian Pacific Freight Handlers' Strike Settled

The strike of freight handlers on the Canadian Pacific which had been pending since September 21, was finally settled on October 24. As the strike was spreading to other classes of employees and as transportation conditions were already much disturbed by the influenza epidemic, the Canadian government requested the railroad to name the best possible terms on which the freight handlers would be permitted to return to work. The company then offered to take back all the men out on strike without discrimination, except that at Calgary, where the trouble originated, it would refuse to take back 25 per cent of those who first struck. The railroad further agreed to submit to the Canadian Railway Board of Adjustment all grievances which the men claimed to have in connection with pay, etc.; but reserved the original point of dispute at Calgary, namely, the right of the company to appoint or dismiss foremen without any reference to the union, or without any regard to the question of seniority in the service.

The cabinet of the Canadian government decided that the terms of this offer were acceptable, with the amendment that 25 men instead of 25 per cent of the original strikers should be kept out of service, the question of keeping them

permanently out of service to be passed on by the Canadian Board of Railway Adjustment.

It was understood that the company would select the 25 strikers who had proved themselves most obnoxious in the way of interfering with new men and causing friction in the freight houses and that it could present to the board of adjustment the evidence it had of these pernicious activities. After the cabinet had reached its conclusion regarding the terms of settlement, these were telegraphed to the representatives of the men and were accepted by them. All of the strikers with the exception of the 25 at Calgary reported for duty on October 24. The government approved the stand of the company with respect to the original cause of the dispute and stated that the railroad would not be asked to arbitrate that point.

A Rosy Picture

A press despatch from Washington published last week says that cross-country operation of mail carrying motor trucks, tried out by the Post Office Department on an experimental scale during the last year, has been a great success. James I. Blakeslee, Fourth Assistant Postmaster General, says that one truck route between Philadelphia and Washington, cutting chiefly through territory without direct rail connection and costing \$800 a month to operate, has in eight months developed a revenue of \$16,000 monthly. Another route into Washington, where 28 parcels a day were moved during the first month, now shows one ton of merchandise each way each 24 hours.

"Seventy lines are now in operation, all but one east of the Mississippi, and there are visions of a system which will furnish \$360,000,000 annually in revenue for road construction or other purposes.

"General Pershing," said Mr. Blakeslee, "has 9,000 trucks damaged or ruined over on the other side. We want them all and can fix up and put every one of them to work. And he's got some boys over there shy a hand, or an arm, or a leg, to whom we can give good pay.

"Operating at night is the most profitable. The typical route is about 180 miles long, 90 miles out and 90 miles back. Almost always the constant operation of the lines produces a return load. Of course, we'll have to have concrete roads, but the business can produce the money to build them. There are some economies in distribution of produce that are simply amazing. Milk retails now in Washington at 17 cents a quart. Milk is coming in on mail trucks direct to consumers for 10 cents a quart, and the trucks are being weighed down with five-gallon cans as consumers learn of the possibility. Food is usually handled ten times on its way to a consumer. We can cut that to five.

"Watching these figures, since December, when we started, has given me a new sort of inspiration. We shall be moving the mails * * * in airplanes for the thousand-mile distances, trains for the 500-mile and trucks for the 250. That's about the schedule."

Railway Accounting Officers

The executive committee of the Railway Accounting Officers' Association announces that June 11, 1919, is the time, and New York City the place for the next annual meeting.

The Central Railway Club

The November meeting and annual dinner of the Central Railway Club will be held at the Hotel Statler, Buffalo, Thursday, November 14. There will be a business session at 2 o'clock in the afternoon, at which the following topical question will be discussed: "How Can a Railroad Man Help Win the War?" At the dinner at 7 in the evening, Henry L. Joyce, manager of the marine department of the Central of New Jersey, will be toastmaster and the speakers will include Howard MacSherry of Newark, N. J., and the Rev. George F. Williams, director of St. Mary's on the Hill, Buffalo.

Following the usual custom there will be a big delegation attending from New York, leaving Hoboken at 8:55 Wednesday evening, on the Lackawanna.

Traffic News

W. D. Trump, terminal manager in charge of all lines in Detroit, Mich., issued an embargo, effective October 28, on all intra-terminal switching, except of essential war material. Exceptions will be granted only through special permits issued by the terminal manager.

The street passenger railroads in New York City—elevated, subway and surface—are now carrying about 400,000 fewer passengers daily than were carried at this time in 1917. This is due, in part, to the epidemic of influenza, but also it is believed that the migration of mechanics from one industrial establishment to another has taken a good many men out of the city.

Postmaster General Burleson has announced that airplane mail service between New York and Chicago will be started between December 1 and 15. It is proposed that the machines shall leave Chicago and New York at six o'clock each morning, and make the trip in 10 hours. Mr. Burleson promises to establish airplane mail carriers between New York and Denver after the war.

A delegation of shippers and others interested in transportation on the New York Barge Canal held a conference with Director General McAdoo last week regarding canal matters and Capt. Charles Campbell, chairman of the Canal and Terminal Interests Campaign Committee, sent a telegram to the director general in connection with the conference, urging him to return the New York Barge Canal to the State of New York and "insure the election of a Democratic governor and congressman this fall." In reply, Director General McAdoo sent a telegram saying that the federal government has not taken over the New York Barge Canal, but that the state still retains entire control of it and should complete the waterway promptly so that it can be used to full capacity. The Railroad Administration, he said, is merely operating barges on the state's waterway and doing everything it can to make it useful to the people of the state and of the United States. Every citizen and every corporation desiring to use the canal can do so as freely as the Railroad Administration is using it. They can purchase canal boats, barges and tugs and operate them on the canal without any interference from the Railroad Administration.

Priorities for Lumber Manufacturers

Regulations under which lumber manufacturers may obtain priority assistance for securing necessary labor, transportation, supplies, equipment, and materials have been issued by Judge Edwin B. Parker, priorities commissioner of the War Industries Board. Manufacturers are prohibited from making any sales or deliveries except for essential uses, namely: The requirements of the United States government and its allies; the needs of the railroads operated by the government; and for supplying to others lumber of primary importance in war work or in essential civilian requirements.

The circular gives revised rules governing priorities in production and delivery of lumber.

Cape Cod Canal

The efforts of the Railroad Administration to make the Cape Cod canal navigable for the largest type of vessels in the coastwise trade are meeting with success, according to a statement issued. It is expected that all dredging will be completed by December 31.

The steamers "Coastwise" and "Bristol," the largest colliers in the New England coal trade, capacity 6,900 tons each, passed through the canal on September 20 and 21 respectively, resulting in a saving of several hours' time, and over 60 miles distance for each steamer. These vessels are 359 ft. in length, 49 ft. beam and drew 18 ft. through the canal, which they passed at low tide.

A fleet of four powerful tug boats and a force of competent pilots are maintained at the canal. The Public Health Service will establish a branch hospital for the care of sick or injured seamen, and the United States Coast Guard has located the site for a life saving station. The Department of Commerce has recently improved the lights in Buzzard's Bay, showing the western approaches of the Cape Cod canal, and is investigating improvements of a similar nature at the eastern end of the canal. Supplies of coal for tug boats are now available at Sandwich.

Coal Production

The production of bituminous coal for the week ended October 19 not only decreased 6.7 per cent because of the influenza epidemic, but fell to the low weekly record of last May, according to the weekly report of the Geological Survey. Preliminary estimates place production for the week at 11,523,000 net tons, which exceeded the production during the corresponding week of 1917 by 1,300,000 net tons, or 12.3 per cent. The influenza epidemic also caused a loss in the anthracite fields and the production for the week, estimated at 1,715,000 net tons, was 12.3 per cent below that for the corresponding week. For the week ending October 12 the percentage of full time output lost on account of car shortage, according to the reports of bituminous operators, was 7.9 per cent.

Fuel Administrator Garfield has issued a report on the fuel situation showing an encouraging situation as to the advance stocks of coal now on hand and an increase of 37,000,000 tons of bituminous coal produced during the first six months of the coal year as compared with the last year. This has been made possible, Dr. Garfield says, by cordial co-operation between the mine workers, the operators, the Railroad Administration and the Fuel Administration.

Reports to Director General McAdoo show that the railroads loaded 232,356 cars of coal during the week ended October 19 compared with 216,294 for the corresponding week of 1917. For the year up to October 19 the increase over the corresponding period of 1917 was 730,203 cars.

Unprecedented Live Stock Receipts at Kansas City

Live stock receipts in the Kansas City (Mo.) stock yards in the last week of September were the greatest in the history of that market. The receipts of live stock from the roads supplying those yards in the week from September 23 to September 28, inclusive, amounted to 259,868 head, as compared with 180,726 head during the same week of 1917, or an increase of 44 per cent. The total number of cars received and forwarded during that week was 7,366. The entire month of September was also a record period for live stock traffic. The number of head handled by the railroads during the month was 1,404,423, as against 885,967 delivered and shipped during the same period last year. The increase over September, 1917, was, therefore, approximately 59 per cent. The total number of cars used for this traffic during the month of September was 27,446, or 7,731 greater than the number utilized for the same business last year, an increase of approximately 39 per cent. Live stock receipts and shipments at Kansas City during the month of August were also very heavy, a total of 869,887 head were handled, 209,011 more than last year, or an increase of 32 per cent.

The unprecedented movement of live stock is attributed mainly to the severe drought in the southwestern states last summer. The exceptional traffic was handled with very little congestion on the railroads.

NEW FRENCH RAILWAY PROJECT.—The committee called "Switzerland-Ocean," or "45th Parallel," recently met at Lyons to discuss the execution of a project for a railway line, Turin-Lyons-Limoges-Bordeaux, which will greatly facilitate and increase the economic relations with Italy via Turin, Milan, and Venice, and beyond, and with North and South America on the west. A delegate of the Minister of Commerce, various representatives of the municipalities concerned, and presidents of chambers of commerce assisted at the meeting.—*The Engineer, London.*

Equipment and Supplies

Locomotive Deliveries

A total of 54 locomotives were delivered to railroads under federal control during the week ended October 12, of which 36 were of the U. S. R. A. standard types. Of these, 39 were shipped by the American Locomotive Company, 9 by the Lima Locomotive Corporation and 6 by the Baldwin Locomotive Works to the following railroads:

Works	Road	Number	Type
American	Grand Trunk, New England	10	U. S. R. A. Mikado
	Louisville & Nashville	13	U. S. R. A. Mikado
	Chicago Junction	5	U. S. R. A. Switch
	Chesapeake & Ohio	4	Mallet
	Erie	2	U. S. R. A. Switch
	Telugh Valley	5	U. S. R. A. Mikado
Total		39	
Lima	Illinois Central	9	Mikado
	Total	9	
Baldwin	Philadelphia & Reading	1	Consolidation
	St. Louis-San Francisco	1	Santa Fe
	Archison, Topeka & Santa Fe	1	Mikado
	Great Northern	1	Switcher
	Chicago, Burlington & Quincy	1	Mikado
	Cleve., Cinn. & St. Louis	1	U. S. R. A. Mikado
Total		6	
Grand total		54	

A total of 62 locomotives was shipped to various railroads under federal control during the week ended October 19, of which 39 were of the U. S. R. A. standard types, as follows:

Works	Road	Number	Type
American	N. Y. C. & St. L.	10	USRA Mikado
	L. & N.	6	USRA Mikado
	C. & O.	5	Mallet
	Erie	5	USRA Switch
	W. Pa.	5	Mikado
	Chic. Junc.	5	USRA Switch
	C. & A.	7	USRA Mikado
	W. & L. E.	4	USRA Mikado
Total		47	
Lima	Ill. Cent.	9	Mikado
	Total	9	
Baldwin	P. & R.	2	Consolidation
	P. R. R.	1	Mikado
	C. C. & St. L.	2	USRA Mikado
	A. T. & S. Fe.	1	Mikado
	Total	6	
Grand total		62	

Freight Cars

E. George & Co., New York, is inquiring for 75 50-ton ore cars.

THE AIR NITRATE COMPANY, New York, is inquiring for 275 car bodies.

G. H. HUTCHINS & Co., New York, is inquiring for 2 20-ton freight cars.

THE BALTIMORE & OHIO is inquiring for 100 steel underframes for caboose cars.

J. WATKINS WHITE, New Orleans, La., is inquiring for a number of tank cars.

W. W. LINDSY & Co., Philadelphia, Pa., is inquiring for four 75-ton, open top cars.

THE LIBERTY SHIP BUILDING COMPANY, Bloomington, N. C., is inquiring for one transfer car.

THE ITALIAN GOVERNMENT has ordered 10,000 freight cars from the American Car & Foundry Company.

THE ANACONDA COPPER MINING COMPANY, New York, is inquiring for 35 U-shaped steel dump cars.

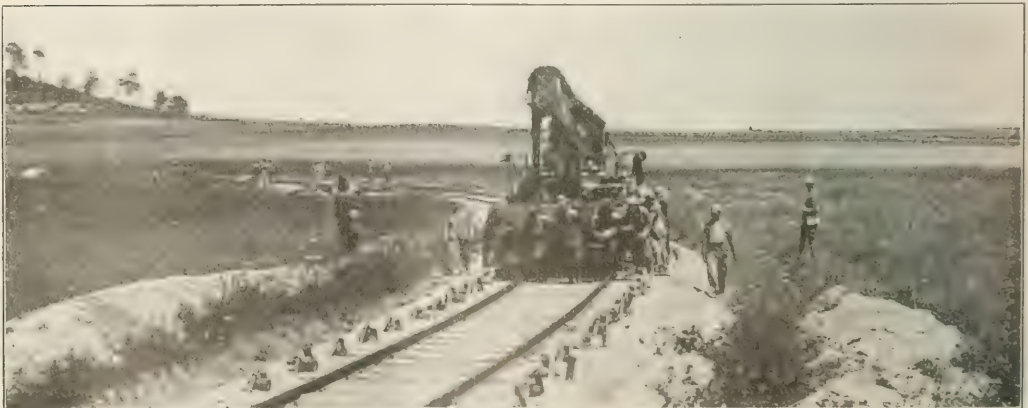
THE WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING COMPANY, Philadelphia, Pa., is inquiring for one platform car.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is inquiring to lease 15 dirty oil tank cars and 5 refined oil tank cars with a capacity of 80,000 gal., for six months, with option of releasing for an additional six months, and is also in the market for 30 to 35, 42-in. or 44-in. gage mine cars.

THE UNITED STATES WAR DEPARTMENT has placed orders for freight cars through the Department of Military Railways for service on military railway lines abroad as follows: American Car & Foundry Company, 8,300; Standard Steel Car Company, 7,060; Liberty Car & Equipment Company, 800; St. Louis Car Company, 400; Pressed Steel Car Company, 5,475; Pullman Company, 4,400; Haskell & Barker Car Company, 5,950; Standard Car Construction Company, 100; General American Tank Car Corporation, 400; Cambria Steel Company, 1,100; Keith Railway Equipment Company, 500; Mt. Vernon Car Manufacturing Company, 1,200; Koppel Industrial Construction & Equipment Company, 500; Pennsylvania Tank Car Company, 660; Ralston Steel Car Company, 1,000; Keith Car & Manufacturing Company, 1,150; Bettendorf Company, 1,000.

Passenger Cars

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for one second-hand, 50 passenger capacity, steam, gasoline-electric, or gasoline propelled passenger and baggage car.



American Soldiers Moving a Heavy Railroad Gun on the St. Mihiel Front

Supply Trade News

Herbert W. Drew, president of the Northern Railway Supply Company, Chicago, died at Washington, D. C., on October 14.

John W. Greenlaw, secretary of the Greenlaw Manufacturing Company, Boston, Mass., died on October 30, of pneumonia, in Malden, at the age of 81.

E. C. Carroll, sales representative of the National Carbon Company, with headquarters at Chicago, has resigned to enter the production department of the Globe Seamless Tube Company at Milwaukee, Wis., effective November 1.

A. M. Weston, who has been track engineer for the Lackawanna Steel Company, Buffalo, for the past eight years, has resigned to become general manager of the Key-Bolt Appliance Company, Buffalo, manufacturers of a new design of bolt for ship construction and track work.

A. M. Brown, assistant manager of the compressor sales division of the Chicago Pneumatic Tool Company at New York, has been appointed district manager of sales, with office at Philadelphia, Pa., succeeding **G. A. Barden**, who will remain in Philadelphia as sales representative for the company.

The Chicago Railway Supplies Liberty Loan Committee, of which **Charles K. Knickerbocker**, vice-president of the Griffin Wheel Company, was chairman, secured subscriptions from railway supply companies amounting to \$6,875,000, which was greatly in excess of the quota of \$5,270,000 assigned to the committee.

At a meeting of directors of the Safety Car Heating & Lighting Company, the vacancy caused by the death of **Robert M. Dixon**, president of the company, was not filled, but **W. L. Conwell**, vice-president, was appointed executive officer of the company with full powers of the president. At a meeting of directors of the Pintsch Compressing Company, **J. A. Dixon**, vice-president, was appointed executive officer with full powers of the president.

The Locomotive Pulverized Fuel Company, New York, has received an order from Morris & Company, Chicago, for equipping that company's steam power plant at Oklahoma City, Okla., with a complete "Lopulco" system for crushing, drying, pulverizing and burning coal. Morris & Company expect to use native coals and to make use of Texas lignite. The power plant contains 7 Edgemoor boilers having a total of 3,100 hp., all of which are to be equipped.

John J. Smart, vice-president and director of Rowson, Drew & Clydesdale, Inc., died October 23 of influenza at the age of 43 years. When the firm of W. J. Crouch Co., Inc., was founded, Mr. Smart was one of the original members and served as manager of the engineering division. When Crouch & Co., amalgamated recently with the old English firm of Rowson, Drew & Clydesdale, Mr. Smart was made head of the manufacturing division.

The Barber-Green Company, Cleveland, Ohio, announces the appointment of **F. E. Smith** as chief engineer. Mr. Smith was formerly connected with the engineering department of the Stephens-Adamson Manufacturing Company, of the Granby Mining & Smelting Company, and the American Zinc & Chemical Company. **Geo. C. Sanford**, formerly connected with the Elevator Supplies Company and the Otis Elevator Company, now becomes superintendent of the Barber-Green Company.

The Chicago Pneumatic Tool Company is contemplating the construction of a reinforced concrete plant in Detroit, Mich., which will be five stories in height, with a finished basement, and will cost between \$200,000 and \$250,000. The structure will be 180 ft. by 60 ft. The company also will build a 45 ft. by 150 ft. extension to the erecting department at its No. 2 plant at Franklin, Pa. The building will be of

brick and steel construction, and will cost about \$30,000. Bids are now being received on these buildings.

John P. Hopkins, chairman of the board of directors of the Independent Pneumatic Tool Company, and former mayor of Chicago, died in that city on Sunday, October 13. He was ill only a few days and death was attributed to a weak heart superinduced by an attack of Spanish influenza. Mr. Hopkins was born in Buffalo, New York, in 1858. He moved to Chicago in 1880 and accepted a position with the Pullman Palace Car Company as a machinist. Later he went into business for himself as a partner in the firm of Secord & Hopkins, general merchandise, at Pullman, Ill. This venture proved successful and was the foundation for a large fortune. Mr. Hopkins was a national figure in politics. He served the unexpired term of Carter H. Harrison, Sr., as mayor of Chicago in 1893-94, and was several times chairman of the Democratic National Committee. Since the beginning of the war he has served as secretary of the Illinois Council of Defense. In 1905 he became interested in the Independent Pneumatic Tool Company and was the largest stockholder. He was one of the original organizers of this company and was chairman of the board of directors at the time of his death.

Frank W. Furry, president of the Ohio Injector Company, died at his home in Chicago on October 23, after a short illness, at the age of 60 years. Mr. Furry was born at Wadsworth, Ohio, on February 25, 1858. From 1884 to 1893 he was connected with the Ferdinand Shumacher Milling Company, now the Quaker Oats Company, and was then until April, 1894, in railway service, having been employed on the Atlantic & Great Western as a telegraph operator at Sherman, Ohio, and on the New York, Pennsylvania & Ohio as telegraph operator at Akron, Ohio, and later as city agent of the Valley Railway.



F. W. Furry

Mr. Furry moved to Chicago in April, 1894, when he organized the Ohio Injector Company of Illinois, with which company he had been actively engaged and was its president at the time of his death.

Trade Publications

CONDENSERS, PUMPS AND COOLING TOWERS.—Under the name of "Condensers, Pumps, Cooling Towers, etc.," the Wheeler Condenser & Engineering Co., Carteret, N. J., has just published bulletin 112-A describing its condensing machinery in detail. The bulletin contains 32 pages, is profusely illustrated and features a discussion of the choice of the kind of condenser.

WOOD PRESERVING.—The Carbolineum Wood Preserving Company, of New York, has recently issued a circular in which the advantages and economies derived from supplementary surface treatment of timber are discussed at length. The information is concisely presented and includes service records of structures treated by this method. Several photographs illustrate clearly the method of application while others show the condition of timber thus treated after years of service under various conditions.

EXPORTS OF MERCHANDISE from the port of New York during the month of August, 1918, amounted to \$205,686,073. Included in this total were steam locomotives valued at \$752,051, and steel rails at \$610,535.—*Bulletin of the National City Bank of New York.*

Financial and Construction

Railway Financial News

CHICAGO & WESTERN INDIANA.—The directors have authorized the renewal of the \$15,000,000 one year 6 per cent notes which fell due September 1 last, but which were not paid because of the lack of funds. The renewal of these notes is for one year from September 1, and they are upon the same interest basis as the original issues. In consideration of such renewal, however, a premium of $\frac{1}{4}$ per cent will be paid at the time of renewal.

HOCKING VALLEY.—Kuhn, Loeb & Co. and The National City Company have announced that this company's 6 per cent gold notes, due November 1, have been extended to February 1, 1919, with the approval of Director General McAdoo. The agreement, under which the notes are issued, preventing the railroad from entering upon new obligations without fully securing the old, continues in force. Director General McAdoo has agreed, it was announced, to advance the funds necessary to provide at maturity for any of these notes, but the Railroad Administration desires that all railroad corporations, as far as possible, shall provide for their own financial requirements. Noteholders are requested by the railroad company to extend their notes, so that the government will not be called upon for funds at this period, while plans are being made for permanently financing the company.

NORTHERN PACIFIC.—The stockholders at a special meeting voted unanimously to authorize the directors to conclude the contract with the government. The amount of compensation to be paid the road, as certified by the Interstate Commerce Commission is \$30,130,069. This amount is subject to slight modification.

Railway Construction

BALTIMORE & OHIO.—This road has awarded a contract to T. S. Leake & Co., Chicago, for extensions to roundhouses at Flora, Ill., and East St. Louis. At the former point eight 102-ft. stalls will be added to the present structure and at East St. Louis, 11 additional 100-ft. stalls will be constructed. The extensions will be of brick construction. The contract was awarded on a cost plus percentage basis.

BOSTON & ALBANY.—This road has prepared tentative plans for a new passenger station at Springfield, Mass. The plans call for building a new passenger station and office building, a passenger subway, a baggage and express subway, and a building to accommodate the baggage, mail and express business separate from the passenger station building. There will be eight through and one stub end station tracks, with platforms 20 ft. wide, and a Bush train shed covering all tracks and platforms. Two all-electric interlocking plants will be provided at each end of the station. A new outbound freight house will also be provided at the Liberty street local delivery yard, and the yard will be reconstructed to increase its capacity. The cost of the proposed improvements will be about \$2,500,000, none of which is to be spent for the purchase of land.

CANADIAN NORTHERN.—A new brick station, two stories high and 129 ft. long by 30 ft. wide, is being built at Rainy River, Ont., to cost about \$30,000. The contractor is Claydon Company, Ltd., Winnipeg, Man.

CHICAGO, MILWAUKEE & ST. PAUL.—Contracts have been awarded to Paul Riesen & Sons, Milwaukee, Wis., for the construction of a reinforced concrete mechanical coaling plant at New Lisbon, Wis., to cost about \$25,000, and a plant of similar type and cost at Watertown Junction.

CORNWALL RAILROAD.—A contract has been given to J. H. Greiner, Lebanon, Pa., for building a machine shop extension at Twenty-second and Guilford streets, Lebanon, Pa. The building will be 25 ft. high, 60 ft. wide, and 140 ft. long of brick and iron construction and will cost about \$25,000.

ILLINOIS CENTRAL.—Bids are being received for a one-story, 40 ft. by 200-ft., freight house at Herrin, Ill., to cost about \$25,000. A contract has been awarded to Joseph E. Nelson & Sons, Chicago, for the construction of a one-story, 40-ft. by 200-ft., passenger station, freight house and express building at Stithton, Ky., the cost of which is estimated at \$85,000. Joseph E. Nelson & Sons have also been awarded a contract for the construction of water works facilities at DuQuoin, Ill. The Railroad Water & Coal Handling Company, Chicago, has been awarded the contract for water work facilities at Bois, Ill. A contract has been given to G. A. Johnson & Son, Chicago, for the construction of engine pits and paving in a roundhouse at Jackson, Miss.

NEW YORK CENTRAL.—A contract has been given to the Walsh Construction Company, Davenport, Iowa, for carrying out improvements, on the Pennsylvania division of the New York Central, at Avis, Pa. The work will include an extension to the car shop 45 ft. high, 202 ft. wide and 350 ft. long; also an extension to the blacksmith and machine shop 41 ft. high, 126 ft. wide and 206 ft. long. There will also be a steel mill building with brick curtain walls and tile roof, on concrete foundation. The cost of the improvements will be about \$855,000.

PENNSYLVANIA.—The new engine house and machine shop at Pitcairn, Pa., now nearing completion, will cost, with the other improvements, about \$1,500,000. The engine house is semi-circular and contains 34 stalls and there are three drop tables. This is a reinforced concrete building. The machine shop is 54 ft. x 120 ft., and is of steel. There are two turntables, each 110 feet in diameter, and there is a storehouse of reinforced concrete, measuring 50 ft. x 100 ft. There is also a brick office building two stories high, 40 ft. x 80 ft., also an ice house and an oil house combined, 38 ft. x 77 ft. This building is of reinforced concrete and one story high.

The Pennsylvania Railroad has given a contract to the Brann & Stuart Company, Philadelphia, Pa., for building an extension to the engine house at Thirtieth street, West Philadelphia, at a cost of about \$100,000, and a contract has been given to the William Steele & Sons Company, Philadelphia Pa., for building an extension to the stalls of the engine house at Forty-sixth street, West Philadelphia, at a cost of about \$60,000.

PENNSYLVANIA RAILROAD, EASTERN LINES.—This road has received authorization to build a 50 pit locomotive repair shop at Marietta, Pa., at an estimated cost of \$5,000,000. Plans for the work are rapidly being formulated and it is expected that the entire plant will be in operation in the early fall of 1919.

PHILADELPHIA & READING.—A store and oil house, one story high and 85 ft. long, and a master mechanic's office, two stories high, 19 ft. x 38 ft., are being built at Tulip and Somerset streets, Philadelphia, Pa. Buildings are of concrete and brick. The contractor is Pringle Borthwick, Philadelphia; cost, about \$46,000.

ST. LOUIS MUNICIPAL BRIDGE.—The Southwestern regional director has authorized the construction of connections between the municipal bridge at St. Louis, Mo., and the Merchants' Bridge and Terminal Railroad at the west end, and the tracks of the Alton & Southern at the east end, so that in case it is later decided to do so, the bridge can be promptly put into use.

ST. LOUIS SOUTHWESTERN.—This road will soon commence the construction of a one-story frame passenger station on a concrete foundation, 24 ft. by 156 ft., at Malden, Mo. The building will be constructed by the road's own forces; cost \$6,500.

ST. PAUL UNION DEPOT.—The foundations of the headhouse of the St. Paul Union Passenger Station have been completed and work on the superstructure has been started. The headhouse will be 150 ft. by 300 ft., with an adjoining waiting room, 80 ft. by 400 ft., extending over the tracks. The total number of tracks which will enter the terminal will be 22. In addition, the project involves the construction of 12 miles of track, 500,000 cu. yd. of grading and the erection of a small engine house. The total cost of the terminal improvements will amount to approximately \$11,000,000.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—A contract has been awarded to the Fruin-Colnen Contracting Company, St. Louis, Mo., for the construction of an engine terminal and a two-story concrete coal hopper with pits at East St. Louis, Ill., to cost approximately \$127,000.

Railway Officers

Railroad Administration

Central Administration

Sydney B. Congdon, who has been secretary to **John Skelton Williams** as comptroller of the currency, has been appointed assistant to the director of the division of finance and purchases, with office at Washington.

Federal and General Managers

The Quana, Acme & Pacific has been placed under federal control and assigned to the jurisdiction of **J. S. Pyeatt**, federal manager, Dallas, Texas.

G. L. Peck, federal manager of the Pennsylvania Lines West of Pittsburgh, with headquarters at Pittsburgh, Pa., has had the Chicago Union Station included in his jurisdiction.

A. W. Trenholm, federal manager of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., has had the Fairchild & Northeastern added to his jurisdiction.

H. B. Earling, general manager of the Chicago, Milwaukee & St. Paul, lines west of Moberge, S. D., with headquarters at Seattle, Wash., has had his jurisdiction extended over the Port Townsend & Puget Sound.

E. L. Brown, general manager of the Denver & Rio Grande and the Denver Union Terminal, with headquarters at Denver, Colo., has had his jurisdiction extended over the Pueblo (Colo.) Union Depot & Railroad.

Operating

The Arizona & New Mexico has been released from federal control.

D. F. Bunch has been appointed chief dispatcher on the Appalachia division of the Southern Railroad, vice **C. C. Craig**, resigned.

E. D. Hungerford, superintendent of the Chicago, Rock Island & Pacific, at Cedar Rapids, Iowa, has been appointed terminal manager of all lines at that point.

The jurisdiction of **J. L. Nichols**, superintendent of the Baltimore & Ohio Chicago Terminal, with headquarters at Chicago, has been extended over the Chicago Heights Terminal Transfer.

W. L. Robinson has been appointed supervisor of fuel consumption on the Baltimore & Ohio Western Lines, the Dayton & Union Railroad, and the Dayton Union Railroad, with headquarters at Cincinnati, Ohio.

O. N. Harstad, trainmaster of the Chicago, Milwaukee & St. Paul, at Minneapolis, Minn., has been promoted to superintendent of the Aberdeen division, with headquarters at Aberdeen, S. D., effective November 1.

W. H. O'Dea has been appointed trainmaster of the Delaware, Lackawanna & Western, with office at Scranton, Pa., vice **H. J. Mullaghy**, furloughed to accept other service with the United States Railroad Administration.

Joseph L. Vaughan, conductor on the Dakota division of the Northern Pacific, has been appointed trainmaster, with headquarters at Jamestown, N. D., and **William W. Berry**, conductor on the Rocky Mountain division, has been appointed trainmaster, with headquarters at Missoula, Mont., vice **W. C. Showalter**, promoted.

J. E. Fahy has been appointed assistant superintendent of transportation of the Baltimore & Ohio, western lines, with headquarters at Cincinnati, Ohio. **T. J. Daly** has been appointed trainmaster at Newark, Ohio. **L. I. Kerr** has been appointed assistant trainmaster at Barnesville, Ohio, succeeding

W. H. Arnold, who has been promoted to trainmaster at Cambridge, Ohio.

Eben D. Moon, division superintendent of the New York Central (west of Buffalo), with office at Hillsdale, Mich., has been appointed superintendent of the Michigan division, vice **E. R. Bissell**, appointed terminal manager at Cleveland, Ohio; **J. R. Todd**, assistant division superintendent, with office at Erie, Pa., has been appointed superintendent of the Lansing division, vice **E. D. Moon**, transferred, and **J. J. Daley**, trainmaster, with office at Wesleyville, Pa., has been appointed assistant superintendent of the Erie division, vice **J. R. Todd**, promoted.

Abner Leake Kuykendall, whose appointment as superintendent of terminals of the Southern Pacific at Houston, Texas, was announced in the *Railway Age* of October 18, was born at Grand View, Johnson county, Texas on March 20, 1876. He received a high school education and began railway work in 1894 as an express messenger for Wells Fargo & Co. on the Gulf, Colorado & Santa Fe. Subsequently he was employed in various capacities on the same road, including clerk, warehouse foreman, switchman and night yardmaster. He then went to the Southern Pacific, and has filled successively the positions of warehouse foreman, night yardmaster, general yardmaster, and assistant superintendent of transportation at Jacksonville, Texas. Recently, as noted above, he was promoted to superintendent of terminals at Houston.

Financial, Legal and Accounting

Maury Middleton, acting local federal treasurer of the Southern Railroad, has been appointed also local federal treasurer of the Piedmont & Northern, with headquarters at Washington, D. C.

H. H. Field, general solicitor of the Chicago, Milwaukee & St. Paul, the Escanaba & Lake Superior and the Ontonagon Railroad, with headquarters at Chicago, has had his jurisdiction extended to include the Port Townsend & Puget Sound.

E. F. Parham, federal treasurer of the Southern Railroad and other roads under the jurisdiction of **E. H. Coapman**, federal manager, has been appointed federal treasurer also of the Piedmont & Northern, with headquarters at Washington, D. C.

The jurisdictions of **H. D. Sheean**, general solicitor of the Baltimore & Ohio Chicago Terminal; **F. B. Huntington**, federal auditor, and **H. H. Hall**, acting federal treasurer, all with headquarters at Chicago, have been extended over the Chicago Heights Terminal Transfer.

G. J. Bunting, federal auditor of the Chicago, Milwaukee & St. Paul and the Escanaba & Lake Superior, with headquarters at Chicago, has had his jurisdiction extended to include the Port Townsend & Puget Sound. **A. G. Loomis**, federal treasurer of the former roads, with office at Chicago, has been appointed also acting federal treasurer of the Port Townsend & Puget Sound.

The authority of **H. B. Dike**, general solicitor of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been extended over the Lake Superior Terminal & Transfer Railroad. **T. B. Thompson** has been appointed federal auditor, of the latter road, with headquarters at Duluth, Minn., and **H. N. Paist** has been appointed acting federal treasurer, with office at Minneapolis.

Traffic

J. R. Veitch, assistant general freight agent of the Chicago, Milwaukee & St. Paul, with headquarters at Seattle, Wash., has been appointed general freight and passenger agent of the Port Townsend & Puget Sound, with the same headquarters.

P. F. Finnegan, assistant, Division of Traffic, United States Railroad Administration, with headquarters at Washington, D. C., and formerly general freight agent of the Baltimore & Ohio at Chicago, has been appointed freight traffic manager of the western lines of that road, with head-

quarters at Cincinnati, Ohio, succeeding **C. L. Thomas**, deceased. Mr. Finnegan also becomes chairman of the Cincinnati district freight traffic committee in place of Mr. Thomas.

T. P. Chambers, general agent of the freight department of the Atchison, Topeka & Santa Fe, at Los Angeles, Cal., has been appointed division freight agent at that point. **E. W. McGee**, general agent of the passenger department at Los Angeles, has been appointed division passenger agent at the same place. **N. W. Hall**, general agent of the freight department, and **J. B. Duffy**, general agent of the passenger department, at San Francisco, Cal., have been appointed division freight agent and division passenger agent, respectively, with the same headquarters. **L. McPhetridge** has been appointed division freight and passenger agent at Fresno, Cal. **W. R. Dowler**, general agent at San Bernardino, Cal., has been appointed division freight and passenger agent at that point. **S. C. Payson**, general agent at San Diego, Cal., has been appointed division freight and passenger agent at that place.

Engineering and Rolling Stock

W. S. Shaw, Jr., has been appointed division engineer of the Michigan Central, with headquarters at St. Thomas, Ont., succeeding **J. E. Johnson**.

E. L. Collette, assistant engineer of the St. Louis-San Francisco, at Springfield, Mo., has been appointed district engineer at that place, succeeding **P. J. Neff**.

G. O. Hammond, general mechanical superintendent of the New York, New Haven & Hartford, with office at New Haven, Conn., has resigned, effective November 1.

E. A. Whitman, chief engineer of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has had his authority extended over the Lake Superior Terminal & Transfer Railroad.

C. F. Loweth, chief engineer of the Chicago, Milwaukee & St. Paul, the Escanaba & Lake Superior and the Ontonagon Railroad, with headquarters at Chicago, has had his jurisdiction extended to include the Port Townsend & Puget Sound.

The authority of **E. G. Lane**, chief engineer of the Baltimore & Ohio, western lines, and the Baltimore & Ohio Chicago Terminal, with headquarters at Cincinnati, Ohio, has been extended over the Chicago Heights Terminal Transfer.

B. J. Farr, master mechanic of the Grand Trunk (Western Lines), at Battle Creek, Mich., has been appointed superintendent of motive power and car department of the Western Lines, with headquarters at Detroit, Mich., succeeding **W. H. Sample**, who has gone to the Grand Trunk in Canada.

C. P. Richardson, assistant engineer of track elevation of the Chicago, Rock Island & Pacific, with headquarters at Chicago, resigned, effective October 19, to take a position as cost engineer on the Davenport project of the United States Housing Corporation, with headquarters at Davenport, Iowa.

The jurisdiction of **T. A. Foque**, general mechanical superintendent, and of **P. Swenson**, superintendent of bridges and buildings of the Minneapolis, St. Paul & Sault Ste. Marie, has been extended over the Duluth, South Shore & Atlantic and the Mineral Range, both with headquarters at Minneapolis, Minn.

Purchasing

E. T. Stone, purchasing agent of the Minneapolis, St. Paul & Sault Ste. Marie, with office at Minneapolis, Minn., has had the Lake Superior Terminal & Transfer Railroad included in his jurisdiction.

The jurisdiction of **W. S. Galloway**, purchasing agent of the Baltimore & Ohio system, with headquarters at Baltimore, Md., has been extended to include the Chicago Heights Terminal Transfer.

O. H. Wood, assistant purchasing agent of the Great Northern, at Seattle, Wash., has been appointed purchasing agent of the Pacific Coast Railroad, with the same headquarters, succeeding **G. W. Saul**.

W. A. Linn, purchasing agent of the Chicago, Milwaukee

& St. Paul, the Escanaba & Lake Superior and the Ontonagon Railroad, with headquarters at Chicago, has had his jurisdiction extended to include the Port Townsend & Puget Sound.

Lyle Miller has been appointed division storekeeper of the Atchison, Topeka & Santa Fe at Riverbank, Cal.; **G. W. Riggin** has been appointed to that position at Gallup, N. M.; **A. J. Dodge** has been appointed division storekeeper at Dodge City, Kan., and **N. O. Sharpe** has been appointed storekeeper for the eastern division, with office at Emporia, Kan.

Corporate

Executive, Financial, Legal and Accounting

C. I. Millard has been elected vice-president of the Norfolk Southern, with headquarters at Norfolk, Va.

James McNeill has been appointed secretary and treasurer of the Detroit & Mackinac, with office at New York.

W. R. Grim has been elected vice-president of the Louisiana & Arkansas, with headquarters at Texarkana, Texas.

J. E. Gordon has been appointed controller and secretary of the Gulf & Ship Island, with office at Gulfport, Miss.

Henry J. Hart, general solicitor of the Bangor & Aroostook, has been elected vice-president and general counsel, with headquarters at Bangor, Me.

F. J. Fell, Jr., general accountant of the Pennsylvania, has been appointed auditor of the Cumberland Valley, with headquarters at Philadelphia, Pa.

W. C. Carrick has been appointed auditor of the Richmond, Fredericksburg & Potomac and the Washington Southern, with headquarters at Richmond, Va.

George Hodge, assistant to general manager of the Canadian Pacific, Eastern Lines, with office at Montreal, Que., has been appointed assistant to the vice-president.

H. A. Elliott has been appointed general attorney of the Arizona & Eastern, and **W. M. Shirk** has been appointed assistant treasurer, both with headquarters at Clifton, Ariz.

W. R. Cole, chairman of the board of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been elected also president to succeed **J. Howe Peyton**, deceased.

C. E. Stockdill, assistant to the vice-president and general manager of the Canadian Pacific, with headquarters at Winnipeg, Man., has been appointed assistant to the vice-president of the western lines, with the same headquarters.

C. C. Huitt has been appointed assistant to the president of the Missouri Pacific, with headquarters at New York, N. Y. **E. H. Lycett**, general accountant, has been appointed assistant secretary and assistant treasurer, with office at St. Louis, Mo.

R. Rosa, assistant secretary and assistant treasurer of the Nevada-California-Oregon Railway, with office at New York, has been elected treasurer, vice **R. M. Cox**, resigned, and **O. R. Belcher**, superintendent at Alturas, Cal., has been elected assistant treasurer, succeeding Mr. Rosa.

The following new corporate officers have been chosen on the Charleston & Western Carolina: **George B. Elliott**, chairman, executive committee, New York; **R. D. Cronly**, secretary and assistant treasurer, Wilmington, N. C.; **J. J. Nelligan**, treasurer, Baltimore, Md., and **J. E. Shannon**, auditor, Wilmington, N. C.

E. H. Boles, general attorney of the Lehigh Valley, has been appointed general counsel, with headquarters at New York. **D. G. Baird**, secretary, also has been appointed treasurer, with office at Philadelphia, Pa. **J. W. Robbins**, assistant secretary, also has been made assistant treasurer, with office at Philadelphia. **H. R. German** has been appointed assistant secretary, with office at New York. **A. F. Bayfield** has been appointed auditor, with headquarters at Philadelphia.

H. E. Bissell, right of way and claims agent of the Grand Trunk Pacific, with office at Winnipeg, Man., has been appointed land and tax agent. The claims department is now in charge of **H. H. Hansard**, solicitor, to whom all correspondence pertaining to claims on account of injuries to persons or livestock should be addressed.

Frank A. Greene, assistant superintendent of insurance and safety of the Pennsylvania Railroad, under the United States Railroad Administration, since June, 1918, and previous to that time assistant superintendent of the insurance department, has been appointed insurance agent of the Pennsylvania Railroad for the corporation.

J. D. Farrell, vice-president of the Union Pacific system, has also been elected first vice-president of the Los Angeles & Salt Lake, with headquarters at Portland, Ore. **C. P. Smith** has been elected secretary, with office at Los Angeles, Cal. **F. C. Loofbourov** has been appointed assistant secretary, with headquarters at Salt Lake City, Utah; **W. J. Doran** has been appointed treasurer, and **J. M. Evans** has been appointed auditor, both with headquarters at Los Angeles.

W. L. Ross has been chosen president and receiver of the Toledo, St. Louis & Western and president of the Toledo Terminal, with headquarters at Toledo, Ohio. **James Stuart Mackie** has been appointed agent for receiver and acting secretary, with headquarters at New York. **Bryan Thomas** has been appointed secretary of the Toledo Terminal Railroad, and **W. C. Carr** has been appointed treasurer, both with headquarters at Toledo.

Anthony D. MacTier, general manager of the Eastern lines of the Canadian Pacific, at Montreal, Que., has been elected vice-president, with headquarters at Montreal. He

was born in December, 1867, at Blairgowrie, Scotland, and was educated in Sedburgh, Yorkshire, England. In May, 1887, he began railway work with the Canadian Pacific as a stenographer and served in the office of the general baggage agent and the general superintendent until 1889. He was then for two years assistant to the superintendent of sleeping and dining cars, and from 1891 to May, 1896, served in the car service, stores and fuel departments. He was appointed general baggage agent in



A. D. MacTier

1896, and from 1899 to 1907 served as general fuel agent. He was then appointed assistant to the vice-president, remaining in that position until December, 1912, when he was appointed general manager, Eastern lines, and now becomes vice-president of the same road as above noted. Mr. MacTier's entire railway service has been with the Canadian Pacific.

C. E. Perkins, president of the Chicago, Burlington & Quincy, with headquarters at Chicago, has also been elected president of the Ft. Worth & Denver City, the Ft. Worth & Denver Terminal, the Wichita Valley, the Wichita Falls & Oklahoma, the Wichita Valley, the Stamford & Northwestern and the Abilene & Northern. **S. Kesler** has been elected secretary and treasurer of the seven latter companies, with headquarters at Ft. Worth, Texas, and **D. B. Keeler**, vice-president of those companies, has also been elected controller.

R. D. Cronly has been appointed assistant to general counsel, assistant secretary and assistant treasurer of the Atlantic Coast Line, with headquarters at Wilmington, N. C. **J. F. Post, Jr.**, has been appointed assistant secretary, with office at Wilmington. **J. J. Nelligan** has been appointed treasurer, and **J. B. Kirby** has been appointed assistant treas-

urer, both with headquarters at Baltimore, Md. **S. B. Woods** has been appointed assistant to general counsel, and **J. E. Shannon** has been appointed auditor, both with headquarters at Wilmington.

J. T. Mahaney, auditor of the Wichita Falls & Northwestern, has had his jurisdiction extended over the Missouri, Kansas & Texas and the Missouri, Kansas & Texas of Texas, with headquarters at St. Louis, Mo. **E. W. Peabody**, statistician of the Missouri, Kansas & Texas, has been appointed treasurer of that company, including the M. K. & T. of Texas, and the Wichita Falls & Northwestern, with office at St. Louis. **A. C. Rearick**, general counsel of the Chesapeake & Ohio, has been appointed counsel for the Missouri, Kansas & Texas, with office at New York.

D'Alton C. Coleman, whose election as vice-president of the western lines of the Canadian Pacific, with headquarters at Winnipeg, Man., was announced in the *Railway Age* of



D. C. Coleman

October 25, was born at Carleton Place, Ont., on July 9, 1879. He began railway work in November, 1899, as a clerk in the assistant engineer's office of the Canadian Pacific at Ft. William, Ont., and subsequently was employed as a clerk in the office of the superintendent at Ft. William, Ont., and of the general superintendent at Winnipeg, Man., until January, 1902, when he became chief clerk in the superintendent's office at Cranbrook, B. C. He was then successively chief clerk in the general superintendent's

office at North Bay, Ont., and Winnipeg, Man., and chief clerk to the assistant general manager at the latter place. On June 1, 1907, he was appointed superintendent of the Third district, Pacific division, at Nelson, B. C., and on December 1, 1908, he became superintendent of car service of the western lines at Winnipeg. On April 1, 1912, Mr. Coleman was promoted to general superintendent of the Manitoba division at Winnipeg, and in July of the following year he was made general superintendent of the Alberta division at Calgary, Alta. In January, 1915, he was appointed general manager of the western lines, in charge of maintenance and operation, with headquarters at Winnipeg, which position he held until his recent promotion to vice-president, as noted above.

Operating

The St. Louis & O'Fallon, which was under the jurisdiction of **A. S. Johnson**, terminal manager, St. Louis, Mo., has been released from federal control, effective October 16.

S. H. McCartney, secretary and auditor of the Nevada-California-Oregon Railway, with office at Alturas, Cal., has been elected general manager, vice **R. M. Cox**, resigned.

W. H. Sample, superintendent of motive power of the Grand Trunk Western Lines, at Detroit, Mich., has resigned and has been appointed general superintendent, motive power and car departments, of the Grand Trunk system (in Canada), with headquarters at Montreal, Que. A portrait of Mr. Sample and a sketch of his railway career were published in the *Railway Age* of September 28, 1917, page 586.

Alfred Price, assistant general manager of the Canadian Pacific, Eastern Lines, at Montreal, Que., has been appointed general manager, Eastern Lines, with office at Montreal. **J. T. Arundel**, general superintendent of the Ontario district, with office at Toronto, Ont., having retired from the service. **Allan Purvis**, general superintendent of the Quebec district,

with office at Montreal, Que., has been appointed general superintendent of the Ontario district, and **J. M. Woodman**, superintendent at Montreal, has been appointed general superintendent of the Quebec district, in place of Mr. Purvis.

Engineering and Rolling Stock

George W. Hand, valuation engineer of the Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at Chicago, has been appointed corporate engineer of those companies, with the same headquarters, effective November 1. Mr. Hand was born at Hometown, Ind., in 1882, and was educated at Purdue University. In March, 1903, he entered railway service with the Chicago & North Western as a tapeman and has been with that road ever since. During his first four years of railroad experience he was employed as tapeman, rodman, and instrument man on location work, construction work and surveys. From 1907, to 1910 he was assistant engineer on track elevation work, following which he was transferred to the chief engineer's office and assigned to special duties, which included making specific investigations, studying standards and carrying on state valuation work. When the federal valuation law was passed, he was assigned exclusively to valuation work and was subsequently appointed valuation engineer and a member of the valuation committee of the North Western and valuation engineer of the Omaha. He has continued in these capacities up to the time of his recent appointment as corporate engineer of both companies.

Daniel Joseph Brumley, valuation engineer of the Illinois Central, with headquarters at Chicago, who has been appointed chief engineer to look after the interests of the corporation, with headquarters at Chicago, as has already been announced in these columns, was born near Belmore, Ohio, on March 19, 1865. He was educated in the civil engineering school at Ohio State University, graduating in 1895. In June of that year he began railway work as assistant section foreman on the Louisville & Nashville at Evansville, Ind. During the latter part of 1896 he became assistant engineer for the Columbus & Hocking Coal & Iron Company at Straitsville, Ohio.

The following two years he was successively assistant supervisor on the Louisville & Nashville at Belleville, Ill.; section foreman at Evansville, Ind.; rodman at Louisville, Ky., and assistant engineer at Clarksville, Tenn. In December, 1898, he was transferred to the chief engineer's office at Louisville, Ky. In September, 1901, he left the Louisville & Nashville to go to the Mexican National as roadmaster at Laredo, Texas, but returned to the former road one month later as roadmaster at Elizabethtown, Ky., where he remained until October, 1904, when he was appointed division engineer

of the Indianapolis Southern at Indianapolis, Ind. In March, 1905, he became principal assistant engineer of the Illinois Central, the Yazoo & Mississippi Valley and the Indianapolis Southern, with office at Chicago. Mr. Brumley was engineer of construction of the two former roads from June, 1910, to April, 1913, when he was appointed engineer maintenance of way. In November, 1913, he was promoted to assistant chief engineer, with headquarters at Chicago, and in April, 1914, he became valuation engineer, which position he held until his appointment as chief engineer of the corporation, as mentioned above.

William McNab, valuation engineer of the Grand Trunk, at Montreal, Que., has been appointed chairman of the valuation committee, vice **H. R. Safford**, who has gone to Chicago to take a position in the Central Western region of the United States Railroad Administration. **A. Crumpton**, assistant valuation engineer, at Montreal, Que., has been appointed valuation engineer, both with headquarters at Montreal.

Traffic

Frank E. Emery has been appointed general agent of the Arkansas & Louisiana Midland, at St. Louis, Mo.

B. F. Seggerson has been appointed traffic manager of the New Mexico Central, with headquarters at Santa Fe, N. M., to succeed **C. A. Richardson**, assigned to other duties.

Railway Officers in Military Service

Captain L. M. Pill, formerly valuation engineer on the Mobile & Ohio, with headquarters at Mobile, Ala., has been commissioned a major on the general staff of the American Expeditionary Forces in France.

W. J. Wilson, superintendent of the Washington Terminal Company, Washington, D. C., has been commissioned a major in the United States Corps of Engineers and expects to leave the country in the near future for service in connection with the military railways abroad.

Obituary

George A. Stockburger, trainmaster on the New York Central, with office at Albany, N. Y., died at his home in Albany on October 23, at the age of 45.

Chester P. Siems, chairman of the Siems-Carey Railway and Canal Company, died on October 23 at his home in New York City at the age of 33. In 1907 he entered the engineering department of the Spokane, Portland & Seattle, and in the fall of 1908, left the railroad company and joined his father in forming the firm of Siems & Co., which carried out some large contracts on the Great Northern and the Northern Pacific.

John C. Nelson, engineer of maintenance of way of the Seaboard Air Line, who died at Norfolk, Va., on October 6, as noted in our issue of October 18, was born at Belton, Texas, on November 3, 1862. He began railway work as a rodman with an engineering corps on the Richmond & Mecklenburg in July, 1882. From February to April, 1883, he was levelman on the Richmond & Danville, and from the latter date to February, 1884, was resident engineer on the Richmond & Mecklenburg. He then became assistant engineer on the Cincinnati, New Orleans & Texas Pacific, where he remained until March, 1891. The following three months he was resident engineer on the Louisville Southern, returning in May, 1891, to the Cincinnati, New Orleans & Texas Pacific as assistant engineer. In July of that year, Mr. Nelson was appointed engineer maintenance of way of the Cincinnati division of the Cleveland, Cincinnati, Chicago & St. Louis at Springfield, Ohio, and in September, 1899, he became division engineer of the Eastern division of the New York Central & Hudson River at New York City. He returned again to the Cincinnati, New Orleans & Texas Pacific in 1902 as roadmaster, and in 1907 he went to the Seaboard Air line as engineer maintenance of way, which position he held at the time of his death. Mr. Nelson was a charter member of the American Railway Engineering Association.



G. W. Hand



D. J. Brumley

EDITORIAL

Railway Age

EDITORIAL

Announcement

Samuel O. Dunn, editor of the *Railway Age*, sailed recently for a trip to England, France and Belgium, and will be absent about two months. He goes as a member of a party of fifteen business paper publishers and editors, who are making the trip at the invitation and as the guests of the British government. It is the intention to give the members of the party opportunity to study the military, industrial, economic and other conditions in the countries mentioned, both through conferences with their political, military and business leaders, and by means of visits to their great centers of population and industry.

The party was made up and goes under the auspices of the British Ministry of Information, represented in this country by the British Bureau of Information, of which Geoffrey Butler, with headquarters in New York City, is Director.

The other members of the party are H. M. Sweltand, president, United Publishers Corporation, New York; David Beecroft, editorial director, Class Journal Company, New York; A. J. Baldwin, vice-president, McGraw-Hill Publishing Company, New York; H. C. Parmelee, editor, Metallurgical & Chemical Engineering, New York; Floyd W. Parsons, Editor, Coal Age, New York; E. B. Taylor, advertising manager, Dry Goods Economist, New York; H. Cole Estep, editorial director, Penton Publishing Company, Cleveland; H. G. Lord, president, Textile World Journal Co., New York; W. W. Macon, associate editor, Iron Age, New York; F. F. Cutler, president, Shoe & Leather Reporter, Boston; Allen W. Clarke, president, American Paint Journal Company, St. Louis; Edward L. Darville, associate editor, Hardware Age, New York; H. L. Aldrich, president, Aldrich Publishing Company, New York, and Roger W. Allen, president, Allen-Nugent Company, New York.

It is expected that during his absence Mr. Dunn will be able to send back some articles to the *Railway Age*; and we believe his comments on the foreign situation, written both while he is away and after he returns, will be of no little interest to the readers of the *Railway Age*.

During the convention of the Association of Railway Electrical Engineers, one of the speakers made use of a striking means of illustrating a woeful lack of efficiency in the matter of industrial lighting. After careful computation he was obliged to conclude, he said, that the labor of an army of more than a

A Vast Industrial Army

million and a half of men was lost in the United States from no other cause than from the lack of proper lighting. If better and more scientific methods of illumination are within our reach it is high time that greatly increased activity were started along the lines of correct lighting. The labor situation has never before been as serious as it is at present. If proper lighting will result in effecting economy and in-

creasing production equivalent to even a small proportion of the labor of a million and a half of men no time should be lost in making the necessary changes, regardless of cost.

Notwithstanding the unprecedented amount of advertising which the Liberty Loans had, there were some opportunities which were neglected. One important

Good Advertising Space

one was the use which might have been made of the car windows of coaches and Pullmans. It is, of course, a well recognized fact that a man may see a particular article or particular fact advertised a thousand times and not be moved to act, and the thousand and first time there is something about the advertisement or about his mood which "sells" him the idea. When a man is traveling in a railroad car he is generally in both an observing and a receptive mood. The extent to which card advertisements are used in street cars and subways is a recognition of this fact. To have advertised the Liberty Loan by means of a transparent poster, such as used in Europe, pasted across the next to the end window facing in on coaches and Pullmans would have been a comparatively inexpensive method of reaching the public in a new way at a particularly opportune time. The idea might well be used now in connection with the United War Work Campaign. Besides using the next to the end windows, a poster might be used filling only a part of the space of the middle windows on each side, with the poster facing out. While this would be unsuitable for through express trains, on local trains it should be a very effective method of reaching quite a large class of people in addition to the actual travelers on the train.

With conclusive proof that the locomotive brick arch will save fuel and increase the hauling power of locomotives, it is

Locomotive Brick Arch Maintenance

strange that greater care is not taken in its maintenance and that a more extensive program of equipping old locomotives with arches is not carried out. The most authoritative tests of brick arches yet made are those of the Pennsylvania Railroad which were described in its bulletin No. 30, an abstract of which appeared in the *Railway Age Gazette* of May 4, 1917, page 933. It was shown that the drawbar horsepower of locomotives may be increased from 12 to 16 per cent and it is a generally recognized fact that the brick arch makes possible a fuel saving of at least 10 per cent. Numerous instances have been brought to our attention where locomotives are permitted to run without the arch brick in place. With the surplus of power reported at the present time there is no excuse for this as there is plenty of fire brick available in the market for locomotive use. Furthermore, as locomotives pass through the shop no better investment could be made than to equip them with arches. The best figures available indicate that only about 60 per cent of the locomotives in this country have brick arches. There has been a material decrease in the application of fire brick arches to old locomotives this year as compared with last, although every new locomotive is equipped with an arch. With the extreme demand for fuel economy it is hard to reconcile the fact that this matter has not been given more serious consideration.

The appalling train wreck in Brooklyn, N. Y., on November 1, the worst disaster on rails that has ever occurred in Greater New York, happens at a time when, unfortunately, petty political differences color the discussions concerning the causes; but the real difficulty is extremely simple. A public service

The Brooklyn Disaster

commissioner lays the blame on Mayor Hylan. Mr. Hylan was formerly a locomotive runner for the Brooklyn Rapid Transit Company, and is said still to be a member of the Brotherhood of Locomotive Engineers; he knew of the proposed strike of the brotherhood men and telegraphed to the officers of the company asking them to avert the strike, but did not ask the men to defer their walk-out until the Public Service Commission could have time to consider the controversy. Others blame the strikers, on general principles; and the main charge against the company is that it did not show proper respect for the National War Labor Board. These charges may be well-grounded, but they involve a long inquiry; and such inquiries seem never to afford the least assistance in getting at the bottom of the trouble, in train accident investigations. The published evidence indicates the real difficulty in Brooklyn as simply the neglect of some officer to see that no motorman was intrusted with a high speed passenger train until he was thoroughly acquainted with the road. Whether it was the highest operating officer or the lowest, or some one between these grades, who was immediately at fault, is not yet disclosed. This requirement seems to be neglected because of its very simplicity. Men who are well acquainted with the road will make blunders; the great majority of runners have a full knowledge of the road before the superintendent ever has occasion to ask about it; and so a vital element is left at loose ends. In the Nashville collision of July 9, last, the absence of an experienced trainman and the presence of a green man in his place, was one of the tragic elements which, if it had been otherwise, probably would have prevented the collision.

As the unprecedented winter of 1917-1918 recedes farther into the distance the statistics showing the efficiency of freight operation reflect an increasing improvement. The monthly report compiled by the Operating Statistics Section of the Railroad Administration shows an increase in the ton-miles of revenue freight

Freight Operations for August

handled in August of 7.6 per cent, as compared with August, 1917, while for the eight months' period there was an increase of 1.1 per cent. Up to July 1 the railroads this year had handled less ton-miles than during the first six months of last year, but the increase in July produced a gain of one-tenth of one per cent for seven months and the August showing made a still further improvement. The improvement accomplished under the direction of the Railroad Administration, as far as this report indicates, has been principally in the increased train and car loading as compared with the results gained last year and in spite of the decline in the speed of movement as indicated by the reduced mileage per car and per locomotive per day, 4.8 per cent more ton miles were handled per freight locomotive per day and 3.3 per cent more ton miles per car per day. The reduced mileage per day may doubtless be explained in part by a reduction in the average haul as a result of the efforts toward short-routing and the elimination of cross-hauling, which have been particularly effective in the case of coal under the zone system. A shorter average haul would tend to bring down the mileage per day because of the greater effect of the time required at terminals. The proportion of empty car mileage in August also continued to show an increase, from 31.2 per cent in 1917 to 32.4 in

1918. This is probably one effect of the plan of centralized regulation of car distribution, under which empty cars are ordered to the place where they are needed for loading instead of being required to work their way, but it is believed that better service results, sufficient to justify the increased haulage of empty cars.

Ever since this country entered the war, the railroads have struggled with the problem of reinforcing old equipment.

Latitude in Methods of Re- inforcing Cars

It has been necessary to put cars of weak construction in service, and with the car service rules suspended the proportion of these cars remaining on the tracks of the owning roads has been so low that little reinforcing work could be done. Largely as a result of this condition, it has been impossible to make much headway in reducing the number of heavy bad order cars. The high percentage of cars in bad order off the home roads is particularly striking. The Railroad Administration has recently issued instructions for reinforcing which should help the situation somewhat. It seems, however, that much better results could have been secured had the roads been allowed more latitude in the method of doing the work, particularly in applying metal draft arms. Of the cars held out of the service, probably 80 per cent are in bad order on account of defective draft gear. It is obvious that to remedy this, the draft attachments should be strengthened instead of repeatedly repairing them in kind. The Division of Operation has specified that draft arms shall be of cast steel. Because of the fact that the reinforcing is limited to this one material, the roads must secure the draft arms from the owner. It is necessary to hold the car on the repair track and write to the owning line for the material, and it often happens that the roads do not have draft arms for that particular class of car. It is then necessary to follow the original construction in repairing the car. A number of roads have used, for reinforcing wooden cars, draft arms that are built up of plates and channels. Such members can be designed so that they will fit many classes of cars with but slight alterations. The amount of rolled shapes and plates required is almost negligible and the saving in man-power that could be effected by using this type of construction should be sufficient to outweigh the minor disadvantages. It is to be hoped that the Railroad Administration will revise its instructions and permit the roads to apply built-up draft arms in order that the work of reinforcing wooden cars may be accelerated.

Increase Tie Production

ONE OF THE MOST SERIOUS problems now confronting the Railroad Administration in the maintenance of the roadway is that of securing an adequate supply of ties. In a report submitted to the director general by Hale Holden covering conditions in the Central Western region for the month of September, the statement was made that there was a shortage of 6,200,000 ties or 120 ties per mile of line on the roads in that region on September 1. This indicates a deficiency of about 40 per cent and is fairly typical of conditions over the country. Furthermore, this exists in spite of the fact that many roads, particularly those which use treated ties, maintain a normal stock equivalent to nearly a year's requirements and these roads are only beginning to experience a shortage. From present indications conditions will be much worse next year unless prompt measures are taken.

Part of the responsibility for the present situation comes from the shortage of labor, which is universal in all industries, for the contractors have been unable to maintain large enough forces to produce the usual number of ties. Another contributing cause was the ill-advised action of the central

purchasing committee last spring which aroused the opposition of the large tie producers and caused a number of them to transfer their activities to other channels. Their hostility, having once been aroused, the promulgation of standard specifications and uniform prices for ties, excellent measures in themselves, served to widen the breach still further, as a result of which the production of ties is now far below normal—a situation which forecasts trouble next year.

A movement is now being inaugurated which has large possibilities for good or for trouble. The St. Louis Chamber of Commerce has taken the initiative in calling a two-day meeting of tie producers at St. Louis on November 19-20 to perfect an organization which will afford a channel for communication and co-operation with the United States Railroad Administration and other branches of the government in matters relating to the manufacture and sale of ties. This meeting should provide an opportunity for the discussion of the controversies which have arisen between the Railroad Administration and the tie producers and offers a great opportunity for the harmonizing of the differences which now exist. It will be unfortunate if the meeting develops into the formation of a united opposition to the Railroad Administration at a time when ties are so seriously needed. In the end, uniform specifications are of advantage to the manufacturer of ties, as well as the roads using them. Likewise, uniform prices, determined with a full knowledge of the cost of production and allowing a fair profit, insure a producer against losses which has been common in the industry. It has been unfortunate that an antagonistic spirit has been created. It is to be hoped that representatives of the Railroad Administration and of the tie producers will take a sufficiently broad view of the entire situation that this meeting may be productive of real constructive effort to protect the interests of both sides and to increase the output of ties to meet the present demands.

Standard Freight Rates

IN PROPOSING to put into effect throughout the greater part of the United States a system of "scientific" scales of class rates graded according to distance, the Railroad Administration is undertaking to develop on a large scale a principle toward which the Interstate Commerce Commission has been working for a number of years and which the state commissions have followed to an even greater extent. Regulation of rates by commissions has naturally tended toward the adoption of distance as the principal factor in making rates and this has been particularly true where commissions have been authorized by law to initiate rates themselves, as in the case of the numerous state railroad commissions that have prescribed mileage scales based on someone's formula for ascertaining the cost of service. The Interstate Commerce Commission, not having the power to initiate rates, has not carried the idea so far, but where it has had to prescribe rates to be substituted for those in existence in order to remove discriminations or other causes of complaint it has quite frequently prescribed distance scales or scales in which mileage was the predominant factor, with modifications as concessions to the commercial conditions on which railroad men have usually placed greater emphasis than they have upon the factor of distance.

While commission regulation of freight rates has undoubtedly had a salutary effect in removing most of the unjust discriminations which had grown up in the days of unregulated rate making and unbridled competition in rates, it has hardly attempted to bring about in a broad way any particular "system" of rate making. Except in particular cases, or where, as heretofore mentioned, state commissions have bodily prescribed scales of rates, rate regulation, while gradually tending toward the cost of service and distance basis of rate making, has in practice usually regulated rates

with reference to the numerous conditions which railroads have used in their own rate making, merely substituting the judgment of a public body supposedly free from selfish interest and prejudice for that of the practical railroad men who frequently did have the selfish interests of their own companies and sections of the country to consider.

While attempting to prevent the kind of discriminations that resulted from the railroad methods of rate making, government regulation has never been able to prevent, and, in fact, has been responsible for, another class of discriminations resulting from the effect of different policies of regulation and from the competition of the selfish interests of some of the states whose commissions had power to make rates, and railroad officers in recent years have been nearly as vociferous in complaining of the discriminations resulting from conflicting state and interstate regulation as the shippers and commissions formerly were in complaining of railroad discriminations.

Now the Railroad Administration, having large powers of its own and also being comparatively free from the restrictions of the commissions, is seeking to take advantage of those facts and of the at least temporary absence of competition between railroads, not only to bring about a scientific system of rate making, but also to do away with the conflicts and discriminations resulting from simultaneous state and interstate regulation. The plan, which was described in last week's issue, is confined for the present to class rates without affecting commodity rates, and to application only within prescribed zones and not interterritorially. The Railroad Administration has worked out scales of class rates, graded by distance up to 1,000 miles and has divided the country—exclusive of the Official Classification territory, where rates are already on a more systematic basis than in other parts of the country—into various zones where the rates are to be 75 per cent, 100 per cent or 120 per cent, respectively, of the rates of the standard scale, the percentages representing the differences in conditions affecting the cost of service in the different parts of the country. While the commodity and the inter-zone rates are not to be disturbed, at least for the present, the zones are each large enough to contain several states. The application of the standard scales therefore would put out of business various existing scales created in most cases by state commissions, as well as some interstate scales created by railroads, besides removing many of the "rate walls" erected by state commissions for the protection of the shippers of their states and the consequent discriminations which have frequently resulted to the prejudice of the shippers located in other states or to those engaged in interstate commerce.

Therefore, to the long list of practices which the Railroad Administration has taken advantage of the centralized control and the absence of competition to standardize, there must now be added standardized freight rates and many who will deplore the idea of standardizing rates will have their objections tempered by the fact that the state commissions are also to be subjected to the standardizing process. The railroad men that advocated centralized regulations for the purpose of bringing about an elimination of the conflicts between state and interstate regulation and their resulting discriminations, succeeded only to the extent of creating a considerable body of public opinion in support of their idea. Instead of centralized regulation they got centralized management as a probably necessary consequence of the breakdown of the system of regulation which they had so strongly criticized, but they at least have the satisfaction of seeing some of their ideas vindicated by the government.

Given a free hand to operate the railroad system of the United States in the most efficient manner possible and with an incidental purpose of conducting at the same time a laboratory experiment in government operation, the Railroad Administration has not long allowed itself to be hampered by the numerous restrictions which a dual system of govern-

ment regulation had thrown around the operation of the roads by private corporations. It is interesting to note occasionally how many problems the Railroad Administration has found time to attack in addition to its paramount job of increasing transportation efficiency as an aid to winning the war and it might be easy to question the wisdom of upsetting rate conditions as well as so many other conditions at a time when war itself is making so many revolutionary changes which are inevitable, but as the war job is apparently proving to be somewhat easier than had been anticipated it is possible to manifest considerable interest in the outcome of the proposed experiment with scientific freight rates.

In this case the Railroad Administration is displaying a greater degree of diplomacy and of tact than it has found time for or has considered necessary in many instances. Instead of attempting to force its plan into effect, it has submitted it to the federal and state commissions and to shippers' organizations in a tentative way for their suggestions and criticisms and apparently it intends that the proposals shall be given the fullest consideration before any action is taken. There is much more of political and other kinds of high explosive in a proposal to standardize freight rates than, for example, a plan of standardizing cars and locomotives or even demurrage rules. Already there are indications that the state commissions will not welcome the proposed interference with their former prerogatives and there will naturally be some criticisms from the shippers and committees who are adversely affected in the Procrustean process of bringing about uniformity. The Railroad Administration has tackled a large problem, but one which presents a wonderful opportunity for substituting order for a condition somewhat approaching chaos.

New Books

Proceedings of the American Railway Engineering Association. 1569 pages, 6 in. by 9 in. Bound in half morocco, cloth or paper. Published by the American Railway Engineering Association, Karpen Bldg., Chicago. Price half morocco \$7, cloth \$6.50 and paper \$6.

The contents of the volume for 1918, as with its predecessors, is divided between reports of committees, 1074 pages; discussions, 194 pages; and monographs 301 pages. The convention report this year is distinctive in that it includes the reports of two new committees, namely, those on Economics of Railway Operation and Economics of Railway Labor. The report of the first named is more or less of an introductory nature although it included 39 pages devoted to a bibliography of the subject. The report on Economics of Railway Labor, being an exceptionally live subject at the present time was a basis for one of the most important reports presented at the convention last March. The discussion of this report also includes valuable information, particularly on labor saving devices. The report most far reaching in its influence is that of the special committee on Stresses in track covering 184 pages and introducing material not previously available in any form. Valuable scientific data of original character is also presented in the report of the committee on Iron and Steel Structures covering impact tests on structures carrying electric locomotives. There is also a set of specifications for movable bridges. Only two monographs are included in his year's proceedings, one on screw spikes and tie plates and the other on the design of docks and wharves by W. H. Hoyt, assistant chief engineer, Duluth, Missabe & Northern. The first one covers by far the larger proportion of the space and is an exhaustive report on this subject by a joint committee composed of officers of the Pennsylvania Railroad and the Pennsylvania Lines.

Letters to the Editor

Standardize and Conserve Paper

BUFFALO, N. Y.

TO THE EDITOR:

I have read your journal and have been a contributor for nearly 35 years—before Wellington's time—and it is only lately that I have seen anything favoring the conservation of paper. I have argued time and again for a rational use of letter heads, catalogs, specifications, etc., but to no avail. I think you can buy envelopes varying in size by eighths of inches, some long, some wide, some short and *ad infinitum*.

Many people are opposed to standardization, but when 90 per cent of the business men use $8\frac{1}{2}$ in. by 11 in. paper why not everybody—“eventually, why not now”?

EMILE LOW,
M. Am. Soc. C. E.

Standardization

TO THE EDITOR:

We are now about to enter into a phase or cycle of standardization which needs to be keenly observed by every thoughtful mechanical man; laying aside all prejudice let us view the experiment broadly and with unbiased minds.

For the time being every pet idea must be relegated to the background and those things which we have harbored for the most of our lives we are to forget for the present. Fall into line is the command and do with what has been allocated to our territory as if every detail were part and parcel of our own inventive genius. This is what our Government has in effect requested and commanded and as good citizens and soldiers it is ours to obey to the letter. In order that nothing escape our attention, however, we note in passing that first of all we must make new patterns for the new standard locomotives, carry a new stock of gray iron and cast steel parts, a new line of fittings such as checks, water gages, steam valves, turrets, pops, gages, etc., etc. We also note that our reamers, taps, milling cutters and dies are not suitable—nor have we jigs or templates suitable for renewals and repairs. All of which is merely by the way, inasmuch as we are preparing to lay in our stock accordingly so as to have everything in readiness for the next lot of new locomotives.

Now the question is shall we accept these machines as they are without a comment or suggestion? Who is to guide the future design from the pitfalls to which every designer is a victim now and then? How long are these splendid engines to remain as they are? By whose authority are we to assume they will be the 1919 Model Mikado? Who is to follow up their daily performance and what is to be done if some detail is found to be impractical? Shall we keep to the design, literally renewing those parts which fail, just exactly as they were before they broke, or shall we do as we have done heretofore and strengthen the weaknesses as they occur, keeping a memorandum of the various changes to be made in the next design in order to meet the conditions with which we are confronted on our various divisions. Common sense tells us that we are to face these questions and do the things as we have always done them. Locomotive designing is not yet finished; we must go on and on to perfection, suggesting, experimenting, changing until the highest art is reached and reached again.

Who will then gainsay this plain simple reasoning? Does it not argue into the thinness of air the delusion of permanent design or THINGS FIXED? MILLARD F. COX.



A Construction Camp in the Woods

Soldiers Build Logging Roads in Spruce Forests

Over 350 Miles of New Railways in the Northwest Are Carrying
Airplane Lumber to the Mills

By Major W. A. Welch

Division Engineer, Air Service Aircraft Production Board, Portland, Ore.

OUR COUNTRY AND OUR ALLIES must have airplanes and seaplanes to win. Spruce is necessary for them because of its lightness, strength and splendid fiber. No other wood known can approach it in this regard. In no other place except along the western stretch of the Coast Range mountains in Oregon and Washington can it be

During the two years preceding the United States' entry into the conflict buyers for Britain and France had made heavy purchases of spruce in the North Pacific states and, as a result, America, when she began seeking this timber found that virtually all the easily accessible spruce along water courses and along logging railroads had been logged. Mountains that climb at acute angles and range from 1,000 to 5,000 ft. in height, forests of giant trees rising from underbrush, impenetrable to man without tools—deep canyons, numerous water courses—clay and soapstone soils—a rainfall from 100 to 140 in. annually, and all of it between November and May. Such is the character of the country which the men entrusted to the immense job of getting out the spruce were called upon to conquer.

In the face of such obstacles, the Spruce Production Division of the Signal Corps undertook this work. There was no organization. There were very few maps and only incomplete and much incorrect data concerning spruce sections extant. The first task was to seek out the heaviest stands of spruce. Unlike other timber, it does not grow in solid stands; instead the heaviest, on an average, totals between 15 and 20 trees out of every hundred.

The cruisers' reports of all these forests were collected and the best bodies of spruce determined. Locating engineers, who were secured from the western railroads, were sent to make reconnaissance and preliminary estimates of railroads necessary to open up these areas. Where these estimates showed the roads would cost \$3 or less per 1,000 ft. b.m. for the spruce they would carry, locating parties were put in the field and preparations were begun to rush these roads to completion.

These engineers have been given commissions in the Air Service Air-Craft Production Bureau of the Army. They gladly gave up good positions and salaries, to accept these



Trestle 65 ft. High Built of Round and Square Timbers

secured. The territory is only 400 miles long and 50 miles in width—the wildest and most inaccessible part of the United States. This area was tapped at only six points by branch railroads which cross the Coast Range mountains. Most of the timber lies between these lines.

commissions and get into this work and have put their very souls into it. Their parties are made up largely of enlisted men who enlisted to get to France and fight the Hun face to face. They have accomplished some of the most difficult and rapid location in the history of our railroads, and have rendered better service to their country than they could have done "over there."

The construction forces were put in the field behind the location parties as rapidly as equipment and supplies could be assembled. Contracts were let on a cost plus basis for this construction work which had to be opened up at every

value after the spruce is cut; others are temporary and designed only to meet the present emergency. All of them have been designed to carry heavy logging traffic during the rainy season and this has necessitated many types of con-



Tunnel Portal Along a Rugged Shore Line

possible point. Camps were constructed, some entirely of canvas, others with framed mess halls and barracks. Sanitary precautions were carefully taken and each camp was made a military unit under the command of an officer. Experienced grading, logging and construction foremen have direct charge of the work which is all done by soldiers.



Junction of a Logging Spur with a Main Line

Thirteen roads were decided on, ranging from 3 miles to 72 miles in length, and aggregating a total of 173 miles of main line and 181 miles of spurs which, when complete, will open up 1,500,000,000 ft. of spruce. Some of these lines are of standard main line construction because of their



Track Carried on Stringers Supported by Log Cribs

struction. Where much earthwork was necessary, great care has been taken to provide drainage and all track is being heavily ballasted, in some places beach sand is being distributed one foot thick on all fills before the ballast is placed and the cuts are ditched 18 in. deep. Grades have been



Heavy Cribbing Used at a Place Where Piles Could Not Be Driven

kept under two per cent on main lines wherever possible and curvature under six degrees.

On temporary lines much stringer and pile work has been done, several of the short lines being built entirely on logs, 36 to 60 in. in diameter and 70 to 100 ft. in length, placed on cross logs by hoisting engines and the ties notched into them. This construction has been both cheap and rapid in very heavy timber and since it eliminates most of the clear-

ing and grubbing, which costs \$10,000 per mile, there is a great saving. Three-pile bents with sawn caps and stringers have been used where piles can be obtained on the work; this also saves the expensive clearing and provides a road-bed which will outlast the needs and will carry the traffic through the rainy season. Much heavy crib work has been done where fills were necessary on steep soapstone side hills in which piles could not be driven. These cribs are constructed of fir and hemlock logs from 30 to 60 in. in diameter. The work was done with logging equipment.

Many bridges are being built, some 80 and 90 ft. high, these being combination pile and frame trestles with several Howe truss spans. The delivery of material for these bridges was one of the most difficult problems. Where the bridges were near the coast, this material was rafted and towed to sea and released by the tugs two or three miles from the beach, when the tide was setting in. The coast guards, in their surf boats, followed the rafts in until they were near enough to carry lines through the surf to the men and teams on the beach, who would then land the rafts with these lines.

Most of these lines were begun this spring and more than 10,000 soldiers have been working throughout the summer. Logs are now coming over most of them while the rails are

being laid on the others, and before the rains come all of them will be in operation. This rapid construction has been made possible only by the wonderful co-operation and the splendid morale of the soldiers and civilians who have gone at all their tasks determined to put them through, and keeping the one thought always in their minds that each tree felled means another airplane and that airplanes mean victory. Nearly 4,000 soldiers are working in this cut-up plant at Vancouver, Wash., and nearly 1,000,000 ft. b. m. of airplane spruce is being turned out each day by this mill.

But the war would not wait for us to build these railroads and open up these forests. It demanded immediate production and the greatest problem which Col. Brice P. Disque, commander of the Spruce Production Division, was called upon to solve was that of immediate production. He solved it promptly by putting soldiers into all the bodies of spruce which could be reached by motor trucks and began riving or splitting the immense spruce logs into cants which could be handled by these trucks and sawed with straight grain at the cut-up mill. It was this riving that kept production up, while the railroads were building and other methods of getting the logs to the mills were being worked out.

Convention of Railway Electrical Engineers

Discussion of Committee Reports Brings Out Interesting Practices of the Several Roads

THE TENTH ANNUAL CONVENTION of the Association of Railway Electrical Engineers, held at the Hotel La Salle, Chicago, Ill., October 29-31, 1918, was presided over by the president, C. J. Causland of the Pennsylvania Railroad. The meeting this year was essentially a war time convention. Practically every paper read was obviously prepared with our present national emergency in the minds of the committee. Wherever it had been found possible to effect economies the several committees had made a special effort clearly to present these practices to the members of the association. Although in point of numbers the actual attendance probably did not exceed that of former years to any great extent, the spirit of the convention and the lively interest taken in the discussions of the various reports combined to make the 1918 meeting one of the most successful of any ever held by the association. It is particularly significant that an unusual number of the senior active members of the association were present and that many of these attended the convention under instructions from their superior officers.

Electric Headlights

One of the activities with which the electrical department is largely concerned just now, and will be for several months to come, is the installation of electric headlights. While the practice of installing electric headlights and cab lights is in general the same on a majority of the roads, there exists quite a diversity of opinion concerning the details of such installation. The recommendations made by the committee were drawn up for the purpose of inviting discussion and were not made with a view of their being adopted as read. Some of the members seemed to think that cab wiring should be enclosed in conduit and were able to justify themselves in this position by citing specific instances of satisfactory service rendered from the use of conduit in their cab wiring. The use of the handrail for carrying wires from the cab forward to the headlight was also discussed and opinions seemed to differ considerably regarding the use of this rail

as a conduit. The discussion concerning the details of electric headlight installation and operation consumed practically an entire morning session; the various opinions expressed indicate that considerably more experience with numerous details should be obtained before installation methods can be standardized in every respect.

Lighting

Another of the reports which drew much favorable comment was the one dealing with the subject of lighting of engine terminals and yards. New possibilities for lighting large outdoor areas have recently been brought about by the use of floodlights with high candlepower incandescent lamps. Certain localities can be effectively lighted with low intensities of illumination and it is to such cases that the flood light is well adapted. For lighting tracks or similar areas the best results are obtained by locating the flood lights at a height of about 60 to 75 ft. from the ground. By mounting the lights high in the air it has been found that any glare is done away with. Flood lighting lamps have been developed to such a degree of perfection that when they are properly located and mounted high enough it is quite possible to look directly toward such a unit from a distance without feeling any particular eyestrain or being momentarily blinded.

For lighting the roundhouse circles flood lights work out to advantage when they can be located high enough and far enough away to give a wide beam. In lighting the circles two things must be aimed at. First, a general illumination between the house and the turntables and, second, a more intense light at the ends of the turntables to enable the turntable operator and hostler to ascertain when the turntable is in the proper position.

Stationary Power Plants

In the report of the committee on the question of war time economy of stationary power plants, a number of very timely and important points were brought out. During the present

crisis, both national and international, the problem of obtaining equipment for the extension of old, and for the construction of new plants, has reached a point where attention must be diverted to the maintenance and operation of existing plants. Two great problems to be considered in the operation of power plants in the order of their importance, are continuity of service and maximum efficiency. However, in striving for continuity of service, maximum efficiency must not be lost sight of. By maximum efficiency is not meant the highest possible efficiency of any one particular branch or unit, but the highest possible economy of the plant as a whole—the best and most economical service for the least expenditure of fuel, supplies and labor. This may mean that some one particular unit may be required to operate inefficiently within itself in order that maximum efficiency may be obtained from the plant as a whole. Operation and maintenance of the steam boilers is necessarily a most important feature. To secure the maximum efficiency from a steam boiler the heating surfaces must be kept clean. While it is entirely proper in some cases to use a boiler compound for the purpose of removing scale, it should be used only after a careful analysis of the feedwater has been made. Boiler compounds should not be used promiscuously as their indiscriminate use may lead to much trouble, and indeed in some cases, a complete shutdown. There is one scale remover that never fails when used with sufficient frequency and supervision, and that is the mechanical method, the use of a tube cleaner and scaling hammer.

Many steam generating plants operate an air compressor for the use of certain shop tools as well as for train line charging systems. Compressed air is one of the most expensive forms of energy used in railway shops and is usually the most neglected. Unlike steam or water an air leak cannot be seen and due to the fact that they are not unsightly, they are sometimes neglected. It should be remembered, however, that each cubic foot of air that is wasted is equal to approximately nine cubic feet of steam.

A great many shutdowns in the power plants are caused by hot-boxes and 99 per cent of these hot-boxes are due to negligence. It takes a bearing some little time to heat up to the danger point and if it is insisted on that the attendants feel the bearings at intervals of not over 20 minutes apart practically all of the hot-boxes will be avoided.

It was recommended by the committee that when installing new pipe lines fittings be avoided wherever possible. Fittings in small pipes, especially, should be entirely eliminated by the use of oxy-acetylene or electric welding.

On some roads the care of the power plant does not fall within the jurisdiction of the electrical engineer but not a few of the members present at the convention indicated that they were partially or wholly in charge of the stationary power plants. This would seem to be a logical placing of responsibility and it is believed that there will be an increasing tendency in this direction in the future.

Electric Arc Welding

The longest, most comprehensive, and perhaps the most valuable report of the entire convention was that of the committee on Electric Arc Welding. The three systems now in general use for metallic arc welding are as follows: 1, multiple operator system; 2, single operator system—stationary type; 3, single operator system—portable type. The multiple operator system is one in which more than one operator receives current for welding direct from the same machine which is centrally located in a shop or terminal. A control panel is provided for each operator, such as will enable current of different values to be obtained in any one circuit without interference from the other operators. The single operator stationary type system is one in which a separate machine is provided for each operator. As many of these machines are stationed at different points in the

shops or terminals, as the demands require, each machine receiving its power direct from the shop power circuit. The single operator portable type system differs only from the single operator stationary system in that the machine is mounted on a truck in order that it may be moved from one point to another as the occasion requires, receiving its power from receptacles conveniently located about the shop or terminal.

The carbon arc process was the first method of welding metals with the electric arc and has been in use for more than 30 years. The advantages of the carbon arc, where it can be used, are greater speed and lower cost. The class of work to which this process is adapted includes building up operations, repairing broken parts, electric cutting, etc., but it is not suitable for work where strength is of first importance, such as boiler side sheets or locomotive frames.

The welding committee prepared an excellent description together with working drawings for such equipment accessories as are required by the welding operator. Of first importance in this list is the face shield. These are usually of either of two types. The more simple shield is arranged to be held in the left hand while operating the arc with the right, and consists simply of a tapered wooden box with suitable handle carrying the necessary protective glass. The helmet type of face shield is one which is slipped over the head and permits the freedom of both hands. Welding screens and welding booths are described in considerable detail.

A small sandblast outfit which has given good results was also recommended by the committee as being an essential device for clearing the dirt and oxide from the surfaces on which the welding is to take place. A suitable type of electrode holder which has been found satisfactory was also presented by the committee. In cases where portable welding outfits are used a cable reel has been found of decided advantage; working drawings from which this cable reel may be built are also included in the report.

Probably the most important feature of the entire welding report is the section dealing with definitions and symbols covering the different types of welds. Due to the fact that application of electric arc welding is progressing rapidly, it has become necessary for the Emergency Fleet Corporation and the United States Navy to adopt a standard form of nomenclature which has been perfected in part. It was suggested by the committee that the use of this nomenclature be made general with the hope that it may be extended to the entire industrial world.

Not only did the committee go into much detail concerning the latest practices of the art of electric arc welding, but it also presented a chart showing what it considered to be the proper welding organization for steam railroads.

During the discussion which followed the reading of the paper on arc welding, the question arose as to the length of time required for the training of a welding operator. Those who have had experience recently in breaking in new men for this work claim that, for certain classes of work where the operator repeated the same small operation continuously, it was possible to instruct an operator in a very brief period of time. To make a first class welding operator, however, capable of satisfactorily welding all classes of work, requires a much longer time, the instructions usually covering a period of several months.

Mr. Wanamaker of the Rock Island stated that in his opinion the subject of electric arc welding was far from a simple one. He said that for the last four years he had been devoting a great deal of his time to a study of this subject and that, while he had made satisfactory progress in accomplishing certain kinds of welding, he felt that he had still much to learn concerning this subject. Mr. Wanamaker emphasized clearly his belief that the proper person to place in charge of electric welding on the railroads is

the electrical engineer. In connection with this, however, he made it very plain that the subject of welding could not be treated superficially and that if success was to be obtained in a marked degree the most diligent study must be pursued by those in charge of the work.

Other Business

In addition to the more important reports previously cited four other papers were presented covering the following subjects: Conservation of Present Electrical Equipment; Train Lighting Equipment and Practices; Organization of the Electrical Department; Electrical Equipment of Ore and Coal Docks and the report of the Committee on Data and Information.

The election of officers for the ensuing year took place on Thursday afternoon. John E. Gardner, C. B. & Q., was elected president to succeed C. J. Causland. L. S. Billau, B. & O., was elected senior vice-president and L. C.

Hensel, Frisco Lines, junior vice-president. Two new members were elected to serve on the executive committee—F. J. Hill, Michigan Central, and E. Lunn, Pullman Company.

The exhibits shown by the members of the Railway Electrical Supply Manufacturers Association were of more than ordinary interest.

On the evening of Thursday, the final day of the convention, a war dinner was tendered to the members of the Association of Railway Electrical Engineers by the members of the Railway Electrical Supply Manufacturers' Association. F. F. Skeel of the Crouse-Hinds Company, president of the R. E. S. M. A., acted in the capacity of toastmaster. A. J. Farrelly, Chicago & North Western, gave a brief and interesting outline of the growth of the Association of Railway Electrical Engineers. The growth and development of the Railway Electrical Supply Manufacturers Association was also humorously described by W. L. Bliss of the U. S. Light & Heat Corporation.

Doings of the United States Railroad Administration

Advances to Railroads Now Total \$363,116,970 Not Including \$58,433,628 Advanced to Equipment Builders

WASHINGTON, D. C.

THE RAILROAD ADMINISTRATION announced on November 1 that from April 1, 1918, to November 1, 1918, the director general has advanced to all railroads, exclusive of the current earnings of these lines applied directly by the individual roads to their current expenses and corporate needs, the sum of \$363,116,970.

In addition to this payments have been advanced by the director general to the equipment builders on account of the standardized locomotives and freight cars, which have to be paid for by the companies, amounting to \$58,433,628, making an aggregate of all advances during this seven months' period of \$421,550,598. These advances were made to 100 railroad companies and systems.

The railroad systems to which the director general has advanced as much as \$10,000,000 or more to November 1 are:

Pennsylvania Railroad Lines.....	\$56,620,000
New York Central Lines.....	\$53,000,000
New York, New Haven & Hartford.....	50,000,000
Baltimore & Ohio.....	22,250,000
Chicago, Milwaukee & St. Paul.....	16,925,000
Illinois Central.....	15,475,000
Erie.....	12,900,000

These seven systems have received nearly two-thirds of all the money advanced thus far by the director general to all the roads.

For the month of October the total amount advanced to railroads, including advances made by the director general to the railroad corporations for corporate needs and to federal managers to provide for prior and present requirements, including back pay, old vouchers, improvements, betterments, etc., was \$68,271,800. The advances during the month were made to 56 different lines, over one-half of the amount going to five systems as follows:

Pennsylvania Railroad Lines.....	\$13,050,000
New York Central Lines.....	12,400,000
Baltimore & Ohio.....	5,750,000
Erie.....	2,000,000
Illinois Central.....	1,700,000

Of the total amount so disbursed to the railroads to November 1, 1918, \$222,741,410 was taken from the \$500,000,000 revolving fund, and \$140,375,560 came from the surplus earnings of certain roads which had been turned over from time to time to the director general by particular roads whose receipts for the period exceeded their needs. The

statement makes no separation as between the amounts loaned to railroads and the amounts paid on account of their compensation, nor between the advances to the federal managers and those to the corporations.

"Under the provisions of the law," the statement says, "the director general has authority to supervise or regulate the issuance of new securities by railroad corporations, and it has been the endeavor of the Railroad Administration to aid the railroad companies to obtain at reasonable and moderate interest rates the capital which they might need, either for new expenditures or for the extension or renewal of maturing obligations.

"The record shows that through the aid and intervention of the director general many hundreds of thousands of dollars of interest have been thus saved to the railroad corporations. The following instances will illustrate the results of the Railroad Administration's policy in this respect.

"The Baltimore & Ohio Railroad had an issue of \$22,500,000 of notes maturing October 1. The company applied to the director general for assistance, stating that the best terms for renewal which it had been able to elicit were equivalent to 7¾ per cent per annum. As the notes were abundantly secured by high-class collateral, the director general informed the company that he regarded the interest rate proposed as excessive and that he could not consistently sanction it. The Division of Finance thereupon communicated, informally, with a number of banks which held the maturing notes, and upon receiving advice from the holders of approximately one-half in amount of the notes of their willingness to renew at 6 per cent per annum without commission, the director general advised the railroad company to offer an extension at 6 per cent to all the noteholders, with the understanding that the government would advance funds to pay off those holders not agreeing to renew. Holders of 80 per cent in amount of the maturing notes promptly renewed at 6 per cent per annum and the government advanced the Baltimore & Ohio company the funds to pay off the balance.

"The Chicago & Western Indiana Railroad Company told the director general that \$15,000,000 of its notes would mature September 1, and that the best proposition from the bankers for renewal was equivalent to 9¾ per cent per

annum. The director general informed the corporation that he would not sanction renewal on such terms, but would approve a rate of not exceeding $7\frac{1}{4}$ per cent per annum, to include bankers' commissions. The railroad company has now been able, through its bankers, to arrange with over 80 per cent of the noteholders to renew on those terms, thus saving the company $2\frac{1}{2}$ per cent per annum, or \$375,000 in interest.

"The Chicago & North Western Railroad Company's issue of \$5,000,000 of notes secured by high-class collateral, were maturing October 22, 1918, and the company asked the director general for aid or authority to renew at about $7\frac{1}{2}$ or 8 per cent. As a result of the director general's intervention and the co-operation of the bankers, the notes were renewed at 6 per cent per annum, without commission.

"The Hocking Valley Railroad asked the director general for assistance to enable it to meet \$5,000,000 of notes maturing November 1, 1918, stating that the company had been unable to secure the money with which to pay the notes at less than 7 per cent to 8 per cent. With the help of the director general the company has been enabled to renew a portion of the loan at 6 per cent per annum, while the government has agreed to advance to the company such funds as will be required to provide for any unrenewed portion at the rate of 6 per cent.

"These are a few illustrations of how the railroad administration has held down interest rates to railroad corporations in uncertain and difficult times.

"In other ways, also, the director general has held a restraining hand on money prices. On September 30, 1918, he issued a circular announcing that the rates of interest which depository banks would be required to pay on railroad accounts after October 1, 1918, would be reduced from the higher rates which had previously prevailed to 2 per cent on demand deposits, and 3 per cent on time deposits, notice being given at the same time that banks designated as depositories of railroad funds would be expected to limit their charges for money to their customers to the legal rates.

"It is gratifying to report that as a result of the active efforts of the Railroad Administration to maintain and protect the credit of railroad corporations, and to stabilize and keep to a moderate level the rates of interest which these companies may be required to pay, the interest rates on nearly all new railroad loans have been kept down to 6 per cent per annum, the uniform rate which the government itself has charged on all loans which it has made to railroad companies up to this time."

Seniority Rights of Employees in Military Service

Director General McAdoo has issued general order No. 51 giving the following instructions regarding the seniority rights of employees who have entered the military service:

The majority of railroads under federal control have already made announcement with respect to the preservation of seniority rights for employees who have entered the military service of the Army and Navy, and have indicated that so far as practicable, preference in re-employment or reinstatement would be given to soldiers and sailors when mustered out of the service.

(1) In order that as nearly as practicable there shall be a uniform treatment of this matter, the following general principles will govern:

(a) In the case of an employee having established seniority rights, so far as practicable, and where the employee is physically qualified, he will be restored to such seniority rights.

(b) In the case of employees who do not have seniority rights under existing practices, a consistent effort will be made to provide employment for them when mustered out of military service.

(2) Upon railroads where the assurances given on this

subject have been more specific than the provisions of paragraph 1 hereof, such assurances shall be observed.

Repairs to Refrigerator Cars

The mechanical department in Circular No. 7 has issued the following instructions governing repairs to refrigerator cars:

In order to insure the greatest possible degree of efficiency in refrigeration and conservation of foodstuffs, refrigerator cars having trucks of 60,000 pounds capacity or over will, when receiving general repairs or being rebuilt, be made to conform to the following United States standard refrigerator car requirements:

No. 1. *General arrangements.*—The general arrangements of cars shall be as near as practicable to that as shown on blue print 1386, United States standard refrigerator car.

No. 2. *Ice boxes.*—Ice boxes shall be arranged in accordance with blue print 1389, United States standard refrigerator car design.

No. 3. *Hatch arrangement.*—Hatch arrangements shall conform and receive appliances as designed for United States standard refrigerator cars, as per blue prints as follows:

1390. Hatch arrangement.	1613. Hatch plug lifter.
1606. Hatch plug hinge.	1614. Hatch hinge butt.
1607. Hatch plug hinge strap.	1615. Hatch cover lock lever guide.
1608. Hatch plug lifter guide.	1630. Hatch plug lift ring.
1609. Hatch cover hinge.	1653. Hatch cover lever anchor.
1611. Hatch cover lever.	1731. Hatch hinge pin.

No. 4. *Well trap.*—Well trap and well trap cone shall be arranged to conform with United States standard refrigerator car, as shown on blue prints—

1610. Well trap cone.	1617. Well trap cover.
1616. Well trap.	

No. 5. *Drain pipe.*—Drain pipe shall be arranged in accordance with blue print 1604, United States standard refrigerator car.

No. 6. *Floor and walls.*—Floors and walls shall conform to blue print 1387, United States standard refrigerator car.

No. 7. *Floor racks.*—Floor racks shall conform to United States standard refrigerator car blue prints, as follows:

1644. Floor racks.	1728. Floor rack pin bearing.
1724. Floor rack hinge plate.	1729. Floor rack bearing.
1726. Floor rack hinge loop.	1732. Floor rack hinge pin.
1727. Floor rack link holder.	

No. 8. *Doors, fastenings and cushions.*—Doors and attachments shall be arranged and receive appliances as designed for United States standard refrigerator cars, in accordance with the following blue prints:

1391. Door arrangement.	1657. Side door seal pin keeper.
1623. Side door hinge.	1658. Side door seal pin.
1635. Locking rod guide.	1659. Side door lock arm.
1639. Door locking rod.	1664. Seal hook and chain.
1649. Locking rod back plate.	1675. Door open fastener.
1654. Side door locking rod socket.	1676. Clip for door open fastener.
1655. Side door locking rod socket.	1677. Link for door open fastener.
1656. Side door step.	1730. Door hinge pin.

No. 9. *Van Dykes.*—Van Dykes of the above prints will be furnished each railroad upon making application to Frank McManamy, assistant director, Division of Operation.

No. 10. *Reports.*—Railroads will send blue prints of cars that do not meet the above specifications to the Mechanical Department, Division of Operation, Washington, D. C., with the following information:

(a) Number of cars owned that will need to be changed to meet the requirements.	(d) Number of cars that can be changed monthly at each shop.
(b) Estimated cost of making the changes.	(e) Number of cars that can be changed in all shops per month.
(c) Location of shops where cars will receive such changes.	(f) Length of time that it will require to make changes on all cars owned.

No. 11. *Special application of floor racks.*—(a) In order to improve refrigeration of cars as at present constructed, all railroads owning refrigerator cars will immediately arrange to apply floor racks in accordance with item No. 6, where they have not already been so equipped. It is desired to have all refrigerator cars requiring such racks

equipped within the next twelve months; therefore, there should be no delay in beginning this immediately.

(b) Monthly report will be furnished to the general supervisor of car repairs, Washington, D. C., showing the number of cars equipped with floor racks; those equipped with similar racks and the number remaining to be equipped.

The blue print numbers refer to the standard designs for refrigerator cars which have been prepared for some time, but from which orders have not yet been placed.

Taxation Questions

The proposal in Congress to combine war taxes and ordinary taxes in the pending revenue bill has brought about a complication affecting the division of taxes as between the Railroad Administration and the railroad companies. The federal control act provides that the corporations shall pay war taxes out of the amounts they receive from the Government as compensation, while ordinary taxes shall be paid by the Government while it is operating the properties. John Barton Payne, general counsel for the Railroad Administration, appeared before the Senate finance committee last week and urged a specific provision in the law to make certain the respective tax obligations by ear-marking a part of the proposed taxes as war taxes. Alfred P. Thom, counsel for the Railway Executives' Advisory Committee, presented a brief contending that the Government should pay any increase in taxation imposed during the period of federal control.

Railroad Administration Wants Its Share of Increased Express Rates

The Railroad Administration does not approve of the suggestion made by the Interstate Commerce Commission, which was originated by representatives of some of the state commissions, that the increase in revenues which the express company needs to pay increased wages be derived by reducing the proportion of express earnings payable to the Railroad Administration. In a statement commenting on the commission's opinion it says:

"The contract between the director general and the express company provides that the express company shall pay to the government for the express privileges accorded to it by the director general 50.25 per cent of the gross revenues from the express business. This percentage represents the average which has been paid for 10 years by the express companies to the railroads, and it is fair to assume that this percentage represents what is required for the performance of that part of the total service which has been performed by railroads in the past. Moreover, the heavy increases in operating costs on the railroads have necessitated substantial increases in freight and passenger rates averaging probably 25 per cent or more, and averaging in the case of many passenger rates as much as 50 per cent. In such circumstances it is clearly unwise to make an actual reduction in the basis of the government's compensation for the express privileges accorded to the express company for services on passenger trains. By the preservation of the present established basis of compensation for the express privileges, the increase in revenue of the Railroad Administration from the carrying of express business on passenger trains will be no greater than the increased revenue paid for transportation of passengers and their baggage, and such increase from the express business is just as appropriate and necessary as the increase from the passenger business.

"Another consideration of first importance is that the relatively low rates for transportation of express matter have had the effect of transferring to passenger trains the transportation, as express, of many articles and commodities which ought normally to go by freight. This tendency has been accentuated by the substantial increases recently made in freight rates. The result of this undue transfer of freight

matter to passenger trains has been to congest and delay the passenger train service. The proposed increase in express rates will probably fall short of establishing a proper relation between express rates and freight rates, and certainly on this account no less increase in express rates than is proposed would be advisable.

"The entire amount of this increase which will inure to the express company is to be used for making necessary increases in wages of express employees. The portion of the increase which will inure to the Railroad Administration will be no more than is needed to provide for heavy increases in operating cost fairly chargeable to the express business."

It is not expected that the proposed increase in express rates can be made effective before January 1.

Forest Products Section to Distribute Creosote

The War Industries Board has issued a circular of regulations intended to set forth a definite working arrangement for the distribution of creosote due to the present shortage. The board and the Railroad Administration have felt the need of closer co-operation with the industry and it is expected that the arrangement will provide prompt deliveries to the government and war industries and in general relieve the situation with the least possible interference with existing trade conditions. Creosote has been placed on the clearance list and requirements of the army, navy and Emergency Fleet Corporation will be allotted by a section of the War Industries Board. With the approval of the priorities commissioner, producers are required to give preference, first, to direct orders of the army, navy and Emergency Fleet Corporation, and, second, to direct orders of railroads and of other transportation facilities under the direction of the Railroad Administration and to direct orders of telegraph and telephone companies under control of the post office department. Harbor commissions and war industries requiring creosote for use on direct government account will submit applications to the board.

The Railroad Administration has adopted a program of conservation and substitution of materials in the treating of ties, etc., which will undoubtedly result in a considerable saving of creosote. The Forest Products Section of the Central Advisory Purchasing Committee will receive the allotment for railway uses and will distribute it for all railway work and work under the direction of the Railroad Administration and when deemed necessary will divert shipments under contract from one road to another.

Traffic Conditions

The weekly report of traffic conditions made public by the Railroad Administration for the week ending October 26 continues to reflect the influence of the influenza epidemic in the reduction of passenger traffic and to some extent of freight movement, and in the Southern region the effect of the epidemic on trainmen has resulted in some local congestion in traffic and, consequently, embargoes. In the Southern region general changes in passenger schedules were made effective on October 20, some of the schedules being lengthened. In the Central Western region the Southern Pacific reports that a Liberty Loan Special operated through California, Arizona and Nevada, covered 4,781 miles and visited 145 towns, reaching 380,000 people. The Allegheny region reports arrangements made for the sale of through tickets between points on the Philadelphia & Reading and the Pennsylvania via Philadelphia. The war department reports a slightly increased amount of express traffic held at New York, the arrivals exceeding the unloading by about 500 cars. Some shortage of open top equipment is reported at Chicago, but taking the situation throughout the country, the transportation conditions are said to continue to be satisfactory. The navy department reports some congestion at the Boston and Washington navy yards, which is being given

attention. The export situation at practically all Atlantic and Gulf ports continues easy, although the deliveries to vessels show slight decrease under the arrivals. A heavy movement of cars and car parts to the French government is reported. The reports indicate that the table d'hôte dining car service continues to meet with approval.

Rail Distribution

C. A. Morse, assistant director of the Division of Operation in charge of engineering and maintenance, is now giving close attention to the distribution of new rail. Because of the congestion in the steel mills, no new orders for rails have been placed this year and deliveries will be made on only about 1,400,000 tons of a total of 2,000,000 tons under previous contracts for 1918 rolling. Thus less than one-half of a normal year's requirements will be secured. Rollings have been at the rate of less than 25,000 tons per week for most of this year. Plans had recently been made to increase this to 35,000 to 40,000 tons weekly during November, but the receipt of orders for rails for our forces overseas has forced the mills to divert this extra tonnage there.

The orders now being rolled were placed two or three years ago. In general, they are well distributed among the roads of the country, although in some instances lines now badly in need of rails have none under contract. An attempt is being made to divert some of the rail to those lines on which it is most needed, the Detroit, Toledo & Ironton and the Grand Trunk Western being among the roads which are receiving rail diverted from the Erie and other roads. Approximately 65 per cent of the present output is now being given to the lines in the Eastern region, orders being largely concentrated on the roads in this and the Northwestern regions in order that they may get as much of this rail as possible into the track before winter. About December 1 it is expected that the mills will be turned on to orders for Southern roads where rail can be laid throughout the winter.

Ticket Plan for Dining Cars Tried Experimentally

The European plan of assigning seats in dining cars to passengers for a particular hour is being tried out experimentally on the Congressional Limited train between Washington and New York and also on a train between New York and Boston, in connection with the new table d'hôte dining car service. The plan was put into effect on the Congressional Limited on November 1. This train northbound on that date consisted of 10 cars and two diners each seating 30, and 240 people were served with meals. There were four sittings, at 5:30, 6:15, 7:00 and 7:45 p. m. Stewards passed through the train before meal time and gave tickets to passengers assigning them to seats and giving the option of any one of the four periods for which seats were available. The dining cars are located in the middle of the train and two stewards passed through the train in opposite directions. It was found that the maximum time required to serve a meal was 35 minutes, leaving a maximum interval of 10 minutes to reset the table. Reports received indicate that the passengers readily accepted the idea, which prevents the necessity for standing in line to wait for meals, and may be extended to other trains of heavy travel if the plan continues to work out satisfactorily.

To Aid Shippers in Tracing

In order to accommodate shippers as far as possible in keeping in touch with their freight, B. L. Winchell, regional director of the Southern region, with the approval of the Railroad Administration, has adopted a plan in the Southern region which it is hoped will meet this situation. A central organization in Atlanta has been established which will maintain records of the interline car loads passing the Southern region border line gateways, as well as certain interior junction points. For instance, if a carload of freight from New York for Memphis is overdue at destination, the Mem-

phis merchant to whom the shipment is consigned, can call up the Freight Service Bureau at Memphis for information as to the car's whereabouts, and communication with the central office of record at Atlanta ordinarily will develop the facts without delay. The local freight service bureau will be expected to show solicitude as to the transportation necessities of shippers.

Shippers Fear Another Rate Increase

The plan proposed by the Railroad Administration for establishing standard mileage scales of class rates is arousing much opposition on the part of shippers, according to reports reaching Washington, because of the number of instances in which the proposed standard scale rates exceed the rates now in effect. The Railroad Administration officials assert the plan is intended to bring about uniformity rather than to increase rates but many shippers assert that it represents a standardization upward that will result in a considerable increase in the long run and some profess to see in the plan an attempt to obtain the full amount of the increases contemplated in General Order No. 28, which provided for first raising the state rates to the interstate level before applying the 25 per cent increase. After many protests from state commissions, congressmen and shippers this plan was abandoned and the 25 per cent was applied to the existing rates.

Wage Board to Consider Express Wages

In addition to the duties heretofore conferred upon the Board of Railroad Wages and Working Conditions, Supplement No. 9 to General Order No. 27 provides that it shall be the duty of the board to hear and investigate matters presented by officers and employees of the American Railway Express Company or their representatives, affecting: (1) Inequalities as to wages and working conditions whether as to individual employees or classes of employees. (2) Conditions arising from competition with employees in other industries. (3) Rules and working conditions for the several classes of employees, either for the country as a whole or for different parts of the country.

The board in the performance of these duties shall, as in the case of railroad employees, be solely an advisory body and shall submit its recommendations to the director general for his determination.

Lubrication of Locomotives

Mechanical Department Circular No. 6 gives the following instructions regarding the lubrication of locomotives:

Investigation has developed that, in many instances, locomotives are not properly lubricated, which in addition to increasing coal consumption also causes excessive wear on cylinders, cylinder packing, valves and valve chambers, as well as on piston rod and valve stem packing.

It has been found that this is due on some roads to the practice of draining lubricators of all oil upon their arrival at the terminal and putting in the exact amount allowed for the trip before leaving. If excessive switching is necessary during the trip, or if any other unusual delays occur, or if the oil feed is not so regulated that it will last during the trip, the locomotive is often operated to the terminal with cylinders not lubricated. Cases are also found where on account of this practice yard engines are worked for hours without cylinder oil. This practice is extremely expensive.

Lubricators should be filled before locomotive leaves terminal, and sufficient oil should be carried on the locomotive to provide against any necessity for damaging cylinders, valves, packing or other parts of the machinery during the trip. Piston rod and valve stem packing should be properly lubricated, and a suitable swab provided to retain the oil.

Engine men will be held responsible for the proper use of all lubricating oils furnished them.

Railroad Men Given Opportunity to Vote

Although some of the officers of the train service brotherhoods are understood to have told Director General McAdoo that his general order, requiring railroad men to abstain from political activity, was an infringement on their rights as citizens, Mr. McAdoo took no chances that they or anyone else should infer that he did not want them to exercise their right and privilege of voting at the critical election of last Tuesday. The director general on November 1 sent the following telegram to the regional directors:

"In accordance with usual practice and the laws and customs of the various states, please instruct all federal and general managers to give to railroad employees the largest possible opportunity without interfering with necessary railroad operations to exercise their right of suffrage on election day, November 5."

No Modification of Warranty Covenant

The attorney general has declined to grant the request of the Railroad Administration for a modification of the warranty covenant against commission agents in contracts with the government for supplies. The Railroad Administration had proposed a provision that the contingent fee clause would not apply to regularly established selling agencies established before the war. The refusal to modify was based on the fact that the clause is inserted in contracts with all government departments and was approved by the President and cabinet and no lesser authority should change it. The secretary of war had personally secured from the President an approval for waiver of the clause in certain cases approved by the war department board of contract review.

Henry Bartlett to Consider New Devices

Henry Bartlett, formerly chief mechanical engineer of the Boston & Maine and a member of the committee on standards for cars and locomotives of the mechanical department of the Railroad Administration, is to devote his attention especially to the examination and testing of new devices for the mechanical department in accordance with rules providing for the submission of new devices and inventions outlined in a circular issued by the division of operation in September. Mr. Bartlett has been giving attention to such matters for some time, but the lessening of the work on which he has been engaged in connection with the standard car designs will enable him to devote a larger proportion of his time to new devices.

Hearings on Increased Wages

Hearings were held this week at Washington before the Board of Wages and Working Conditions on the application of the brotherhoods of train service employees for further increases in wages, in addition to those granted them under

General Order No. 27, by way of standardization to restore relations between the wages of various classes of employees which were somewhat disturbed by the order. They also have asked for time and one-half for overtime.

New Ticket Selling Plan Postponed

Because of the shortage of labor due to the influenza epidemic it has been found necessary to change from November 1 to December 1 the date for having railroad tickets and Pullman tickets sold at the same window. The adoption of the plan requires some alterations in ticket offices. The change, however, has already gone into effect at some offices.

Interesting Data on Rail Renewals

Some interesting information on rail renewals over a long period of years has been made public by the Committee on Economics of Railway Location of the American Railway Engineering Association in connection with a circular issued in Bulletin No. 210 of the association soliciting data on the effect of curvature on cost of maintenance of way and structures, etc. This table is submitted as illustrating what the committee desires in the way of data on the influence of curvature on rail renewals. The table is taken from a report of some investigations on the Pennsylvania Lines as presented by Robert Trimble, chief engineer of construction. It shows the number of renewals on all main tracks in 159 miles during a period of 31 years, for track on tangent and on various degrees of curvature.

RAIL RENEWALS ON TANGENTS AND CURVES ON THE PITTSBURGH, FORT WAYNE & CHICAGO, FOR ALL MAIN TRACKS FROM ROCHESTER TO CRESTLINE

Alignment	Average length of track, ft.	Length of track renewed in 31 years	No. of renewals in 31 years	Average in life	Ratio of renewals (tangent being 1.0)
Tangent	1,082,633	2,688,561	1.88	10.74	1.00
Curve 0° to 1°	117,107	332,539	2.84	10.90	0.99
Curve 1° to 2°	157,323	510,289	3.24	9.57	1.12
Curve 2° to 3°	79,847	267,823	3.35	9.25	1.16
Curve 3° to 4°	46,382	186,291	4.01	7.73	1.39
Curve 4° to 5°	34,819	153,764	4.42	7.04	1.53
Curves 5° to 6°	4,800	18,100	3.77	3.45	1.82



Photo from Underground to Switzerland, N. Y.

Swiss Refugees from Russia Arriving on Native Soil

Volume of Traffic Again Shows Increase

THE RAILROADS in August continued to break the records set last year as to the volume of freight traffic handled, according to the monthly reports of the Operating Statistics Section of the Railroad Administration. The revenue ton miles increased 7.6 per cent over August, 1917, after the July report had shown an increase of 5.6 per cent, and for the eight months of the year ending August 31 the increase as compared with 1917 was 1.1 per cent. The increase in ton miles in August was handled with an increase of only .2 per cent in freight train miles and a decrease of 1.4 per cent in car miles. There was a slight increase in the number of locomotives and of cars in service and the average tonnage per train and per car was increased 6.6 and 8.3 per cent, respectively, but the percentage of empty car miles increased and the average mileage per car and per locomotive per day continued to show a decrease. The net result, however, was an increase in the ton mileage both per locomotive and per car per day. The figures are reported both by roads and by regions and as a consolidated total. The New England district shows an increase in revenue ton miles of 14.8 per cent and the Southern region an increase of 14.3 per cent. The figures are summarized as follows:

Region	1918	1917	Per Cent Change	Per Cent of Increase				Per Cent of Decrease			
				15	10	5	0	5	10	15	20
NEW ENGLAND											
New England	1,277,794,320	1,109,500,000	14.8								
Central	1,277,794,320	1,109,500,000	14.8								
Ohio-Indiana	1,277,794,320	1,109,500,000	14.8								
Eastern Region	1,277,794,320	1,109,500,000	14.8								
Allegheny	1,277,794,320	1,109,500,000	14.8								
Pennsylvania	1,277,794,320	1,109,500,000	14.8								
Southern	1,277,794,320	1,109,500,000	14.8								
Northeastern	1,277,794,320	1,109,500,000	14.8								
Central Western	1,277,794,320	1,109,500,000	14.8								
Southeastern	1,277,794,320	1,109,500,000	14.8								
All Regions	1,277,794,320	1,109,500,000	14.8								
MIDDLE WEST											
Middle West	1,277,794,320	1,109,500,000	14.8								
Central	1,277,794,320	1,109,500,000	14.8								
Ohio-Indiana	1,277,794,320	1,109,500,000	14.8								
Eastern Region	1,277,794,320	1,109,500,000	14.8								
Allegheny	1,277,794,320	1,109,500,000	14.8								
Pennsylvania	1,277,794,320	1,109,500,000	14.8								
Southern	1,277,794,320	1,109,500,000	14.8								
Northeastern	1,277,794,320	1,109,500,000	14.8								
Central Western	1,277,794,320	1,109,500,000	14.8								
Southeastern	1,277,794,320	1,109,500,000	14.8								
All Regions	1,277,794,320	1,109,500,000	14.8								
SOUTHERN											
Southern	1,277,794,320	1,109,500,000	14.8								
Central	1,277,794,320	1,109,500,000	14.8								
Ohio-Indiana	1,277,794,320	1,109,500,000	14.8								
Eastern Region	1,277,794,320	1,109,500,000	14.8								
Allegheny	1,277,794,320	1,109,500,000	14.8								
Pennsylvania	1,277,794,320	1,109,500,000	14.8								
Southern	1,277,794,320	1,109,500,000	14.8								
Northeastern	1,277,794,320	1,109,500,000	14.8								
Central Western	1,277,794,320	1,109,500,000	14.8								
Southeastern	1,277,794,320	1,109,500,000	14.8								
All Regions	1,277,794,320	1,109,500,000	14.8								

Illustration Redrawn from Similar Table Made by Operating Statistics Section

Percentages of Increase or Decrease in Factors Influencing Freight Train and Freight Car Efficiency in the Month of August, 1918, as Compared with the Month of August, 1917

TRAFFIC AND OPERATING CONDITIONS IN AUGUST

Item	Month of August		Increase or decrease		Eight months		Increase or decrease	
	1918	1917	Amount	Per cent	1918	1917	Amount	Per cent
Average miles operated—single track.....	220,418.00	220,125.22	292.78	0.1	227,500.99	227,199.28	301.71	0.1
Freight train miles.....	51,792,883	52,675,864	117,019	0.2	425,829,519	436,044,775	*10,215,256	*2.3
Loaded freight car miles.....	1,277,794,320	1,295,885,621	*18,091,301	*1.4	9,899,418,281	10,606,451,040	*707,032,759	*6.7
Empty freight car miles.....	612,299,738	588,761,682	23,538,056	4.0	4,642,821,267	4,579,607,630	63,213,637	1.4
Total freight car miles—loaded and empty.....	1,890,094,058	1,884,647,303	5,446,755	0.3	14,542,239,548	15,186,058,670	*643,819,122	*4.2
Freight locomotive miles.....	60,969,854	60,713,578	256,276	0.4	494,901,484	503,499,098	*8,597,614	*1.7
Revenue ton miles.....	35,660,217,405	33,136,229,870	2,523,987,535	7.6	262,655,500,995	259,774,408,817	2,881,092,178	1.1
Non-revenue ton miles.....	2,809,629,463	2,908,102,833	*98,473,370	*3.4	23,071,823,215	23,711,618,534	*639,795,319	*2.7
Total ton miles.....	38,469,846,868	36,044,332,703	2,425,514,165	6.7	285,727,324,210	283,486,027,351	2,241,296,859	0.8
Average number of freight locomotives in service	30,450	29,893	557	1.9	31,364	30,937	427	1.4
Average number of freight locomotives in or awaiting shop.....	4,514	4,191	323	8.5	4,670	4,465	205	4.6
Average number of freight cars in service.....	2,342,032	2,265,018	77,014	3.4	2,421,736	2,325,961	95,775	4.1
Average number of freight cars in or awaiting shop.....	155,472	136,915	18,557	13.6	136,041	131,979	4,062	3.1
Tons per train.....	729	684	45	6.6	671	650	21	3.2
Tons per loaded car.....	30.1	27.8	2.3	8.3	28.9	26.7	2.2	8.2
Average miles per locomotive per day.....	64.6	65.5	*0.9	*1.4	64.9	67.0	*2.1	*3.1
Average miles per car per day.....	26.0	26.8	*0.8	*3.0	24.7	26.9	*2.2	*8.2
Per cent of loaded car miles.....	67.6	68.8	*1.2	*1.7	68.1	69.8	*1.7	*2.4
Per cent of freight locomotives in or awaiting shop.....	14.9	14.0	0.9	6.4	14.9	14.4	0.5	3.5
Per cent of freight cars in or awaiting shop.....	6.6	6.9	0.6	10.0	5.6	5.7	*0.1	*1.8
Total ton miles:								
Per freight locomotive per day.....	40,754	38,896	1,858	4.8	37,491	37,710	*219	*0.6
Per freight car per day.....	530	513	17	3.3	486	502	*16	*3.2
Per mile of road per day.....	5,630	5,282	348	6.6	5,169	5,134	35	0.7

*Decrease.

Railroads Must Play Big Part in Conserving Timber

Natural Resources Must Be Conserved If We Are to Do Our Part in Reconstruction Period

By A. Gibson

Superintendent Timber Preservation and Tie Treating Plants, Northern Pacific, Brainerd, Minn.

IN NO WAY can the conservation of one of our most important natural resources be made more effective than by the railways treating all of their cross ties, bridge and other timbers (that can be treated) by a preservative that will extend their service at least 2½ times. There is no experiment about this; it is well known that cross ties and other timbers can be and are made to last very much longer by treatment.

We should not lose sight of the fact that during the years gone by we were drawing our tie and timber supply from virgin forests and the timber used was very high grade. We have now reached the period where second growth trees are being cut and young growth trees are much inferior to what we were getting 15 years and more ago. The result will be shorter life and in consequence a larger consumption.

The annual requirements for cross ties alone are appalling. We have about 290,000 miles of main tracks. Figuring 3,000 ties per mile this will require 870,000,000 cross ties; if the average annual life untreated is estimated at six years this means that main track renewals will require approximately 145,000,000 ties. It is also estimated that there are approximately 100,000 miles of passing tracks, yard tracks and spurs, on which about 2,800 ties per mile are used, a total of

280,000,000 ties. On a basis of six years' life untreated these tracks would require annual renewals of over 46,000,000 ties, making an approximate total of tie renewals for all tracks of 191,000,000. Changing these figures to board measure, and estimating main line ties at 38 ft. board measure per tie, they would represent 5,510,000,000 ft. board measure. Estimating yard and passing track and spur track ties at 32 ft. board measure per tie, the requirements represent 1,472,000,000 ft. board measure, making a total for all tracks of 6,982,000,000 ft. board measure. This is only one item of the numerous drains on the forests by the railroads. In addition to this there are the demands for buildings of all kinds, bridges, wharves, docks and numerous structures in which large quantities of timber are used.

Assuming that the life of cross ties can be extended by the use of preservatives and proper tie plates to 15 years instead of 6, the requirements for main tracks would be reduced to 58,000,000 ties or 2,204,000,000 board feet, and for passing and other tracks to 20,000,000 ties or 597,000,000 ft. board measure annually, or a grand total of 78,000,000 ties or 2,801,000,000 board feet, making a total yearly saving of 113,000,000 ties or 4,181,000,000 ft. board measure for railroad cross ties alone.

SAVING PER TIE PER YEAR

Table showing economy in treating cross ties; with ties and creosote at prices indicated, on the basis of labor for placing in track at 25 cents per tie, 8 cents for handling and treating at tie plant and allowing 5 per cent for 15 years on treatment, including all labor and material at tie plant; assuming that treated ties last 15 years and untreated 6 years.

Creosote per gal.	at 40c	at 45c	at 50c	at 55c	at 60c	at 65c	at 70c	at 75c	at 80c	at 85c	at 90c	at 95c	at \$1
\$0.060	\$0.0387	\$0.0433	\$0.0486	\$0.0533	\$0.0587	\$0.0633	\$0.0686	\$0.0733	\$0.0786	\$0.0833	\$0.0886	\$0.0933	\$0.0986
.065	.0370	.0423	.0476	.0520	.0573	.0620	.0673	.0720	.0773	.0820	.0873	.0920	.0973
.070	.0353	.0407	.0460	.0501	.0553	.0600	.0653	.0706	.0753	.0800	.0853	.0900	.0953
.075	.0340	.0393	.0443	.0486	.0530	.0586	.0630	.0676	.0726	.0773	.0826	.0876	.0926
.080	.0326	.0373	.0426	.0473	.0526	.0573	.0626	.0673	.0726	.0773	.0826	.0873	.0926
.085	.0313	.0356	.0410	.0456	.0510	.0556	.0610	.0656	.0710	.0753	.0807	.0860	.0900
.090	.0300	.0347	.0393	.0447	.0493	.0541	.0600	.0646	.0693	.0746	.0793	.0846	.0893
.095	.0280	.0326	.0380	.0426	.0470	.0526	.0573	.0627	.0680	.0726	.0780	.0826	.0880
.100	.0267	.0313	.0366	.0413	.0466	.0513	.0566	.0613	.0666	.0713	.0766	.0813	.0866
.105	.0253	.0300	.0347	.0400	.0447	.0493	.0547	.0593	.0653	.0700	.0747	.0800	.0853
.110	.0240	.0286	.0333	.0386	.0433	.0480	.0533	.0580	.0633	.0680	.0733	.0780	.0833
.115	.0220	.0266	.0320	.0367	.0420	.0466	.0520	.0566	.0610	.0666	.0720	.0766	.0819
.120	.0206	.0253	.0306	.0353	.0406	.0453	.0506	.0553	.0606	.0653	.0706	.0753	.0806
.125	.0193	.0240	.0293	.0339	.0393	.0439	.0493	.0539	.0593	.0639	.0693	.0739	.0793
.130	.0180	.0230	.0280	.0326	.0380	.0426	.0480	.0526	.0580	.0626	.0680	.0726	.0780
.135	.0167	.0210	.0260	.0310	.0366	.0413	.0466	.0513	.0566	.0613	.0666	.0713	.0766
.140	.0153	.0200	.0253	.0300	.0353	.0400	.0453	.0500	.0553	.0600	.0653	.0700	.0753
.145	.0140	.0183	.0233	.0283	.0333	.0383	.0436	.0483	.0533	.0583	.0633	.0683	.0733
.150	.0120	.0166	.0220	.0266	.0320	.0366	.0420	.0466	.0520	.0566	.0620	.0666	.0720
.155	.0107	.0157	.0207	.0256	.0306	.0357	.0406	.0457	.0506	.0557	.0606	.0657	.0706
.160	.0093	.0140	.0193	.0240	.0293	.0340	.0393	.0440	.0493	.0546	.0593	.0640	.0693
.165	.....	.0126	.0176	.0226	.0276	.0326	.0373	.0426	.0473	.0520	.0573	.0620	.0673
.170	.....	.0106	.0160	.0206	.0260	.0306	.0360	.0406	.0460	.0506	.0560	.0606	.0660
.175	.....	.....	.0146	.0193	.0246	.0293	.0346	.0393	.0446	.0493	.0546	.0593	.0646
.180	.....	.....	.....	.0133	.0183	.0233	.0283	.0333	.0383	.0433	.0483	.0533	.0583
.185	.....	.....	.....	.0116	.0163	.0213	.0263	.0313	.0363	.0413	.0463	.0513	.0563
.190	.....	.....	.....	.0100	.0146	.0196	.0246	.0300	.0346	.0396	.0446	.0500	.0546
.195	.....	.....	.....	.....	.0133	.0186	.0233	.0286	.0333	.0386	.0433	.0486	.0533
.200	.....	.....	.....	.....	.0120	.0173	.0220	.0273	.0320	.0373	.0420	.0473	.0520
.205	.....	.....	.....	.....	.....	.0160	.0206	.0260	.0306	.0356	.0406	.0456	.0506
.210	.....	.....	.....	.....	.....	.0146	.0193	.0246	.0293	.0346	.0393	.0446	.0493
.215	.....	.....	.....	.....	.....	.0133	.0180	.0230	.0279	.0330	.0379	.0433	.0479
.220	.....	.....	.....	.....	.....	.0120	.0166	.0213	.0266	.0313	.0366	.0420	.0466
.225	.....	.....	.....	.....	.....	.....	.0153	.0203	.0253	.0303	.0353	.0403	.0453
.230	.....	.....	.....	.....	.....	.....	.....	.0186	.0233	.0286	.0336	.0386	.0433
.235	.....	.....	.....	.....	.....	.....	.....	.0173	.0220	.0273	.0320	.0373	.0420
.240	.....	.....	.....	.....	.....	.....	.....	.0160	.0206	.0260	.0306	.0360	.0406
.245	.....	.....	.....	.....	.....	.....	.....	.0143	.0190	.0243	.0290	.0343	.0390
.250	.....	.....	.....	.....	.....	.....	.....	.0126	.0173	.0226	.0273	.0326	.0373

BASIS ON WHICH ABOVE TABLE IS PREPARED

UNTREATED			TREATED		
2½ Cross ties	.....	at 50c each	1 Cross tie	.....	at 50c = \$0.50
2½ Placing	.....	at 25c each	1 Placing	.....	at 25c = .25
			1½ Gal cross tie	.....	at 1c = \$0.25
			Tie plant expense	.....	at 8c = .08
Untreated	.....		Interest at 5 per cent per annum on 33-15 years	.....	.33
Treated	.....				.25
					\$1.33
					\$0.55

Total saving \$0.55 ÷ 15 = \$0.0366 per tie per year.

The treating of cross ties with preservatives is not only a move in the interest of conservation, but it is economical for the users, as the table on the preceding page shows. It is prepared from experience in the treatment and use of Minnesota, Wisconsin, Montana, Idaho and Washington timber in railroad tracks in those states.

There are various other items of expense in connection with tie renewals which are not taken into account in this table, and which cannot very well be shown, owing to variable conditions. The originating points from which ties are shipped to the treating plants are different for almost every shipment, the more frequent disturbance of the roadbed for untreated ties, more especially when traffic and labor conditions are abnormal and the additional hauling and handling are typical. Therefore, if the table errs in any way it is in favoring untreated ties. With present processes of treatment large quantities of inferior species of timber, not suitable for general use in buildings or for ties untreated, can be used, such as birch, ash, elm, cottonwood, red oak and jack pine; timbers that will not last to exceed three years without treatment before decay will render them unsafe.

In the fall of 1907 and summer of 1908 the Northern Pacific treated quite a large number of cross ties of the above species (approximately 600,000) at Brainerd, Minn., with creosote oil and placed them in main line and branch tracks. They are giving very good service. To all appearances the red oak, birch, elm, cottonwood and jack pine will last for many years yet. The only sign of failing is caused by mechanical wear and splitting in some instances, but the general results are good. A large number of ties of these species have been used on this road each year since 1907. Red oak, birch and elm are much superior to our best grades such as tamarack or fir for tie timber when treated with creosote owing to their susceptibility to treatment, resistance to mechanical wear and spike-holding qualities. Tamarack and fir are our most refractory timber to treat, but they can be and are treated successfully, although in a few years the supply will have to come from Montana and west of there, as the eastern forests are beginning to show marked signs of depletion in what was considered an inexhaustible supply about 25 or 30 years ago.

When a member of an engineering party on preliminary and location surveys in 1884, I made the trip on foot from South Prairie, Washington, the eastern end of the Northern Pacific line from Puget Sound at that time to what is now Lester, thence up Camp Creek to the west end of the Stampede Pass tunnel, and in all that territory we found no signs of timber being cut except a few small trees for building settlers' cabins. For the entire distance from South Prairie to the summit of the Cascades on the west slope there was one magnificent virgin forest as far as the eye could reach. It was the accepted opinion that Washington had timber to supply the United States for hundreds of years to come. Today the best timber is all cut off except in a few gulches and inaccessible spots where spur tracks are now built so that logging can be carried on economically.

In the winter of 1885 I made the trip by stage, buckboard and on foot from North Yakima, Wash., the west end of the Northern Pacific from St. Paul at that time, to the east end of the Stampede Pass tunnel and found the same forest conditions existing as on the west slope; an unbroken stretch of magnificent forest from Teanaway to the summit of the Cascades and down the west slope to Tacoma and Seattle.

The large stumps are the only remaining evidence today of the grand trees that fell in the terrible slaughter. There are still quite large patches of birch, ash, elm, cottonwood and some red oak in Minnesota and Wisconsin and smaller patches of cottonwood and elm along the streams from Lake Superior to Puget Sound that can be utilized for tie timber, if treated, and which if not used in this or some other

similar way will rot on the ground in a few years and be a loss to the country.

Unless all signs fail our country is going to develop very rapidly after we have won this war. Our population will also increase, which will naturally demand a large extension of our present railroad mileage, and this with the demand for materials from foreign countries will tax our ability to the utmost to meet requirements. Therefore, the more we conserve our present natural resources the better prepared will we be to furnish the balance of the world with the necessities it may need, and timber will be one of the most important items. During the present war the supply of creosote in this country and from abroad has been reduced so that present prices make its use almost prohibitive, but undoubtedly this will be adjusted when the war is over and tank vessels are again available for ocean traffic.

Train Accidents in August*

THE FOLLOWING IS A LIST of the most notable train accidents that occurred on the railways of the United States in the month of August, 1918:

Collisions				Kind of Accident	Kind of Train	Killed	Inj'd
Date	Road	Place					
2.	Pennsylvania	Walker's Mill, Pa.	rc	F & F	P.	3	0
7.	N. Y., N. H. & H.	Westbrook	rc	F & F	P.	2	0
30.	Louisville & N.	Nortonville	re	F & F	P.	1	3

Derailments				Cause of Derailment	Kind of Train	Killed	Inj'd
Date	Road	Place					
1.	Pennsylvania	Terre Haute		P.	P.	1	30
7.	Denver & R. G.	Blanca	b. rail	P.	P.	1	9
10.	Miss. Central	So. Hattiesburg	malice	P.	P.	2	0
13.	Pennsylvania	Destruction	unx	P.	P.	0	6
19.	Balt. & Ohio	Newburg, W. Va.	acc. obst.	P.	P.	3	0
19.	N. Y. Central	Bergen, N. Y.	neg.	P.	P.	0	15
28.	Norfolk & W.	Ada, W. Va.	exc. speed	P.	P.	2	14

The trains in collision on the Pennsylvania Lines near Walker's Mill, Pa., on the second were eastbound freights. The leading train, with a locomotive at the rear, was at a standstill, and was about 200 ft. in advance of an automatic block signal set against the following train. This train, which, it appears, had passed an automatic block signal indicating caution, came on at about 35 miles an hour; and its engineman, fireman, and one brakeman were killed. This collision occurred at 4:40 a. m.

The trains in collision on the New York, New Haven & Hartford near Westbrook, Conn., on the night of the seventh were eastbound freights. The locomotive of the second train was overturned and ten cars were wrecked. The engineman and fireman were killed. The men on the engine having been killed it is not known why the speed of the train was not controlled; but the collision occurred during a severe electrical storm, accompanied by rain and hail, and it is believed that these men were either shocked or killed by lightning just prior to the collision.

The trains in collision near Nortonville, Ky., on the 30th were through freight trains. The collision occurred in a cut, and both engines and seven cars were wrecked. The track was blocked about twelve hours. The engineman of the northbound train was killed, and the southbound engineman was injured. The collision was due to oversight on the part of the train dispatcher. After issuing a meeting order he put another train on the schedule of one of the trains without giving a copy of the meeting order to the new section.

The train derailed at Fruitridge Avenue, Terre Haute,

*All accidents where the cause is given in Accident List.

rc, Rear collision; b, Blowing; F, Fire; acc, Other collisions—b, Blowing; d, Derailed; unx, Unexplained; acc, Accidental obstruction; malice, Malicious obstruction of track, etc.; holier, Explosion of locomotive on road; fire, Cars burned while running; P, on fire; Passenger train; F, Freight train (including empty engines, work trains, etc.); Asterisk, Wreck wholly or partly destroyed by fire; Dagger, One or more passengers killed.

Ind., on the first was westbound passenger No. 21. One mail clerk was killed; three mail clerks, three employees and 24 passengers were injured, all of the injuries being classed as slight. The train was running at about 60 miles an hour. The cause of the derailment was not determined. The track was found in good condition. Eye-witnesses thought there must have been some obstruction on the rail.

The train derailed near Blanca, Colo., on the seventh was a westbound passenger. Four coaches were overturned and eleven passengers were slightly injured. The cause of the derailment was a broken rail.

The train derailed on the Mississippi Central at South Hattiesburg, Miss., on the 10th was a westbound passenger. The engine was overturned at a maliciously misplaced switch and the track was blocked about 10 hours. The engineman and the fireman were killed.

The train derailed near Protection, N. Y., on the night of the 13th was eastbound passenger No. 576. The engine and three cars were overturned and fell down a bank. Six passengers were injured. The derailment occurred at a frog, but whether or not this frog was defective or broken and was the cause of the derailment, or was broken in consequence of the derailment, could not be determined.

The train derailed on the Baltimore & Ohio near Newburg, W. Va., on the night of the 19th of August was westbound passenger No. 47, moving up grade, drawn by two engines. The leading engine was overturned and the en-

gineman, fireman and one trainman were killed. It is believed that the track was disturbed by something dragging from a car in a preceding train.

The train derailed near Bergen, N. Y., on the afternoon of the 19th was eastbound passenger No. 28. It consisted of one express car, two mail cars, one baggage car and four coaches. The engine and all cars except the rear coach were partly tipped over on the south side of the track. The train was running at high speed, but the number of persons injured (all passengers) is given as only fifteen. Trackmen were working at this point, and it appears that the rails were not properly alined when the train came on.

The train derailed near Ada, West Virginia, on the 28th was eastbound passenger No. 4. The engine and four cars were overturned, the engineman and fireman were killed, and nine passengers and five employees and mail clerks were injured. The cause of the derailment was presumed to be too high rate of speed around a curve of eleven degrees on a steep descending grade, no defects being found in track or equipment.

Electric Car Accidents.—In Chicago on the 7th, when a freight train ran into a street car, five persons were killed and 27 injured; at Anderson, Ind., on the 30th, in the derailment of an electric car, one person was killed and 5 injured. At Cleveland, Ohio, on the 7th, an electric car, thrown off the track by running into a heavy truck, fell off a high bridge; eight passengers injured.

Final Liberty Loan Totals Reach \$184,868,300

Railroad Men's Subscriptions \$78,000,000 Over Third Loan. Complete Returns for Eastern Region

THE FINAL REPORTS to Director General McAdoo show that the railroad men of the United States subscribed for a total of \$184,868,300 in Fourth Liberty Loan bonds. This compares with \$106,655,450 subscribed in the third loan, an increase of \$78,212,850.

A tabulation of subscriptions by regions shows that the honors for the campaign belong to the Southwestern region, 99.1 per cent of the 170,333 employees of that region having subscribed for a total of \$21,487,650, an average of \$126 per subscriber. The Eastern region, the largest of the seven, naturally led in the total subscribed with \$54,697,200, but its percentage of employees subscribing and the average subscription were not as high as in the Southwestern region. The Railroad Administration headquarters in Washington led all the regions, all of the 1,014 employed there subscribing an average of \$495.10 each.

The totals in detail follow:

Region	Number subscribers	Percentage employees	Amount subscriptions	Amount per subscriber
Administration Headquarters (Wash.)	1,014	100	\$807,600	\$495.10
Eastern	532,173	96	\$4,097,000	102.00
Southwestern	170,333	99.1	\$21,487,650	126.00
Central Western	307,546	96.69	\$6,082,850	120.58
Paceliantas	189,411	98.3	\$4,381,580	89.48
Southern	184,035	78	\$10,253,000	88.00
Affluency	291,985	94.86	\$23,611,100	80.86
Northwestern	218,168	97.97	\$7,885,750	112.24

Eastern Liberty Loan Totals

Final returns of subscriptions to the Fourth Liberty Loan by officers and employees of the 48 railroads comprising the Eastern Region reported to Regional Director A. H. Smith, Grand Central Terminal, show that 98 per cent of all employees subscribed, the average amount per subscription being \$102.00. The total subscription was \$54,555,200, made by a total of 551,944 employees.

The officers and clerks of the regional director's staff subscribed \$113,250 additional.

Twelve of the roads show that 100 per cent of all employees subscribed, namely, the New York Central, Brooklyn Eastern District Terminal, Buffalo Creek, the Delaware, Lackawanna & Western, the Grand Rapids and Indiana, the Lehigh & Hudson River, the Lehigh & New England, the Lehigh Valley, the Pittsburgh & Shawmut, the Susquehanna & New York, the Toledo, St. Louis & Western, and the Wheeling & Lake Erie. In addition to this 24 railroads show between 90 and 100 per cent of all employees subscribed. The Lehigh & Hudson River led all other roads in the Eastern Region in the average amount per subscription of \$150.00, the Grand Rapids and Indiana ranking second with \$146.00, the Wheeling & Lake Erie third with \$141.00, and the Buffalo, Rochester & Pittsburgh, and Central Indiana, fourth and fifth, with \$124.00 and \$123.00, respectively.

The New York Central, both east and west, showed 92,586 employees, or 100 per cent subscribed, the average amount per subscription being \$106.95. The division East and West is as follows:

East of Buffalo	Number of employees	Number subscribed	Percentage subscribed	Amount subscribed	Average amount subscribed
East of Buffalo	85,903	59,900	69.85	\$6,334,050	105.75
West of Buffalo	32,683	32,683	100	3,568,400	109.15

The New York Central total of subscriptions is \$9,902,450, which is the largest amount subscribed by any individual road in the Eastern Region.

The Pennsylvania Lines West showed 95 per cent of all employees subscribed, the average amount per subscription being \$110.00. The total subscription was \$8,735,800, made by a total of 82,990 employees.

The office of the regional director has made a detailed tabulation showing how the bonds were taken by classes of employees on the 48 railroads in the Eastern region. The figures, with the exception of the average subscription per subscriber are copied from the tabulation.

	Number on service	Number subscribed	Per cent	Average sub. scriber	Average sub. scriber
Officers and general office employees.....	37,065	36,463	98	\$6,363,300	\$174.51
Auxiliary station employees.....	30,011	29,483	98	7,37,000	77.76
Engineers.....	23,724	22,977	97	2,732,650	118.49
Firemen.....	23,619	22,096	93	1,740,300	78.76
Conductors.....	132,254	126,122	96	2,175,311	116.88
Other trainmen.....	48,552	46,075	95	3,881,950	84.25
Mechanical department.....	154,295	150,331	97	17,664,850	117.11
Roadway department.....	1,777,508	1,765,508	98	7,745,230	76.56
Miscellaneous employees.....	51,442	49,069	95	4,020,250	96.19

Inasmuch as these totals are probably typical of all the regions it is worth noting that the office employees made the best record, 98 per cent of the total number subscribing for an average of \$174.51. The engine-men were second, 97 per cent of their number in the Eastern region having subscribed for an average of \$118.49, the mechanical department employees a close third with 97 per cent, and an average subscription of \$117.11, while the conductors were close behind with 96 per cent and an average subscription of \$116.88.

FOURTH LIBERTY LOAN TOTALS FOR EASTERN REGION

	Total amount of subscriptions	Total number of employees	Total number subscribed	Average amount per sub. scriber	Percent subscribed
Ann Arbor.....	\$134,550	1,363	1,355	99	99
Balt. & Ohio, est.....	2,569,700	29,150	28,908	88	99
Bangor & Aroostook.....	182,550	1,925	1,723	106	89
Boston & Albany.....	506,450	8,468	7,611	72	83
Boston & Maine.....	2,564,550	31,532	30,051	85	95
Brooklyn, East. Dist. Term.	42,550	438	438	97	100
Buffalo Creek.....	21,550	219	203	103	100
Buff. Roch. & Pitts.....	924,850	7,567	7,463	124	98
Central Indiana.....	28,200	247	228	123	92
Central Vermont.....	217,800	2,656	2,395	90	90
Ches. & Ohio of Ind.....	147,750	1,616	1,435	103	89
Chic. Ind. & Lou.....	369,400	4,172	4,042	1	96
Cin. Ind. & West.....	188,900	1,683	1,598	118	94
Clev. Cin. & St. L.....	2,736,000	25,106	24,492	111	97
Det., Bay City & West.....	5,000	161	96	58	60
Detroit Terminal.....	23,050	219	218	106	99
Detroit Tel. & Iron.....	159,250	1,842	1,542	97	81
Detroit & Mackinac.....	66,150	735	695	95	95
Delaware & Hudson.....	1,747,800	15,701	14,913	117	95
Delaware, Lake & West.....	3,326,000	33,602	32,116	104	100
Erie.....	4,346,900	45,263	43,375	100	95
Grand Rapids & Ind.....	429,000	2,923	2,923	146	100
Grand Trunk, New Eng.....	152,900	1,391	1,205	127	87
Grand Trunk, West.....	645,550	10,028	8,578	75	85
Hocking Valley.....	363,750	5,169	3,924	92	75
Indianapolis Union.....	62,350	867	756	82	87
Lake Erie & West.....	383,300	3,823	3,657	104	95
Lehigh & Hudson River.....	114,100	756	756	150	100
Lehigh & New Eng.....	131,900	1,295	1,295	102	100
Lehigh Valley.....	2,944,150	25,053	25,053	117	100
Maine Central.....	618,200	7,907	7,098	87	89
Manistique & L. Sup.....	6,250	100	87	68	77
Michigan Central.....	1,706,750	18,896	18,295	93	96
New York Central, East.....	6,334,050	59,903	59,903	105	100
New York Central, West.....	3,568,400	32,683	32,683	109	100
N. Y. Chic. & St. Louis.....	795,550	7,681	7,424	107	96
N. Y., N. H. & E.....	3,167,700	43,953	42,391	75	96
N. Y., Ontario & West.....	548,450	5,024	4,740	106	94
Pennsylvania Lines, West.....	8,735,800	82,990	79,032	110	95
Perc. Marquette.....	882,950	10,271	9,158	96	89
Pitt. & Shawmut.....	75,700	611	611	122	100
Rutland.....	261,500	2,189	2,177	120	99
Susquehanna & N. Y.....	17,500	160	160	109	100
Tol. & Ohio Cont.....	641,600	6,742	6,475	99	96
Tol. St. Louis & West.....	408,050	3,316	3,316	123	100
Trenton & Delaware.....	26,650	260	245	118	94
Ulster & Delaware.....	63,050	582	537	117	92
Wabash.....	1,141,000	9,266	9,262	123	99
Wheeling & Lake Erie.....	813,350	5,745	5,745	141	100
Total.....	\$4,585,500	551,944	531,940	100	96

Regional organization, 253 employees (100 per cent subscribed)..... \$113,250
Local sub-committee subscriptions through the A. R. A..... 28,750

Grand total.....\$54,697,200

St. Louis Roads Make Liberty Loan Record

Every one of the 40,889 employees of the Missouri Pacific, the St. Louis Southwestern, the Louisiana & Arkansas, and the Southern Illinois & Missouri Bridge, which comprise the lines under the jurisdiction of A. Robertson, federal manager, subscribed to the fourth Liberty Loan. The total of the bonds taken on these railways was \$6,665,500, or an average

of \$163 per employee. The 35,520 Missouri Pacific employees alone subscribed a total of \$5,864,050, or \$165 per employee. The lines under Mr. Robertson rank high if not the highest among the federal managers' districts as to average subscription per person.

This commendable record was only achieved after a most vigorous Liberty Loan campaign. To give impetus to the campaign a meeting of 1,000 delegates representing the employees of the lines was held at Planters Hotel, St. Louis, on September 14. Among those who addressed this assembly were A. Robertson, federal manager; B. F. Bush, South-



Loan Meeting at Ewing Avenue Yard, St. Louis

western regional director; E. J. White, general solicitor of the lines under Mr. Robertson; J. F. Murphy, general manager of the Missouri Pacific, John Moran, general chairman of the Brotherhood of Locomotive Engineers, Daniel Upthegrove, general attorney of the St. Louis Southwestern; S. L. Watts, general chairman of the Brotherhood of Railway Car-men of America and a number of other representative officers and employees and officials of the various labor organizations. Following the meeting at the Planters Hotel, the federal manager, in company with the general chairmen of



The Locomotive Which Handled the Liberty Loan Special

various labor unions as well as railway officers and employees, made a tour of his district holding meetings at stations, roundhouses, shops, churches, opera houses, which were attended by all employees who could possibly be spared from their work. The crowds were uniformly large and enthusiastic. The photographs show the locomotive which handled the Liberty Loan Special and a typical meeting which was held at Ewing Avenue yard, St. Louis. It will be noted that considerable ingenuity was displayed in decorating the engine. The stars and stripes are in evidence on various parts of the locomotive, President Wilson's photograph has a prominent position in the headlight, the Ameri-

can eagle is mounted on the sand dome and a miniature cannon on the pilot.

As previously mentioned, the total subscription of the Missouri Pacific was \$5,864,050, or an average of \$165 per employee. The totals and averages for the other three lines were \$710,300 and \$151 on the St. Louis Southwestern, a total of \$86,650 and an average of \$136 for the Louisiana &

Arkansas, and a total of \$4,500 and an average of \$115 on the Southern Illinois & Missouri Bridge.

Mechanical employees subscribed more heavily than any other class of employees on these lines. The total of their subscriptions amounted to \$1,862,550. Roadway employees were next with a total of \$1,474,800 and officers and general office employees were third with \$867,300.

Signals Required to Facilitate Traffic in Australia

Automatics Prove Profitable on Lines Operating Under the British Board of Trade Standards

By C. B. Byles

Signal Engineer, New South Wales Government Railways, Sydney, N. S. W.

CONSIDERABLE PROGRESS HAS BEEN MADE in recent years in the installation of automatic signaling on the New South Wales Railways. This system consists of 4,677 route miles, of which 4,102 are single, and the balance consists of two or more tracks. Three trunk lines radiate from Sydney, south, west and north, respectively. These lines are double for distances varying from 100 to 200 miles from the metropolis, and beyond that the whole of the mileage is single. The three trunk lines referred to carry a fairly heavy passenger and freight traffic, comprising interstate expresses, mail trains and trains of less importance. The speed, however, at which even express and mail trains are operated is relatively low, owing to the exceedingly heavy nature of the country through which they pass. The remainder of the system consists of an extensive mileage of single track branch lines, and over these the traffic is, for the most part, very light. Within the suburban area of Sydney, extending to a radius of about 20 miles, a dense residential traffic is dealt with and the train service provided compares in density with that in the suburban areas of most of the principal cities of the world.

It should be remembered, in considering the conditions under which the traffic is handled in New South Wales, that the British Board of Trade standards in respect of safe working are adhered to. Thus, many practices which are permissible under somewhat similar physical conditions in the United States are not allowable in New South Wales. The larger part of the system is interlocked, and the ideal aimed at is the complete interlocking of the whole system. It is considered necessary, as a rule, for an officer to be in attendance at all places where main line switching movements take place, and the practice which prevails in the United States of permitting a train crew to side track a main line train for a more important one to pass is unknown here. At places where the attendance of a traffic officer is necessary for switching purposes or for station attendance, he is required also to operate the signals and to manipulate the block telegraph system or other system of working in operation. It thus comes about that, at stations where the conditions in other respects call for the employment of an officer, very little is gained by installing automatic signals, and hitherto, under such circumstances, the manual block system, operated under suitable safeguards, has been considered sufficient to meet the requirements.

The single line portions of the system are, for the most part, worked by means of the electric tablet or electric staff systems, only a comparatively small mileage being worked by means of ordinary train staff and ticket. No attempt has been made to introduce automatic signaling on single lines, and it is difficult to see at present how this could be done,

in view of the fact that the possession of a token as authority for passing over a single line has always been regarded as an indispensable feature of safe working. The introduction of automatic signaling on single track lines and the disuse of the token would introduce a variance of practice and, in view of the dependence upon a fixed habit on which the use of the token system relies for its efficacy, very serious considerations would arise in connection with any scheme involving an exception to this hitherto invariable rule.

From what has been written, it will be clear, therefore, that the scope for automatic signaling is confined to:

(a) The country stretches of double track lines on the three trunk systems.

(b) The suburban areas.

Taking first the country lines, the use of automatic signaling is not found to be justified in cases where traffic attendance is necessary for purposes apart from signaling. There are, however, many sections of double track lines passing through sparsely populated country upon which the distance between attended stations is greater than the length of block sections necessary to handle the traffic. Under these circumstances, automatic signals have, with advantage, been installed to divide the sections between attended stations. The length of such sections varies, of course, according to circumstances, but they average about five miles and, at the present time, the number of country sections of automatic signals is 40. This equipment will probably appear small to American readers who are accustomed to stretches of hundreds of miles of automatic territory, but it must not be forgotten that the conditions in respect of through traffic are entirely different from those prevailing on American railways, and in view of the comparatively recent development of heavy traffic on these railways, it is somewhat remarkable that even this amount of automatic signaling has become necessary and profitable. In support of this statement it should be mentioned that it was only within the last 10 years that any considerable mileage of trunk line beyond the metropolitan area has been doubled.

The standard practice for automatic signals is upper-quadrant left hand, 3-position. Upon the country sections referred to, the mechanisms are invariably of the low voltage type, and BSCO cells are employed for both these and track circuit purposes. The signals are of the familiar topmast mechanism type, and, so far as construction is concerned, American practice has been followed to a large extent. A feature which has been adopted with advantage is the concentration in a small hut of the track relays and batteries for each signal location. This plan has been found to afford great assistance for maintenance purposes, and advantage is taken of the roof to ensure a water supply for the batteries.

Turning now to the automatic signaling in the suburban area, it may be stated that this extends from the metropolis, roughly, for a distance of nine miles on one line, and eight on another, the bulk of the route being four-track and in some cases eight-track. The earlier portions of these installations consist of lower-quadrant, two-arm signals, and as when the system was first introduced an electro-pneumatic power plant already existed in Sydney yard, advantage was taken of this to provide electro-pneumatic signals. Outside the electro-pneumatic area, with the exception of one smaller installation of all-electric signals operated with 60-volt motors (also lower quadrant, 2-arm), upper-quadrant, 3-position signals, operated by alternating current mechanisms with alternating current track circuits have been introduced, and in view of the advantage of alternating current operation it is hoped to extend this system in all future suburban work. For the alternating current signaling, power is supplied at 2,200 volts from the power house belonging to the railway department, from which the whole of the tramway system and railway lighting system of the metropolis is supplied. The alternating current is supplied to the signal mechanisms and track circuits in the usual way through transformers at the various locations, and the signals are lighted electrically. It is unnecessary to enter into any exact details of these signals as American practice has been fairly closely followed. A point of interest, however, is in connection with the lights provided for the upper-quadrant signals. It has

spectacle remains at red, but when the upper arm rises to 90 deg. a stud engages in the slot of the down rod and lifts the lower spectacle so that it shows with a green light. This arrangement has been found quite satisfactory in practice and has the great advantage that it conforms to the practice in mechanical signaling areas throughout the state. There is very considerable scope for the use of automatic signaling on the New South Wales Railways, and but for the war much greater progress in this respect would have taken place than has been the case.

Ninety-two Passengers

Killed in Brooklyn, N. Y.

IN THE DERAILMENT of a southbound passenger train of the Brooklyn Rapid Transit Company, at a sharp curve at Malbone street, Brooklyn, N. Y., on the evening of Friday, November 1, about 7 o'clock, 92 passengers were killed, and about 100 injured. The derailment was due to excessive speed, the motorman evidently being not well acquainted with the road.

The train, from Park Row, Manhattan, and destined for Brighton Beach, consisted of five cars, two of them motor cars, and all but one or two of them wooden. It was crowded with passengers on their way home from work, and



Cars Wrecked at Malbone Street, Brooklyn, N. Y., on November 1

not been considered expedient here to introduce the yellow light for the third indication, and instead of doing so, the original British practice of two lights has been maintained. When electric lighting of the signals is provided, the lower light is controlled by the contact-makers on the mechanism barrel, and the indications are:

Two greens—"All Clear."

Green above red—"Caution."

Two reds—"Stop."

In the case of the country signals, where electric lighting is not available, a lower movable spectacle has been provided, which is operated by a slotted connection from the main mechanism. The lower spectacle shows two lights only—red and green. When the arm rises to 45 deg. the lower

was about ten minutes behind time because of delay due to a mistake in taking the wrong track at a junction, which mistake necessitated a short backward movement. At Malbone street, where the tracks run in a covered subway for about 200 ft. the southbound track was recently changed so as to divert the trains into a new subway, at the right of the older line, and it was at the entrance of this new subway, on a curve of 240 ft. radius, with a speed limit of six miles an hour, that the derailment occurred. The motorman, who was one of the few survivors in the leading car, admitted that the speed was about thirty miles an hour, and good judges estimated it at a much higher rate. A naval officer riding in the train, thought that it was seventy miles an hour. The first car was wrecked by striking the first column at the

beginning of the row of steel columns which constitutes the left side of the new subway, and, with one or two following cars, was crushed into a mass of wreckage as bad as ever was seen in a butting collision of trains running at a mile a minute.

The motorman, 29 years of age, was a crew despatcher, serving as motorman because of a strike of regular motormen. He had had some little experience as yard motorman but seems to have made few or no trips in charge of trains.

The strike, started by the men to compel recognition by the company of the Brotherhood of Locomotive Engineers, had been compromised by a conference which was in session at the time of the derailment.

The mistake at the junction was due to the absence of classification lights on the train so that the signalman did not know its destination; and the motorman accepted the wrong signal because of his inexperience on that part of the line.

Women in the Offices of the Canadian Railways

Equal Men in Accuracy and Performance on Simple Jobs,
But Are Not So Good for Complex Work

By J. L. Payne

Comptroller of Statistics, Ottawa, Canada

WHEN Canada began sending troops in large numbers to France the railways were among the first and chief sufferers from the shortage of labor which followed. In view of the general character of railway employees, as to physical fitness and those qualities which are broadly comprehended in the word "manhood," this was not surprising. Wherever you find him there is something in the nature of a railway man which suggests a ready responsiveness to such a call as the war created. He is courageous, self-contained and sympathetic. Beneath the veneer of a bluff and often blunt exterior he carries a warm heart. I know railway men from long contact with them at their work, and this sums up my diagnosis of them. Be that as it may, they threw themselves by thousands into the great struggle, and hundreds of them now sleep "where poppies blow in Flanders."

The Canadian Pacific and Grand Trunk together lost 15,000, and this fact at once presented an acute problem to those charged with the duty of keeping up the working staff. The adjective is used advisedly; for while in 1915 a marked decline in traffic took place, in 1916 and 1917 business swelled to an unparalleled volume. This accentuated the losses from enlistments, and administrative officers were at their wits end to keep the wheels moving. In one staff of 700 there were in the first six months following the outbreak of war more than 900 changes. It is not my purpose to deal in this short sketch with that aspect of what happened, but to limit my observations to the measures which were taken to recruit the general office staff. In short, I shall write almost wholly of what was done to meet the demand for clerical help.

Obviously young men were not to be had in considerable numbers. Only those who were ineligible for military service were available, and the young fellow who could not take some place in the campaign was often unsuitable for the strenuous work of a big railway office—for it is both hard and trying. In this situation it became necessary to fall back on women. Now, contrary to my suspicions, it was not a new thing to utilize female clerks. By degrees young women had been taken into certain branches of the head offices, until in 1914 they made up 40 per cent of the staff in the passenger and freight auditing divisions. This was at least twice the proportion which I had assumed; but it was no new thing to discover I was wrong. Such experiences are slowly developing a chastened spirit and a shrinking from positiveness in relation to many things. Wishing to learn on the spot what had been the general results of this revolution in the larger railway

offices, I ran down to Montreal the other day and got into personal touch with a number of the principal departmental heads. I was anxious to find out a great many things growing out of this new situation, and it was my good fortune to find everybody communicative on the subject. My inquiries were distributed over a number of heads, and in the categorical order in which they were made I shall proceed without further introductory remarks to present the answers.

The Canadian Pacific and Grand Trunk employ upwards of 1,500 female clerks. Fifty per cent of these have been brought in as the result of war conditions, and to that extent they may be said to have taken the places of men who were enlisted from the general offices. These recruits did not, as has been said, enter a new field. There were other girls there who had been initiated and had become accustomed to the work and to the conditions. This was clearly fortunate for both the railways and the new clerks. In groping for an answer to the comprehensive question as to what measure of success had attended this employment of female clerks on a large scale, I found myself compelled to approach final conclusions by a series of stages. The issue turned sharply on a comparison with men, and in pursuing that parallel a number of striking facts were disclosed. I wanted to know, for example, in what respects girls had been found either superior or inferior to male clerks, whether or not they had more readily adapted themselves to certain types of work, to what extent they had revealed definite defects and so on. Along those lines, therefore, the inquisition proceeded.

Accuracy and Responsibility

The chiefs told me that in respect of accuracy they had found female clerks on the same footing as men. This was in compilation work. Neither sex had showed a clear superiority; but the girls got through their assignments quicker and were contented in their plodding. So that, while not a whit more liable to make mistakes, they accomplished a slightly higher volume of work as a group. This gave them the edge in the rivalry; but at that point a strange difference was asserted. When it came to assembling a mass of tabulation sheets and striking what are termed "balances," the male clerks showed an undoubted superiority. The girls shrank from any complexity, or what might broadly be defined as responsibility.

This preference for simplicity of task was best described by the inspector of a large bank to whom I incidentally appealed for collateral information as to his experience in the exigencies brought about by the war. "We have not," he

said, "a young man in our head office who would hesitate before taking any promotion offered to him. He would without doubt answer in the affirmative if asked whether or not he felt able to hold down the general manager's job." And that is true of young men in all stations. Many of them might lack the ambition and self-confidence which would stimulate positive effort toward high places; but very few of them would shirk the responsibility involved. "It is different with girls," said the inspector; "they prefer to work along the lines of a definite pattern which is congenial by familiarity rather than to venture upon tasks which are more or less intricate or executive in character." This it might be observed, probably proceeds as much from a dread of failure as an innate sense of limitations.

Right here would seem to be the place for the recognition of what, for the want of a better definition, must be classified as a defect in the employment of female clerks. The idea in a broad way is touched upon in N. H. Greenberg's letter to the *Railway Age* of September 6. In all offices experience is very properly appraised at high value. It represents the just basis of salary increases, and carries with it the expectation of promotion to positions having to do with the direction of a subordinate staff. It is not so much that young women are wanting in the capacity to direct others as that they have no aspirations in that direction, and, with but few exceptions, are temperamentally unsuitable. In the rarest instances, moreover, has it been found practicable to place women in charge of men. The latter resent such control. Then there is the uncertainty of their tenure. Just when they have attained to the highest measure of usefulness they are apt to get married.

When a man takes a wife his anchorage is assured; but when a girl enters into matrimony she is invariably lost with all the training she has acquired. The brighter they are the greater is this danger, as I know from a bitter experience. I have had 10 office assistants of the gentler sex, and seven of them were lost to me through marriage. I am in mortal dread that the eighth is moving stealthily in the same direction. This is a factor in the whole problem of female labor which not only cannot be ignored, but which is a distinct and irreparable weak spot from the employer's point of view. The Canadian Pacific and Grand Trunk lose 25 per cent of their female clerks every three years because of marriages; and strange to say, not more than three per cent of these lost clerks marry other clerks in the railway service.

Before the war female clerks started in the railway offices at \$30 per month and went up to \$90. Now the minimum is \$55 and the maximum \$105. Young men were paid on a more liberal scale. The McDoo award, which was adopted in Canada, placed the sexes on an equal footing. Where they do the same work they receive the same remuneration. This has had the effect of making it easier to secure competent clerical help. I inquired as to what had developed along this line, and was told that, whereas girls had been readily obtainable in the early months of the war, there was now some difficulty. The demand from other industries had created a competitive situation; so that, on the whole, the railways were not able to exercise the same selective privileges as they had done four years ago. This has made for the employment of mediocre skills in some measure.

Temperamental and Sex Eccentricities

Allusion has been made to the difficulty in having female clerks move up to high posts, and in that connection it was pointed out that men do not like to be under the direction of women. That is not surprising when the history of the race is taken into account; but it is amazing that another obstacle to the advancement of women arises out of the resentment of their own sex. Girls would rather receive orders from men. They fret under the control of another woman. No matter how this fact is viewed, there is no escape from the conclu-

sion that at bottom the real cause lies in the other fact, existent since creation, that every woman is every other woman's rival. Hinged to that unwritten law, which men are never able to understand nor to recognize, are other and very subtle difficulties which are inseparable from the employee into contact with Miss B. I don't like her, and never ment of women in groups. They take strong likes and dislikes, which rest on reasons no man can ever find out. "I cannot take up that work," says one, "because it would bring should like her." The patient chief, who has not after many years of study got one whit nearer the psychological foundation of the matter, suggests: "You do not know her. She only came in a week ago." No use, however. "Of course, I do not know her," is the reply, "but nevertheless I dislike her and would rather leave than work either with her or next to her." This may seem like introducing trivialities. I assure you the chiefs of divisions do not hold to that view. These temperamental and sex eccentricities are part of the very warp and woof of the whole fabric, and are only small to those who are inexperienced.

"Have you succeeded in meeting the dearth of male clerks by the substitution of female clerks?" was my final question to the executive heads of the Canadian Pacific and Grand Trunk. While the reply was in the affirmative, there were large and somewhat important qualifications. Some of these have been presented. One chief of a large branch was quite convinced that, while the work was being done as accurately and effectively as in the years of peace, it was costing more. He was prepared to say that, allowing for loss of time from illness and other interferences, it took four young women to do the volume of work formerly done by three young men. While this had not occasioned the same relative increase in cost, it had nevertheless added to the expenses in some degree. From what others had told me, I am disposed to think this additional cost arose in large degree from the difficulty, to which I have alluded, of getting girls to change readily from a class of work with which they had become familiar to another. It had not cost more for minor clerical services.

Women Workers Have Come to Stay

As to the permanency of existing conditions in railway general offices, I found a consensus of judgment on the point that girls had come to stay. It would be premature to speak dogmatically; but it would be surprising if railways should be immune from the obvious change which has come into nearly all the affairs of life. Women have not only invaded practically all fields of human activity, but they claim the right to remain. They usually have their way. Whether or not, in the final reckoning of real values, this will make for betterment and happiness, time alone will tell. I have no disposition to speculate; but I am not isolated in wishing that women had bent all their resourcefulness and exalted influence in other directions. Perhaps the forces of adjustment will operate side by side with this momentous movement, and all will come out right.

Space does not permit my taking up the place which has been given to women in the mechanical branches of the railways. The facts, however, have been presented by others in fairly full measure. Both the Canadian Pacific and Grand Trunk now employ hundreds of women in the workshops, where only men were found anterior to the war. On the whole, the experiment has been successful. Recruits from all classes in the community have entered the shops in large numbers. They like the novelty and freedom given by the uniform they wear. The men accord them chivalrous treatment, and they have displayed an adaptability which is little short of marvellous. They do a great variety of skilled work, and do it singularly well. This is strikingly true in the paint and upholstering shops. They also operate lathes and other machines with skill and allround efficiency. In some varieties of piecework they have attained a speed unequalled

by men. They make good earnings, and it looks as though another preemption has been lost to the male sex.

These general conclusions accord with the recently published report of the United States Employment Service at

Washington. I have no disposition to enlarge on this aspect of the situation as created by the war, but the question is irresistible: What would have happened to the railways if women had not come in this way to their rescue?

French Chef de Gare System and Train Operation

The Need of Centralized Control of Freight Train Movements, Freight Car Supply and Train-loading

FREDERIC A. DELANO, Major of Engineers, U. S. A., formerly president of the Wabash Railroad and later a member of the Federal Reserve Board, at Washington, and who is now in France, has made to Brigadier General W. W. Atterbury, chief of railroad operation under General Pershing, a special report on French railway operating methods from which the following article is taken. As the reader is, no doubt, aware, from letters which have been received from France during the past year, American trainmen in France do not in all cases have their railroad all to themselves; they have to run over French railroads on which French employees are in authority and many French practices prevail.

The report follows:

One thing that surprises every American railroad man in the French method of railroad operation is the immense authority given to the Chef de Gare. He is a good deal more than our "station agent," even though the position of station agent or local agent in some of our large stations in America is not infrequently very important. Under French methods of operation, the Chef de Gare not only is in complete charge of all operations within the limits of his station, including distribution of cars and movement of trains, but a through train having arrived at the station, may not pass out of it without his authority.

That such a system should have developed in France, and until the time of this war proved reasonably successful, indicates either that it has some good features about it, or that the conditions surrounding the operations of French railroads are so different from those we are familiar with in America as to justify it.

Manifestly, one of the good points of the system lies in the fact that raising the importance of the local agent attracts to the service a higher class of men. Hence, small wonder that the competition for places in this branch of service is keen, and that there are numerous applicants for vacancies, which are filled by periodic examinations of candidates. Thus, if a railway system has fifty or one hundred places to fill it is not unusual for five, or even ten times that number of young men, limited to the ages eighteen to twenty-five, to present themselves as candidates.

The applicants are all given a simple written and oral examination in reading, writing, arithmetic and geography, and those who are accepted are taken on probation for a year at a very low salary. At the end of the year they are given assignments as assistant station agents, these being graded into three or more groups, according to the size of the station to which they are to be assigned and the difficulties of the positions.

The French, in spite of paying very small initial salaries, are apparently able to attract a good class of men for this service, and judged (as they should be) by French standards, the position of Chef de Gare at the larger stations is decidedly important and well paid.

The objection to the system which has developed in "wartime," and especially since the problem of supplying the

English and American armies has thrown a large transportation burden upon the railroads, is that it places a serious limitation on the transportation capacity of the railroads. It is no exaggeration to say that there are a good many single track railways in the United States which do a much larger volume of business, particularly in tonnage moved, than some of the double tracked lines of France. This has been accomplished in the United States in three ways:

- (1) By reason of much greater tonnage moved per train.
- (2) The closer intervals at which we can run trains by reason of the block system.
- (3) Because the movement of trains is not left in the hands of the station agent, but is solely in the hands of train dispatchers and trainmasters at centralized points, who, acting under a general superintendent of transportation, move trains much as the commanding general of an army moves his troops.

Another way in which the French system has broken down, under the pressure which has been brought upon it, is in the supply of empty cars for loading. Doubtless under the conditions of business, much of it very short haul and well balanced, which existed on French railways prior to the war, the distribution of cars to local industries could be safely left to the Chef de Gare. The Chef de Gare would ordinarily receive a sufficient number of loaded cars to supply current wants when made empty; and while there were exceptions to this rule, the exceptions were probably not very common. In the same way, the import and export tonnage at French ports was so nearly balanced that the loaded movement of cars to and from seaports was nearly, if not quite, equal, so that there was no great necessity for a centralized supervision of car movement.

But the war has changed all this. On the one hand, the commercial business of France has been compelled to suffer and has been starved to a minimum, while fully two-thirds or even three-fourths of the freight business of the railroads is either directly connected with the transportation of food, ammunition and the other requirements of the army, or indirectly connected with army needs in supplying raw material to the factories making army supplies. In addition to this, England and the United States have been pouring into the seaports of France an immense tonnage of freight which has had to move, in the case of the United States, from 500 to 700 miles across France; and this movement, while it was all long haul business and would lend itself to economic and low cost transportation, has, because it moves only in one direction, put the burden on the railways of a heavy movement of empty cars. This is what we call a badly balanced business!

In trying to keep the seaports supplied with cars the managers of the railways soon found that the trains of empties which they were sending back from the battle front to the seaports were being used to supply the various stations with their local or commercial requirements; and this at once developed another fatal weakness of the system; to wit, the lack of centralized supervision over the car supply.

The remedy for this situation may be viewed from two standpoints:

First, what should be done while the war lasts?

Second, whether there is not room for a decided improvement even after the war.

It would seem to be a pity to lower the standard or morale of the Chef de Gare. Every railway officer, whether in America or in France, must appreciate the importance of having the railway service well represented in its relations with the public, and if this public relation can be improved by aggrandizing to some extent the position of the local agent, as appears to be done under the French system, it is all to the good. If, on the other hand, the operating capacity of the road is diminished, or the full use and distribution of railroad cars is not secured, that is a serious matter which should be met in some adequate way.

Under the American system of centralized supervision of train despatching, and with the more frequent block signal interval, it is not only possible to move trains safely and at closer intervals, but a station agent is held responsible for unnecessarily delaying a train. For example, there would be no excuse under our system for holding a through freight train at a station, however important; and yet that occurs in France repeatedly, and by reason of the lack of centralized supervision a station agent at any point does not know that a train is coming until it arrives. Even then he may obtain a very tardy or inadequate notion of its importance.

It may be that in France the volume of passenger business being relatively greater, on account of the density of population, or the volume of freight being relatively less on account of the much shorter hauls, has caused the serious delays to freight trains and freight cars to be readily tolerated. Certain it is that long-distance freight trains scheduled to make 18 to 20 miles an hour, common in the United States for all high-class freight, are comparatively unknown in France, while the movement of the heavy bulk commodities, such as coal, iron ore, and iron products, in heavy trains, at very low rates, is entirely unknown.

Under the Chef de Gare system there is, as already suggested, no supervision of the use of cars; for instance, there is nothing to prevent a station agent at "A" from using a car for unimportant short haul business, or even for brouette (intra-yard) service, when there may be a great shortage of cars for more important business a few miles away. In America the decision as to how cars shall be distributed is left with officers sufficiently high in rank and well informed as to general conditions to enable them to weigh the relative importance of the demands and determine upon a *desirable*, and as near as may be *equitable*, distribution. In a country as big as the United States it often occurs, and must occur occasionally in a country like France, that there are times in the year when certain commodities must be moved in preference to all others; thus when the harvest season is on, crops which are being harvested must often be moved promptly, if at all. At other times coal must have preference. Some business can frequently afford to wait, whereas other business cannot.

The breakdown of the transportation facilities in France today cannot be attributed in any sense to lack of railway trackage. That seems to be ample, and in many cases more than ample. It is true that yard facilities, and especially passing track facilities, are very inadequate for handling such trains as we in America would deem necessary and economical, but the break down must be attributed to the following:

First, to the shortage of personnel in the locomotive and train service.

Second, to the shortage of locomotives and cars, chiefly the former, the apparent shortage of cars being due largely to the fact that they are not moved promptly.

Third, to the Chef de Gare system by diminishing the

capacity of the road and slowing down the movement of trains and of cars.

In conclusion, the solution seems to lie, as already indicated—

First, by putting in a centralized despatcher system, telephonic or telegraphic, through which a General Superintendent of Transportation will have supervision over the train movements, through the Chef de Gare if you like, yet in complete command and control.

Second, by a system of car records and car distribution through a centralized office.

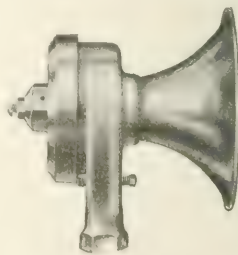
Third, by introducing the American block system on the more important lines so that trains may be safely operated at closer intervals.

Fourth, by increasing, carefully and intelligently, the train load so that more tons may be successfully moved in each train. In other words, the movement of this greater tonnage will be accomplished without increased personnel (a) by reducing transit delays on the road, and (b) by running trains in larger units. There seems to be very considerable room for improvement in both directions.

The Vibrophone

IT IS VERY OFTEN DESIRABLE to use some distinctive whistle or signal as a warning for traffic or to facilitate some phase of railroad operation, and various devices for this purpose have been developed and placed on the market. A new audible warning signal of this character which is of interest to operating men has been placed on the market under the name of the Vibrophone by the Newman Manufacturing Company, Pittsburgh, Pa.

The Vibrophone is an air vibrating whistle for use in connection with existing air lines. It makes a loud penetrating and distinctive noise that can be readily distinguished from any locomotive, factory or other steam or air whistle, even at a distance. It is simple in construction as it has no complicated mechanism or small parts to repair, be lost or kept in order and can be easily attached to air lines with a piece of $\frac{3}{4}$ -in. pipe. It consists of three parts, a brass cap, the megaphone and a phosphor-bronze diaphragm. The Vibrophone is designed to operate with a pressure of from 25 lb. to 80 lb. of air. A



The Vibrophone

good noise is produced with the minimum pressure but the greatest penetrating and carrying power is obtained when the pressure ranges from 60 lb to 80 lb. When it is necessary to use this instrument on a pressure of over 90 lb. and it is not desired to cut it down by the use of a safety valve, the Vibrophone can be furnished specially equipped for the higher pressure. It is claimed that the volume of air required is less than for the common types of whistles ordinarily in use.

One of the uses for this whistle is at hump and scale tracks in classification yards. It can also be used to advantage on work trains, wrecking trains, inspection cars and snow plows, flangers and other equipment of a similar nature which may be run ahead of the engine. Other uses are on drawbridges and similar structures as a warning to water craft or approaching trains, as a fire alarm at shops, roundhouses, docks and other structures, or at signal towers for signaling passing trains, stopping traffic or calling for help in emergency.

Orders Issued by the Regional Directors

These Orders and Instructions Indicate Great Activity in All Departments of Operation

SEMI-MONTHLY PAY ROLLS.—In Order 107 and Circular 198 of the Southwestern and Central Western regional directors respectively, it is announced that the director general desires all railroad payrolls which are now being paid on a monthly basis to be paid semi-monthly, effective not later than January 1. See also *Railway Age*, Nov. 1, page 787.

Movement of Oil.—Circular 196 of Central Western regional director—same as Supplement 3 to Circular 72 of Northwestern regional director. See page 700, *Railway Age* of October 18.

Use of Stock Cars.—In a telegram dated October 30, the Northwestern regional director canceled his instructions of October 5, restricting the loading of stock cars to live stock, live poultry and perishable freight. This does not affect any local restriction required by an individual road.

Emergency Transportation to Express Employees.—The Northwestern regional director announces in Supplement 11 to Circular 20 that the roads in his jurisdiction are now authorized to issue emergency transportation to employees of the American Railway Express Company on account of sickness or death, including passes for corpses. This action was taken on account of the influenza epidemic at the request of vice-presidents of the express company.

Movement of Business Cars.—In a circular dated October 25, the Central Western regional director announces that federal managers may operate their business cars over other lines when it is necessary to do so for business purposes.

Ordering Rail for 1919.—In Circular 124 the Southwestern regional director announces that the distribution of rail for the balance of 1918 and the calendar year 1919 will be handled from Washington. Out of 2,000,000 tons of new rail ordered by the railroads for delivery in 1918 it is expected that not over 1,400,000 tons will be delivered, making a shortage of about 600,000 tons in 1918, and at the present time it is not known in Washington how much rail can be rolled during 1919 as the entire proposition is dependent on how much steel will be required for war purposes. Under instructions from Washington the rail mills will not accept orders for new rail from individual railways and it is up to the individual lines to indicate on their 1919 budgets the new rail which is actually required for safety purposes only. After the budgets for all the railroads have been received in Washington the allotment of rail to the different railroads will be handled by the Railroad Administration officers. Railways will have to accept such amounts of rail as are assigned to them and make the best disposition thereof that is possible.

Air Compressors for Locomotives.—The Southwestern regional director, in Circular 125, suggests the advisability of changing to 8½-in. cross compound pumps on heavy power when locomotives receive class 1, 2 or 3 repairs, if the cross compound pumps can be obtained. An 8½-in. cross compound air compressor will produce approximately three times as much air as will a 9½-in. simple air compressor, approximately twice as much air as an 11-in. simple air compressor, while the number of pounds of steam used per 100 cu. ft. of air is approximately one-third as much in a cross compound pump as in the simple types. The use of the compound compressor will therefore be in the interest of the maximum supply of compressed air as well as in the interest of fuel economy.

Export Licenses.—Hawaii.—In Circular 123, the South-

western regional director announces that the impression that export licenses are necessary for shipments to Hawaii is incorrect, as Hawaii is a part of the United States of America.

Storage Coal.—The Southwestern regional director, in Order 103, and the Central Western regional director, in a circular dated October 24, direct the roads under their jurisdictions to formulate a program for taking up their storage piles of coal which will insure absolutely the consumption of storage coal by March 1, 1919.

Heating Troop Trains.—The Southwestern regional director, in Order 104, and the Central Western regional director, in a circular dated October 25, direct the roads under their jurisdiction to ascertain that steam heat equipment on troop trains is in proper condition as to pipes, valves, etc., and that steam hose is applied to each car. When heat is required and where hose is lacking, it should be applied to the equipment by the road upon which the trains originate, to eliminate delays in the transportation.

Clearance Warning.—In Order 101, the Southwestern regional director calls attention to a suggestion by a safety committee on one of the Southwestern roads that a board be installed at switch stands of tracks leading into industries where there is not sufficient clearance, reading "These buildings will not clear a man on top or side of cars." The regional director suggests that unless something better is in use, this board be installed on all roads in his region.

Protection of Employees Against Loss of Pensions and Similar Benefits.—In Order 102 the Southwestern regional director and in Order 3000-436 the Eastern regional director state that there has been a number of cases of employees on one road under federal control on which a pension or other similar benefit system is in effect, having been transferred to service, under the director general, not within the scope of the pension or benefit system which covered his previous employment. Railroads will request the corporations, where they have the power and right to do so, to take such action as may be required to preserve the transferred employee's status with respect to the pension or benefit system after federal control, to the extent that it would have been preserved if there had been no federal control and the employee had remained at work on the road and the other conditions of the preservation of the status had been observed. Until further orders during federal control, any such transferred employee will retain the benefits of the same pension or similar system as attached to his previous employment provided he complies with such conditions if any with respect to payments, etc., as may be obligatory upon him under such a system.

Pay of Miscellaneous Supervisory Officers.—In a circular dated October 22, the Central Western regional director asks for recommendations regarding increases in rates of pay for such officers, sub-officers and similar employees as were not covered in General Order 27 and its various supplements.

Legal Representatives of Railroads at Washington.—In circular No. 122 the Southwestern regional director and in Order 3000-432 the Eastern regional director announce that R. Walton Moore, Colorado building, Washington, D. C., has been designated statutory agent and will perform the service formerly discharged by the legal representatives of individual lines at Washington who have acted as statutory agents for the service of matters of the Interstate Commerce Commission, and as intermediaries in the settlement of accounts to the various departments of the government. Accounting and other departmental matters will hereafter be handled by him

direct with the proper department of the government or, in the event of dispute, may be taken up with the appropriate division of the Railroad Administration. If any legal representatives or statutory agents at Washington of individual roads still remain on the payroll they should be discontinued effective November 1, unless their retention has been definitely authorized. This does not include those who may be retained and paid by the corporation. To avoid confusion it is suggested that any of the corporations which do not desire to maintain for their separate accounts statutory agents at Washington should issue formal revocations of the designations heretofore made.

Industry Tracks.—The Southwestern regional director, in Supplement 1 to Circular 102, states that in special cases when an industry desires a track constructed for temporary use which is not necessary from the standpoint of the railroad, it may be arranged to have the industry bear the entire expense of the construction of the track, including the cost of the turnout. When such a temporary track is removed, the industry will be credited with the value of the salvaged material less the cost incurred in removing it. Cases of proposed industry tracks of this character are to be reported to the regional director for approval.

Export Permits.—The North Pacific Export Committee, Northwestern region, has issued circular No. 1-A, canceling circular No. 1, outlining rules to govern the movements of export freight through Portland, Oregon, Astoria and Puget Sound ports. The revised rules are as follows:

1. Until further notice no shipment for export to foreign countries except Canada through the ports named will be received for transportation until the agent at point of shipment has been furnished with a railroad shipping permit (except as provided in paragraph 5) issued by this committee.

2. Railroad shipping permits will be issued only on satisfactory showing of compliance with requirements of U. S. Government in connection with export shipments, including export licenses when required, and definite space engagement with a steamship company which has met all requirements of the railroads in connection with the issue of through bills of lading. Such permits will be numbered with prefix J. E. A. and issued in the name of this committee. Permits covering shipments to be exported via Puget Sound ports will be issued by F. A. Peil, chairman, Puget Sound sub-committee, headquarters Seattle, Wash., and permits covering shipments to be exported via Portland or Astoria will be issued by the undersigned.

3. Railroad shipping receipt and way-bill must show—
(a) Number of Government (War Trade Board) license when such license is required.

(b) Railroad shipping permit number.

(c) Name of railroad which is to make delivery to ship.

4. Shipments exceeding quantity or weight provided in railroad shipping permit must not be received and when part lots are forwarded full description must be endorsed on permit with date and place of forwarding.

5. If a shipment is to be made from more than one point or from a point other than that named in the railroad shipping permit, the holder of the permit may surrender same to manager, Trans-Pacific export bill of lading bureau, 143 Liberty street, New York, N. Y., or to G. T. Stolp, joint agent North Pacific coast terminal lines, Railway Exchange building, Chicago, Ill., who will authorize initial railroads to accept a specified tonnage after endorsing upon the original railroad shipping permit the tonnage to be forwarded from each point. Aggregate tonnage must in no case exceed specifications in the permit.

6. Railroad shipping permits are issued with a time limit; shipments must not be accepted by initial railroad carrier after expiration of permit.

7. Shipments heretofore authorized by permits of J. R. Hamilton, chief export agent, at P. O. O'Neill, terminal manager, may be accepted prior to the date of expiration shown in such permits.

8. Shipments covered by U. S. War Department transportation orders are not subject to these requirements.

Denomination of Bills Presented in Payment for Tickets.—Circular of Central Western regional director, dated October 24—same as Order 98, Southwestern regional director, see page 779, *Railway Age* of November 1.

Protection of Perishable Freight.—Circular dated October 28, of Central Western regional director, same as Orders 50 and 100 respectively of the Northwestern and Southwestern regional directors. See page 780, *Railway Age* of November 1.

Execution of Contracts During Federal Control.—In Supplement 1 to circular 109, the Southwestern regional director announces that all operating contracts or contracts pertaining to the handling of road and equipment or for rendering transportation service to or by the Railroad Administration,

which are made in the name of the director general, including written agreements respecting the transfer of passengers, baggage, mail or l. c. l. freight or respecting electric or telephone service, gas supply, water supply and the handling of fuel still contain a proviso substantially as follows:

Anything in this agreement to the contrary notwithstanding: the term hereof shall be concluded, as to the undersigned director general of railroads, by termination of federal control of the railroad whereof a portion is brought hereunder; provided: that the election of any outside party operating said railroad to accept control of the same during the term hereof of said federal control, this shall for the remainder of the term hereof be deemed a new and independent agreement between said outside party, as the (see Note "a") herein, and the (see Note "b"). Also, the covenants or undertakings hereof shall inure to the benefit of or bind the party, as the interests thereof may appear, from whom said railroad was commandeered provided said party so elect.

Note "a": Insert the particular designation used in referring to the director general of railroads in the agreement.

Note "b": Insert the particular designation used in referring to the other party in the agreement.

Working Hours of Locomotive and Car Repair Forces.—In order 106 and a circular dated October 26, the Southwestern and Central Western regional directors respectively announce a working schedule for employees in locomotive and car departments during the coming winter:

The hours for men in the locomotive department should be not less than 58 per week divided as follows: Five days of 10 hr. each, 8 hr. on Saturday. If Sunday work is found necessary, 8 hr. every second Sunday should be worked.

Such overtime as may be necessary to balance shop work for the complete repairs to a locomotive that is being turned out will, of course, be worked as usual in addition to the above hours.

Beginning November 15, the hours for car department employees should not be less than 53 per week, divided as follows: Five days of 9 hr., 8 hr. on Saturday. If Sunday work is found necessary, 8 hr. every second Sunday should be worked.

On roads which can maintain the percentage of bad order cars below four, 8 hr. per day may be worked.

A reduction in the hours of the car department forces is made because work must be done chiefly in daylight hours.

Plan of Organization of Purchasing and Stores Department.—Order 108 of the Southwestern regional director and Circular 195 of Central Western regional director outline a plan for the organization for the purchasing and stores departments as agreed to by the director of the Division of Finance and Purchases and the director of the Division of Operation of the Railroad Administration:

1. The purchasing department shall be in charge of a general purchasing agent or purchasing agent reporting direct to the federal manager, or general manager where there is no federal manager in charge.

2. The purchasing agent, in co-operation with the regional purchasing committee, shall buy all material and supplies, including fuel, dining car and restaurant supplies, and sell all scrap and obsolete material, including equipment. He shall also have direct charge of the handling of scrap and the reclaiming of usable material.

3. He shall be responsible not only for the purchases and sales, but for the quantity of material on hand, the custody, care and distribution thereof, and charges therefor, and necessarily shall have charge of all material not in actual use and of the storerooms and other places where material is stored.

4. He shall be aided by and shall appoint a general storekeeper and other necessary assistants such as fuel agents, stationers, tie and timber agents, and commissary agents, who shall report to the purchasing agent direct.

5. An exception as to paragraphs 3 and 4 may be made, with approval of the regional director, upon railroads where the stores department is separately organized, and now reporting direct to the federal manager.

6. All storekeepers and all others, more than half of whose time is devoted to the handling or accounting for material, shall be appointed by and be under the charge of the general storekeeper and on his payroll.

7. All appointments of purchasing agents, general storekeepers, fuel agents, tie and timber agents, shall be subject to the approval of the regional directors.

8. The regional purchasing committee with the approval of the regional director shall appoint a supervisor of stores to have general supervision over the stores department and reporting direct to the regional purchasing committee.

Fuel Conservation.—In Circular 128 the Southwestern regional director and in Order 3000-434 the Eastern regional director quote a letter from the manager of the fuel conservation section, calling attention to fuel savings which may be effected by stopping water waste. The percentage of water wasted by railroads is estimated as high as 15. C. R. Knowles reported to the American Water Works Association in 1916 that as a result of a water waste campaign the Illinois Central reduced its expense for city water alone from \$225,113 in 1914 to \$190,439 in 1915. The expense

for city water represented, he said, only about 40 per cent of the total cost of water, 60 per cent being for water pumped by company forces. Mr. Knowles estimates that American railroads consume daily approximately 1,950,000,000 gal. of water at a daily expense of over \$100,000.

The manager of the fuel conservation section is of the opinion that a considerable saving in coal and also in money could be effected by the railroads through a campaign among employees to reduce water waste. He lists some of the most common forms of waste on railroads and remedies which have been applied.

Annual passes for 1919.—The question has arisen on a number of railroads whether an employee requiring annual passes over the lines of other federal managers should be furnished an individual pass over his home line in addition to the pass covering the other lines, or whether one pass will cover all lines. In order 109, the Southwestern regional director announces that the office of C. R. Gray, director of the division of operation of the Railroad Administration at Washington, will issue one pass per employee which will cover both transportation on the home line and other roads.

Salary Increases.—In a circular, dated October 31 the Central Western regional director announces that the increases of 25 per cent recently granted to the roadmasters has also been authorized for supervisors of bridges and buildings; the same increase will be given to master carpenters who have heretofore received a monthly salary and have been classed as officials. The increase is retroactive to June 1.

Electric Car Lighting Specifications

THE UNITED STATES Railroad Administration has recently issued specifications governing the electric lighting for the United States standard equipment. These specifications were formulated by a committee of six electrical engineers working in connection with a subcommittee from the committee on standards for cars and locomotives of the Railroad Administration. The subcommittee consisted of W. H. Wilson of the Northern Pacific, John Purcell of the Atchison, Topeka & Santa Fe, and J. J. Tatum, general supervisor freight car repairs of the Railroad Administration. The committee of electrical engineers was made up of Ernest Lunn, chief electrician of the Pullman Company; J. R. Sloan, car lighting engineer of the Pennsylvania; L. S. Billau, assistant electrical engineer of the Baltimore & Ohio; A. E. Voigt, car lighting engineer, Santa Fe; E. W. Jansen, electrical engineer, Illinois Central, and E. Wanamaker, electrical engineer of the Rock Island. A large number of the M. C. B. Standards were followed. The specifications are given in full below.

SPECIFICATIONS FOR ELECTRIC LIGHTING OF U. S. STANDARD CAR EQUIPMENT.

General. Cars shall be lighted by means of a nominal 30-volt belt-driven axle generator system. The battery boxes and axle generator equipment shall be so installed as to permit safe operation of the cars in third rail electric zones.

Axle Generator (Capacity).—The axle generator shall be of a nominal 2 kw. capacity, with 45 amperes net output. It shall cut in at a train speed not to exceed 15 m. p. h. and shall deliver its full rated net output at train speed not to exceed 20 m. p. h., and shall be safe to operate both mechanically and electrically at an r. p. m. equivalent to a train speed of 75 m. p. h., with 33 in. diameter car wheels, and with the pulley sizes as specified.

Armature Pulley.—The armature pulley shall be of malleable iron and be 8 in. in diameter; all other details to conform to M. C. B. recommended practice, as shown on the top figure of sheet U-11 in volume 51 of the M. C. B. Proceedings.

Axle Pulley.—The axle pulley shall be, first choice malleable iron, second choice pressed steel, 20 in. in diameter with 10 in. face at base of flanges. Shall have flanges of the same angle of flare as those on the generator pulley, 2 in. in height. The hub shall have a uniform internal diameter of $7\frac{1}{2}$ in. and a length of 6½ in.

Axle Generator Bearing.—The bearings of the axle generator shall be of ball bearing type and of the size known commercially as Number 412.

Axle Generator Air Gap.—The generators shall have an air gap such as

to permit an oval shim .05 in. thick and $\frac{1}{4}$ in. wide being passed between the armature and the axle pulley.

Armature Shaft.—The armature shaft shall be of chrome nickel steel of an elastic limit 85,000 lb., tensile strength 100,000 lb., elongation in two inches, 17 per cent and reduction in area 35 per cent.

Axle Generator Regulation.—Means shall be provided for automatically preventing the generator from being overloaded and also for automatically controlling the proper charging of the batteries and preventing excessive overcharging. The ampere hour meter system of control shall be used, except where systems are used which prevent excessive overcharging by constant potential means.

Lamp Regulation.—Means shall be provided for maintaining voltage on the lamp circuits within limits of plus or minus one volt within the range of load to be handled at all speeds above the cutting in speed.

Axle Pulley Bushing.—A suitable corrugated pressed steel axle pulley bushing shall be provided having an external diameter throughout its length of $7\frac{1}{2}$ in. and with a face not less than 9½ in. The internal diameter shall conform to the dimensions of the axle as called for on the specifications covering this portion of the equipment.

Axle Generator Suspension and Belt Tension Device.—The axle generator shall be of the body hung type. The horizontal distance between the center of axle and the center of armature shaft, with generator in normal operating position, shall be as close to six feet as the physical limitations of the car will permit. The generator shall be provided with suitable lugs for the application of two $\frac{3}{4}$ in. safety chains. These chains shall be of such length that if the generator breaks loose from its fastening it will clear the top of the rail by at least 8 in. The belt tension device shall be designed so as to permit of the following:

(a) Means for locking the axle generator in position when so aligned.

(c) Means for providing an approximately constant belt pull in any operating position of the axle generator. The supporting bearings shall be provided with means of proper lubrication, preferably by the compression grease cup.

Method of Protection of Generator.—All connections to the axle generator equipment, with the exception of lamp voltage regulator, shall be connected in a normal manner to a dead resistance, with the field resistance adjusted so as to give 40 volts measured on the load side of the generator regulator and with the commutator hand hole covers off and with the generator driven at a r. p. m. equivalent to the minimum full load output speed. No part of the equipment except resistance units, bare copper solenoids, and commutator shall at any time before the expiration of five hours attain an observable rise in temperature in excess of 65 deg. C. and at no time shall the observable temperature of any part of the apparatus (with the above exceptions) exceed 90 deg. C. This is based on A. I. E. E. Class A insulation. If the insulation is not impregnated the above temperature values shall in both cases be decreased by 10 deg. C.

Batteries (Capacity).—The capacity of the batteries shall be 200 ampere hours.

Type.—The batteries shall be of the Plante type.

Crates.—The battery crates are to be made of oak, open type, lead lined and fastened together with brass screws or wooden dowels. Asphaltum and roofing paper, mica or sanded surface on both sides, shall be used between the lead linings and the wooden crates. The covers shall be of lead with filler openings as large as permissible. Ventilated lead filler plug shall be used. The posts on the battery elements shall be of the rectangular type. The bushings for the posts shall be of high grade soft rubber. The dimensions of the posts, bushings, filler openings and filler plugs shall be in accordance with the attached blue prints.

Separators.—Except with Manchester type of positive plate combination of hard rubber with wood veneer separators shall be used. With Manchester positive plates single thick wooden separators may be used.

Battery Bases.—The battery carrying boxes shall be of steel, wood lined throughout. Dimensions of boxes shall be in accordance with M. C. B. Standard practice as printed in Paragraph 10, Page 800, Volume 51 of the M. C. B. proceedings. The location of the boxes on the car shall be as indicated for a 30-volt system on sheet U-4 of volume 51 of the M. C. B. proceedings. The battery compartment doors shall be constructed so that they may be opened without interference with the third rail construction.

Wiring—Conduit—Fuses.—The conduit, wiring and fuses shall be in accordance with M. C. B. practice as given in text and drawings of volume 51 of the M. C. B. proceedings, except that—

(a) The armature lead from the generator to the car wiring shall be Number 4 AWG.

(b) The field connection from the regulator locker to the connections with the field lead on the axle generator shall be Number 8 AWG.

(c) All other wiring from the generator terminal box to the regulator cabinet and from the axle generator terminal box to the regulator cabinet shall be Number 4 AWG. The generator leads shall be encased in $1\frac{1}{4}$ in. woven canvas hose with rubber lining.

Train Line.—Two train lines shall be provided together with receptacles and one train line jumper and shall be in accordance with M. C. B. Sheet U and text on page 798 of volume 51 of the M. C. B. proceedings.

Lamp Bulbs.—The lamp bulbs shall be 32 volt, 50 watt, S-19 bulb, Number 100 base for center deck fixtures. They shall be 32 volt, 15 watt, S-17 bulb, Number 100 base for door and desk lights.

Lamp Fixtures.—The 60 ft. cars shall be equipped with seven 50 watt lamps on the center line of the ceiling. The 70 ft. cars with eight 50 watt lamps on the center line of the ceiling. A 15 watt lamp shall be located in a convenient position at the desk. A 15 watt lamp shall be installed over the center opening on the inside of each side door.

Junction Boxes, Fixtures and Reflectors.—Junction boxes shall be located at the lamp outlets on the center deck and shall form a part of the lighting fixtures. The reflector shall be of the porcelain white enameled shallow bowl steel type approximately 12 in. in diameter and designed to be secured and permanently attached to the junction box cover. This cover

... as provided with portable white enamel ... type ... located as to project the light outwardly through the side door opening.

Circuits.—The center lights shall be operated on two circuits, alternating lamps being connected to the same circuit. The desk light and door lights shall be connected to a third circuit with switches controlling the individual lamps.

Switches.—All circuit switches shall be of the push button type, 15 ampere capacity and to conform with the N. E. Code. The switches controlling the center desk lights shall be installed in the regulator cabinet and in such a manner that renewals may be made without removing the panel board. The switches controlling the desk and the door lights shall be located conveniently adjacent to these lights. In addition a 75 ampere capacity D. P. knife blade type of switch shall be provided on the switch board for controlling the train line circuit.

Locker for Electrical Equipment.—Steel ventilated locker of sufficient size to contain the generator regulating apparatus and switch board panel shall be conveniently located near the desk.

Accessibility of Regulator Parts.—Parts of generator and lamp regulators subject to renewal shall be mounted so they can be replaced without taking down the panels.

Any apparatus or equipment, its location and installation, not specified in the foregoing, but necessary for successful and safe operation, shall be in accordance with M. C. B. practice as given in volume 51 of the M. C. B. proceedings.

Railway Notes from China

PEKING.

A PERSISTENT RUMOR has it that a domestic loan of \$50,000,000 is to be floated by the Ministry of Communications for the purpose of purchasing new equipment for several of the important lines. This loan would probably proceed from the funds of large mining interests and other large shippers who find their output reduced because of the lack of locomotives and goods wagons. It is estimated that this amount would be sufficient to take care of the needs of the government railways for ten years to come. The need for this equipment is attested by the fact that locomotives on two important lines have an annual mileage performance 50 per cent higher than that of the United States in peace times, in spite of the Chinese policy to prolong the life of equipment by heavy repair in order to save costs of freights on new units. The Peking-Hankow has withdrawn a through passenger train from Peking to Hankow for lack of cars, and in spite of wasteful use of equipment by the military, goods wagon performance is two or three times as high as the old peace time record in the United States. Irrespective of the success of these negotiations the Peking-Mukden is reported to have ordered ten new Pacific types from an American builder and the Peking-Suiyuan and the Tientsin-Pukow are negotiating for as many more. If the loan goes through, these orders will probably be merged into the general scheme in order to assist in producing uniformity of design. There are possibilities that all of the rolling stock ordered under the proposed arrangement will be retained by the ministry as a central supply and will lead to the gradual pooling of all locomotives and cars on the contiguous portions of the government system. Under such conditions, the question of uniformity of design becomes all-important to the ministry and to the builders.

* * *

A hitch has occurred in the arrangements with the Fu Chung Corporation whose loan to the Ministry of Communications for the purchase of 55 cars and two locomotives to be used on the Taokow-Chinghua line has been reported hitherto. It appears that the corporation now insists that these cars shall be for the exclusive use of the Taokow-Chinghua line which serves the mines of the corporation. This is considered worth sufficient to the corporation that it will reduce the interest rate on the loan from 8 per cent to 4 per cent in exchange for the guarantee. But this, the Ministry of Communications is unable to ensure, for the cars must go over the Peking-Hankow line to the principal market, which will put the cars into the soldier infested region, with results to the wagons which are easily foreseen.

On the other hand, the Peking-Hankow is too short of cars to make good such losses by exchange of equipment. Hence a practical *impasse* has been reached.

* * *

The transfer of the Harbin-Changchun section of the Chinese Eastern line from Russia to Japan, which was announced a short time ago, brought forth an immediate official denial from the Japanese authorities. The tilt between newspapers and Japanese foreign office had scarcely warmed up before official reports from Russian sources and Reuter's confirmed the truth of the transfer. The Chinese Government immediately lodged a protest because the transfer had been made without permitting China to become a party to the proceedings. Curiously, the Japanese press immediately began to stress a report that United States interests had secured control of the Trans-Siberian lines,—reviewing the old report of Harriman's vision of a line around the world, and pointing out the continued presence of American officials and staff upon that line.

The through traffic arrangements which have existed for a short time between the Canadian Pacific and the China-Japan through-traffic system was made the subject of discussion at the recently concluded conference, with a view toward including other trans-Pacific lines and their trans-continental connections. A tentative plan was drawn up which requires only the agreement of the steamship lines to make it effective.

* * *

The Peking-Hankow line is engaged in a race against time to make its extensive bridge repairs before the flood season arrives. Heavy rains have already occurred, but this is considered good omen as indicating that the season's rainfall will be sufficiently distributed so as not to overtax seriously the very poor drainage basins. After the floods of last summer 256 openings were made in the line between Paotingfu and Yenching. Some of these were nearly half a mile wide, and at one place carried a span of a truss bridge nine miles down the river. Several other spans are still deeply imbedded in sand, and most of them which were unplaced were so badly wrenched as to make replacement difficult and in many cases impossible.

The line in Hupeh and Hunan which was seriously broken up by the military movements there is reported to be restored sufficiently to carry traffic through.

* * *

There is a report that work will be resumed on the extension of the Lung-Hai line eastward from Hsuechowfu. This is a Belgian line—so-called from the source of the capital. This extension was contemplated from the first, but Yuan Shih Kai expended \$20,000,000 of the funds to further his monarchical ambitions and work had to cease. It is a mystery as to where the funds are to be obtained now.

* * *

Because no protection can be had in Sezechuan, the Siems Carey survey parties have been called in. All have arrived at Peking except one, which is on the way. That ends all actual construction work on the railways of China except for a short branch from the Peking-Suiyuan to a coal mine whose output is needed for locomotive fuel. The work is being done entirely by railway forces attached to the maintenance of way department.

Employees of the American Railway Express, to the number of 125,000, including messengers, clerks, drivers, freight handlers and porters, have filed a complaint with the War Labor Board asking for higher wages, shorter hours and better working conditions. The Railroad Administration recently announced that questions affecting the wages of express employees would be referred to its Board of Wages and Working Conditions.

General News Department

The prohibition of smoking in Chicago suburban trains imposed on account of the influenza epidemic was removed on November 6.

The St. Louis & Hannibal announced on November 1 the resumption of regular passenger train service after a suspension of three weeks because of a strike.

Quicksilver, to the value of \$45,000, is reported to have been stolen from a car in the yard of the Erie Railroad at Jersey City, N. J., last May. This statement, published in New York papers, is said to have been given out by the consignee of the mercury who, discouraged at the delay in getting satisfaction, concluded to give the facts to the public. The police have thus far had no success in their search for the thieves.

Car Interchange Rule Modified

At the suggestion of the mechanical department of the Railroad Administration, the Master Car Builders' Association has modified its rule 3-I, which provided that after October 1, 1918, all wooden cars of less than 60,000 lb. capacity, having short draft timbers, would not be accepted in interchange. An investigation was made to determine how many cars such a rule would cut out of joint service and it was found that on the first of this month there were 58,188 such cars of which 40,514 were box cars. The rule was modified to change the effective date to October 1, 1920.

Double Track Operation of the Southern Pacific and the Western Pacific

As announced by the Railroad Administration during the summer, arrangements have been made for the operation of 182 miles of the parallel lines of the Southern Pacific and the Western Pacific in Nevada as double track, and the various physical changes required to make this plan feasible, are now practically complete. The new double track district extends from Weso, two miles east of Winnemucca, eastward to Alavon, four miles west of Wells. In this distance the two roads are for the most part close together and nowhere more than five miles apart. The lines cross at only one point, at Palisade, where the grades are separated. The two lines follow a location along the south channel of the Humboldt river with grades ascending from west to east, the ruling grade of the Western Pacific being 0.4 per cent against eastbound traffic and that of the Southern Pacific 1 per cent.

The advantages to accrue through this arrangement include a more expeditious movement of trains, avoidance of congested conditions and increased safety, and since the Western Pacific line will be used for the eastbound movement, a 21 ft. grade instead of a 53 ft. grade opposing Southern Pacific trains moving eastward. The saving in time to be accomplished is estimated at 2 hr. for each freight train and 30 min. for each passenger train. Physical changes required to make this plan possible include the construction of 11 cross-over connections and one water station, the total cost being approximately \$118,000. As far as conditions will permit one station in each town will be used by both roads. At Carlin arrangements are being made for the trains of both lines to pass through the Southern Pacific yards, and at Elko through the Western Pacific yards. The Southern Pacific station at Carlin and the Western Pacific station at Elko will be used by both lines. At Battle Mountain, where the lines are five miles apart, the highway between the two stations will be improved so that auto stages can be used to overcome the inconvenience of the one way movement of trains on each of the lines.

Illinois Railroads More Heavily Taxed than Other Property

In a statement submitted to the State Board of Equalization of Illinois on behalf of the Chicago & North Western on October 22. T. A. Polleys, tax commissioner of the road, asserts that Illinois railroad property is taxed on the basis of a higher percentage of its true value than is other property in the state. According to well recognized methods, he arrived at an estimated true value of real estate in Illinois of \$10,929,069,000. The total full-value assessment of all real estate of the state of Illinois, as equalized by the board in 1917, was \$5,374,247,661, which is equal to 49.17 per cent of the current true value.

According to seven distinct and recognized methods of estimating the aggregate current market value of the Illinois railroad property subject to ad valorem taxation, Mr. Polleys found a maximum valuation of \$1,101,277,000 and a minimum of \$751,348,000. The average of the seven separate estimates of the current market value is \$937,829,000. The total full value assessment made by the Board of Equalization against all ad valorem railroad mileage of the state in 1917 was \$606,723,882, or 64.69 per cent of the composite estimated true value just stated. This percentage is 15.52 per cent greater than that represented by the ratio of the assessment of other real estate in the state to its true value.

At the conclusion of his statement, Mr. Polleys says: "There seems to be no reasonable doubt that railroad property as a whole in Illinois is assessed at a very much higher ratio of its true value than is true as to taxable real estate. Certainly nothing should be added to such railroad assessments at this time; very appropriately they might be reduced. The taxes to be paid by Illinois railroads under the assessment now being made by this board will be borne by the federal government and not by the private owners of the railroads. The government has transmitted to each member of the board a written communication urging that, in this year's assessment no increase be made and that reductions be granted where the same are justified and consistent under the circumstances. The government is asking at your hands no mere act of favor; it is asking for justice, and justice only. It is asking that the railroads of the state, now under government control, be valued for taxation upon substantially the same basis of valuation which prevails as to real estate. It is asking for that equality in taxation which is guaranteed by the constitution of your state and which the decisions of the highest tribunal of your state have repeatedly declared should not and cannot be denied."

Fresh American Beef for the Men in the Trenches

On September 20, an American captain ate a meal on the battle front in France and was so impressed with the excellent quality of the beef which he ate that he made inquiry as to where it came from. He discovered that it was American beef and he got the shipping tag which accompanied it. He sent this to his wife in Chicago and investigation upon her part disclosed the following facts:

The beef which he ate had been killed in Kansas City, Mo., and on July 10 was put into a chilling plant there. It was shipped on July 16, and was placed in a freezer plant in Detroit, Mich., on July 20. It was shipped from Detroit, frozen, on August 13, and was served in an officers' mess in France on September 20.

Immense quantities of beef are handled in this manner. When one considers that the daily beef ration overseas for one million men amounts to 875,000 lb., and that the entire supply of beef for American troops and a good share of the supply for the allied troops comes from the United States, the stupendous task of the War Department and the railroads is apparent.

Large quantities of this meat are bought by the War Department in Chicago. As the volume of the business grew, trouble was frequently encountered as the result of improper icing and of the delayed movement of loaded cars within the Chicago terminal district. During the warm weather of the past summer, considerable beef deteriorated, and some was entirely lost. For the purpose of eradicating these difficulties the Chicago terminal manager appointed a corps of traffic supervisors. Concerning these supervisors, R. B. Robertson, assistant chief of the Chicago branch, Inland Traffic Service, War Department, says:

"Their work has been so thorough that the entire movement, commencing with the ordering of cars, the initial icing, switching of empties to freezer plants and the loading, topping and tamping; and the switching of the loaded cars to the assembling yards of the road haul carrier for forwarding East is handled very smoothly."

The supervisors take note of the manner of loading and the condition of the beef, and particularly of the manner in which cars are pre-cooled and re-iced, and see to prompt billing notification to the carrier line; and they follow the cars to the road-haul train. They also look after beef purchased by the British Ministry of Shipping. Cars containing this beef are consolidated in solid trains and the average time from Chicago to New York is between three and four days.

Hearing on Railway Mail Pay Case

Hearings in the railway mail pay case, in which the Interstate Commerce Commission is to determine reasonable rates for the transportation of mail by railways and prescribe the basis, space or weight or otherwise, for computing railway mail pay, were begun before Attorney-Examiner G. N. Brown at Washington on November 4. The post office appropriation law of 1916 prescribed a space system of computing railway mail pay, and rates based thereon to be substituted experimentally for the weight system, and authorized the postmaster general, with the approval of the commission, to put it into effect on certain routes to enable the commission to determine the proper method and rates. The postmaster general put the plan into effect on November 1, 1916, on nearly all of the mail routes; and a large part of the intervening time has been taken up by the post office department and the railways, represented by the Committee on Railway Mail Pay, in collecting and preparing statistical evidence. The commission's decision, when rendered, will be made retroactive.

When the law providing for the system of paying the railways on the basis of the footage of car space authorized instead of the tonnage basis was passed it was declared by its sponsors that it would increase the payments to the railways; but it has had the effect of reducing the total by about \$12,000,000 a year. The railroads have protested against the rates as being too low, and have also objected to the plan as being impracticable from the operating standpoint and because it did not compensate the roads for all the space used.

Exhibits were introduced at the hearing on behalf of the post office department showing that on April 30, 1918, the compensation to the railways for carrying the mails was at the rate of 10 cents per ton mile. It was also shown that the annual miles of service of cars carrying mails authorized on the space plan had been reduced from 577,867,985 on November 1, 1916, when the space system was inaugurated, to 541,943,368 on June 30, 1917; to 510,486,407 on March 31, 1918, and to 504,961,489 on June 30, 1918, while the annual rate of compensation to the railroads had been reduced during that time from \$64,447,982 to \$52,182,052.

Superintendent Gaines of the eleventh division of the railway mail service of the post office department, testified that the amount of service required of the railways had been reduced by making a more efficient use of the space, by closer supervision to prevent authorizing a greater amount of space than is needed, and in part by reducing the amount of distribution of mail in railway post office cars by performing that service after arrival at terminals and using storage cars in place of the R. P. O. cars, thereby putting into one car as much mail as could be put in three cars equipped with the distributing facilities. A standard R. P. O. car he said has a

capacity for 240 sacks of mail if equipped with the distributing racks and of 900 without them. He asserted that the changes had not resulted in impairment of the postal service and that they gave to the carrier full pay for the service performed while giving the government all the service for which it paid. Under cross-examination, however, Mr. Haines admitted that railroads are not always paid for all the space where they find it necessary to run a 30-foot apartment car over a route on which only a 15-foot car is authorized, because they know that a 30-foot car will be required to handle the additional mail at a junction point farther along.

The hearing was adjourned until January 7.

Loading Records in Central Western Region

The railroads in the Central Western region showed marked increases in the loading of grain, coal and livestock in the month of October. The number of cars of grain loaded was 33,418, an increase of 4,596, or 15.9 per cent, over October, 1917; 183,380 cars of coal were loaded, 24,461, or 15.5 per cent, more than during the same month last year. The number of cars of livestock loaded amounted to 68,749, which was 4,644, or 7.2 per cent, in excess of the record for October, 1917.

Railway Business Association

Effectiveness of program has required the general executive committee of the Railway Business Association again this year, as in recent years, to postpone the date of the annual meeting, which under the by-laws is to be held, if feasible, in December. The date has not yet been fixed, but will be not earlier than January, in Chicago.

There will be a dinner conforming to whatever suggestions may be obtained from the food administrator; the cost of such dinner to be met by subscription of members for themselves and their invited guests; no officers of railway corporations or officers of the United States Railroad Administration to be invited, the design being to assemble distinctively an audience of railway supply men.

New York Railroad Club

The New York Railroad Club meeting on Friday evening, November 15, will be in the nature of a special fuel conservation rally. Eugene McAuliffe, manager of the Fuel Conservation Section of the United States Railroad Administration, will address the meeting on the broader phases of the work in which his section is engaged. Robert Collett and H. C. Woodbridge, fuel supervisors for the Eastern and Allegheny Regions, respectively, will also speak, as well as a number of the representatives of the Railroad Administration.

Railroad Y. M. C. A. at Glassport, Pa.

On Monday evening, November 3, the Pittsburgh & Lake Erie opened the fifth Railroad Y. M. C. A. building on that system. This road now has one building to every 45 miles of main line. The new building, at Glassport, is three stories in height, the two top stories being used for bed rooms. The restaurant, reading and lounging rooms are on the first floor.

Western Railway Club Meeting

The November meeting of the Western Railway Club will be held in the Crystal room of the Hotel Sherman at 8 p. m. on Monday, November 18. Major E. C. Schmidt will present a paper on the Organization and Work of the Fuel Conservation Section, United States Railroad Administration. The meeting will be preceded by a dinner in the Italian room at 6:30 p. m.

Railway Telegraph Superintendents

The Association of Railway Telegraph Superintendents will hold its annual convention at the Hotel Sherman, Chicago, on December 5 and 6. This will be the first annual meeting since 1916, the convention last year having been postponed on account of war conditions.

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR, 1918

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of way and equipment			Traffic.	Operating expenses			Operating ratio.	Net railway operation.	Railway tax.	Operating income (or loss).	Increase (or decrease) last year.
		Freight.	Passenger.	Total.	Structures.	Equipment.	Supplies.		General.	Total.						
Carolina, Clinchfield & Ohio.	382	\$2,620,675	\$95,745	\$2,965,102	\$703,295	\$703,273	\$703,273	\$703,273	\$980,887	\$403,924	\$2,241,668	75.60	\$3,031,434	\$118,400	\$895,631	\$843,605
Central of Georgia.	1,218	3,730,339	3,730,339	7,460,678	1,919,057	1,919,057	1,919,057	1,919,057	2,065,937	403,384	\$2,469,321	75.61	3,213,024	514,680	1,407,679	1,407,679
Central of New Jersey.	292	3,730,339	3,730,339	7,460,678	2,397,067	2,397,067	2,397,067	2,397,067	2,689,406	501,634	2,187,772	78.06	6,152,534	1,410,651	1,410,651	1,410,651
Central of Pennsylvania.	391	3,730,339	3,730,339	7,460,678	1,968,378	1,968,378	1,968,378	1,968,378	2,108,977	591,797	2,700,775	78.06	6,152,534	1,410,651	1,410,651	1,410,651
Central Vermont.	411	3,730,339	3,730,339	7,460,678	475,429	475,429	475,429	475,429	668,854	315,651	1,084,080	104.37	1,402,514	142,500	283,559	699,626
Charleston & Western Carolina.	342	1,279,687	416,061	1,795,748	277,155	277,155	277,155	277,155	839,388	38,433	1,437,842	80.20	354,765	72,000	9,270,850	1,333,512
Chesapeake & Ohio Lines.	2,479	33,647,697	8,099,743	44,560,790	5,797,513	5,797,513	5,797,513	5,797,513	16,366,440	631,370	34,062,994	77.79	40,496,796	1,218,184	9,270,850	59,313
Chicago & Alton.	1,050	10,500,000	5,637,359	16,137,359	2,036,357	2,036,357	2,036,357	2,036,357	18,880,800	319,492	13,076,472	83.74	2,628,946	489,617	2,138,304	1,407,679
Chicago & Eastern Illinois.	1,469	5,552,643	2,501,442	8,054,085	1,043,343	1,043,343	1,043,343	1,043,343	11,616	44,242	13,076,472	91.76	1,375,272	591,797	781,475	1,414,161
Chicago & North Western.	8,090	52,944,132	18,149,062	78,083,492	11,825,489	11,825,489	11,825,489	11,825,489	63,948,442	175,844	64,351,355	96.81	10,211,613	3,300,340	6,911,478	9,242,507
Chicago, Burlington & Quincy.	9,373	61,911,363	18,149,062	90,060,425	12,474,307	12,474,307	12,474,307	12,474,307	83,942	35,975,306	44,310,000	88.55	14,313,310	974,502	8,141,269	8,141,269
Chicago Great Western.	1,406	8,811,758	3,146,401	12,958,159	1,953,759	1,953,759	1,953,759	1,953,759	2,658,876	3,676,515	10,403,276	106.80	1,763,341	86,821	1,676,520	400,768
Cincinnati, Indianapolis & Western.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago Junction.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, Milwaukee & St. Paul.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, Rock Island & Gulf.	474	1,474,111	73,500	1,547,611	218,881	218,881	218,881	218,881	34,982	1,328,729	1,547,611	100.49	1,474,111	41,337	1,432,774	157,830
Chicago, Rock Island & Gulf.	474	1,474,111	73,500	1,547,611	218,881	218,881	218,881	218,881	34,982	1,328,729	1,547,611	100.49	1,474,111	41,337	1,432,774	157,830
Chicago, Rock Island & Gulf.	474	1,474,111	73,500	1,547,611	218,881	218,881	218,881	218,881	34,982	1,328,729	1,547,611	100.49	1,474,111	41,337	1,432,774	157,830
Chicago, Rock Island & Gulf.	474	1,474,111	73,500	1,547,611	218,881	218,881	218,881	218,881	34,982	1,328,729	1,547,611	100.49	1,474,111	41,337	1,432,774	157,830
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567,434	107.82	1,766,444	18,685	1,747,759	429,922
Chicago, St. Paul, Minneapolis & Northern.	1,311	1,482,619	319,645	1,802,264	403,200	403,200	403,200	403,200	6,431	1,383,766	3,567					

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR, 1918 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues				Maintenance of way and equip-		Operating expenses		Total.	Operating ratio.	Net railway operating.	Railway tax accruals.	Operating income (or loss).	Increase comp. with last year.			
		Freight.	Passenger.	(Inc. mile.)	Total.	Way and structures.	Equip- ment.	Traffic.	Trans- portation.							General.		
Delaware & Hudson River.....	96	\$1,435,156	\$29,095	\$1,521,420	\$288,758	\$20,631	295,764	37,218	\$291,551	63,631	\$42,021	\$1,556,631	82.6	\$264,887	\$47,000	\$210,887	\$264,149	
Delaware & New England.....	206	2,659,453	11,265	831,022	339,884	511,894	47,444	47,444	916,230	46,962	1,877,266	1,877,266	67.31	367,863	67,300	300,563	324,149	
Delaware Valley.....	1,443	33,867,835	4,207,883	40,077,960	4,457,326	10,471,110	493,057	19,919,367	19,919,367	290,338	3,368,136	3,368,136	88.65	2,586,944	1,61,064	2,425,880	2,444,235	
Long Island.....	1,318	3,877,352	3,669,369	7,546,721	1,913,008	1,893,420	157,579	157,579	3,666,312	201,913	7,073,157	7,073,157	76.53	1,133,237	516,067	617,170	3,785,043	
Louisiana & Arkansas.....	352	825,099	299,033	1,127,359	212,233	212,233	37,218	26,479	471,723	44,264	915,937	915,937	81.34	341,343	88,760	252,583	217,317	
Louisiana & New Orleans.....	356	1,377,998	494,960	1,952,258	1,984,713	316,913	295,764	37,218	\$291,551	63,631	\$42,021	\$1,556,631	77.74	441,636	111,887	329,749	303,256	
Louisiana Western.....	297	1,443,432	876,131	2,319,563	2,833,058	238,207	314,452	93,438	727,374	77,381	1,415,911	1,415,911	46.07	1,412,167	1,30,776	317,250	317,250	
Louisville & Nashville.....	5,076	44,738,593	15,330,509	60,070,102	7,742,812	13,728,196	445,538	934,438	24,844,723	1,173,381	48,212,711	48,212,711	76.07	17,454,401	1,98,411	15,470,000	111,744	
Louisville, Henderson & St. Louis.....	1,192	1,283,297	445,538	1,728,835	1,765,333	266,256	231,147	113,898	589,086	39,881	1,981,393	1,981,393	78.90	12,432	921,711	1,111,898	1,111,898	
Maine.....	1,182	6,984,533	232,814	6,651,333	1,755,533	1,147,447	1,147,447	18,988	4,880,561	13,661	650,913	650,913	100.17	13,882	171,721	167,839	167,839	
Michigan Central.....	1,861	28,110,015	10,430,157	42,920,242	4,850,257	8,092,593	520,716	18,174,845	764,384	32,996,061	863,121	33,859,182	76.36	9,623,324	1,88,960	8,734,364	1,354,578	
Midland Valley.....	386	1,441,937	467,673	1,909,610	325,946	367,947	2,445	4,345,657	6,246	76,428	1,408	607,504	76.36	607,504	57,903	550,127	58,724	
Mineral Range.....	160	407,916	18,204	426,120	748,550	141,220	184,659	2,445	4,345,657	6,246	76,428	1,408	101.88	26,969	41,667	14,705	14,705	
Minneapolis & St. Louis.....	1,642	5,721,811	1,484,838	7,206,649	1,356,941	1,167,631	1,167,631	114,729	3,699,584	200,750	7,817,929	7,817,929	90.81	163,648	39,861	123,787	187,014	
Missouri & Illinois.....	1,642	5,721,811	1,484,838	7,206,649	1,356,941	1,167,631	1,167,631	114,729	3,699,584	200,750	7,817,929	7,817,929	90.81	163,648	39,861	123,787	187,014	
Missouri & St. Paul & South Ste. Marie.....	4,237	14,406,981	4,130,270	20,113,412	3,357,181	3,953,354	254,335	933,495	9,731,566	56,721	17,980,464	17,980,464	88.52	2,430,689	145,104	2,285,585	5,708,957	
Missouri & North Arkansas.....	365	585,341	309,976	895,317	1,188,904	287,639	381,358	19,136	3,933,495	47,926	1,408,331	1,408,331	118.46	19,520	70,960	51,440	448,086	
Missouri, Oklahoma & Gulf.....	332	611,610	219,241	830,851	1,188,904	287,639	381,358	19,136	3,933,495	47,926	1,408,331	1,408,331	118.46	19,520	70,960	51,440	448,086	
Missouri Pacific.....	7,301	39,167,161	1,531,681	56,344,001	9,000,141	10,637,017	797,236	23,128,741	1,353,312	47,755,912	1,155,962	58,501,874	85.74	11,158,962	2,74,661	9,412,301	30,746,611	
Mobile & Gulf Ry. Co.....	1,109	1,713,224	128,114	1,841,338	1,535,588	268,728	264,205	4,631,466	39,516	1,346,339	8,844,343	8,844,343	107.76	6,655,546	3,49,066	3,166,480	3,166,480	
Mononahela.....	1,109	1,713,224	128,114	1,841,338	1,535,588	268,728	264,205	4,631,466	39,516	1,346,339	8,844,343	8,844,343	107.76	6,655,546	3,49,066	3,166,480	3,166,480	
Mononahela Connecting.....	4	1,545,961	203,537	1,749,498	2,032,533	231,055	258,902	491,313	1,013,424	1,013,424	1,013,424	1,013,424	69.65	441,353	77,446	363,907	14,798	
Morgan's La. & Tex. R. R. S. Co.....	400	3,860,589	1,556,608	5,417,197	5,301,929	554,477	606,110	70,412	1,833,504	125,380	3,239,888	3,239,888	85.44	17,000	21,138	1,880,840	415,982	
Nashville, Chattanooga & St. Louis.....	1,176	9,091,698	3,044,438	12,136,136	1,438,305	1,427,665	639,066	340,450	5,710,828	316,868	10,531,672	10,531,672	75.72	2,769,949	167,777	2,602,172	684,200	
New York Central & Hudson River.....	1,176	1,534,743	1,138,345	2,673,088	1,042,205	1,042,205	1,042,205	1,042,205	1,042,205	1,042,205	1,042,205	1,042,205	85.74	1,042,205	1,042,205	1,042,205	1,042,205	
New York & New Haven & Hartford.....	263	2,775,363	994,434	4,155,303	4,155,303	432,667	865,270	69,214	1,672,259	63,097	3,133,671	3,133,671	75.89	1,672,259	227,513	1,444,746	1,444,746	
New Orleans Great Northern.....	404	1,905,060	395,035	1,113,788	200,533	211,955	55,075	412,700	70,017	51,652	608,197	608,197	70.01	315,030	70,017	245,013	180,000	
New York Central.....	6,079	11,663,261	433,370	180,145,566	210,0018	410,322,647	1,888,516	800,207	1,641,124	1,641,124	150,971,401	150,971,401	83.82	20,142,766	2,17,000	18,972,766	13,434,770	
New York & Chicago & St. Louis.....	5,721	11,663,261	1,320,059	14,000,856	1,603,061	2,334,633	277,295	6,830,517	357,096	1,640,404	79,381	1,719,785	1,719,785	83.42	20,142,766	2,17,000	18,972,766	13,434,770
New York, New Haven & Hartford.....	2,013	3,867,344	253,131	4,155,938	6,095,938	719,722	12,960,738	318,219	30,471,722	2,063,475	54,806,103	54,806,103	83.42	16,885,236	2,17,000	16,678,236	16,678,236	
New York, Ontario & Western.....	567	4,811,995	1,590,054	6,402,049	7,733,590	916,292	1,549,093	74,218	3,407,430	1,171,411	6,095,834	6,095,834	84.21	1,683,536	172,818	1,510,718	1,510,718	
New York, Philadelphia & Norfolk.....	1,131	3,456,066	780,359	4,236,425	387,748	930,743	81,187	2,163,088	88,625	3,276,503	81,187	3,276,503	81.01	881,513	121,153	760,360	760,360	
New York, St. Louis & Western.....	1,131	3,456,066	780,359	4,236,425	387,748	930,743	81,187	2,163,088	88,625	3,276,503	81,187	3,276,503	81.01	881,513	121,153	760,360	760,360	
Norfolk & Western.....	2,063	3,567,344	2,511,194	6,078,538	7,910,232	12,960,738	318,219	30,471,722	2,063,475	54,806,103	2,063,475	54,806,103	83.42	16,885,236	2,17,000	16,678,236	16,678,236	
Norfolk Southern.....	6,592	4,433,167	1,590,054	6,023,221	7,733,590	916,292	1,549,093	74,218	3,407,430	1,171,411	6,095,834	6,095,834	84.21	1,683,536	172,818	1,510,718	1,510,718	
Northern Pacific.....	5,507	1,881,856	1,475,440	3,357,296	3,357,296	435,380	435,380	38,189	1,378,209	83,603	3,456,078	3,456,078	65.90	1,378,209	1,401,421	1,378,209	1,378,209	
Oregon Short Line.....	2,316	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Maryland.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania Railroad.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568	1,077,000	
Pennsylvania & Potomac.....	1,754	1,500,170	4,073,544	5,573,714	3,084,519	191,093	191,093	6,243,717	62,053	13,500,898	63,209	13,500,898	63.20	7,831,901	1,26,333	7,605,568		

Traffic News

The Federal Express now has a sleeping car nightly from New Haven to Washington and one from Washington to New Haven.

To relieve the congestion of Sunday travel between Baltimore and Norfolk, Newport News and Old Point Comfort the Railroad Administration has put on Sunday-night boats. Steamers of the Chesapeake Steamship Line will alternate with those of the Baltimore Steam Packet Line.

A total of 525,334 cars of grain have been loaded by the railroads up to October 26 this year, as compared with 388,175 during the corresponding period of 1917. Grain loading for the week was 28,249 cars, as compared with 24,994 during the corresponding week of 1917.

The new consolidated ticket offices of all roads under federal control situated in the loop district of Chicago were opened on November 4, in the Insurance Exchange building, at 161 West Jackson boulevard. L. H. McCormick, formerly general agent, passenger department, of the Rock Island lines at Chicago, has been appointed manager in charge of the section of the ticket office occupied by the western roads, and C. C. Clark, formerly assistant general passenger agent of the Michigan Central at Chicago, manager of the eastern and southern lines section.

State Commissions Asked to Study Proposed New Class Rates

Charles E. Elmquist, secretary and Washington representative of the National Association of Railway and Utilities Commissioners, has sent a letter to all state commissions regarding the plan of the Railroad Administration for standardizing class freight rates. He urges them to give to the Interstate Commerce Commission the benefit of their criticisms or suggestions. The letter says:

"We may assume that it is the present intention of the Railroad Administration to put a standard scale of class freight rates into effect within the different zones that may be created. The standard scale will eliminate all state class rates as well as all present interstate class rates, and may vitally affect commodity rates. The Interstate Commerce Commission has not decided upon a course of procedure for the investigation of these rates. If it decides to proceed in the matter, it should have the benefit of criticisms and suggestions of state commissioners upon the effect of the rates as well as upon the manner of making the investigation.

"It is advisable, therefore, for the state commissions promptly to examine the proposed scale of rates for the purpose of determining:

1. Whether the same will produce an increased revenue.
2. The per cent of increase or reduction in the present class rates.
3. The per cent of increase over the class rates applying prior to the effective date of order 28.
4. The necessity for continuing existing commodity rates.
5. Whether the standard scale has any relation to the operation of the railroads as a war measure.
6. Whether it is advisable at this time to attempt any such far-reaching readjustment of rates, regardless of their amount.

"State commissions and the shippers of the country are facing a condition and not a theory. If the Railroad Administration is finally to adopt standard class rates, it is important for the commissions and the shippers to give the Interstate Commerce Commission all the information that they can secure, and also the best constructive criticism that can be brought to bear upon the question. This should be done regardless of the legal questions involved. The commissions have here an opportunity to give to the public the benefit of their knowledge of rates and local conditions. It now looks as if the war would soon be over, and suggestions

should be made with due regard to the fact that the railroads will soon be again operated in times of peace."

Influenza Reduces Coal Production

The influenza epidemic continued to decrease seriously the production of bituminous coal in the week ended October 26, the output being 309,000 tons or 2.7 per cent less than in the preceding week. Shipments from a number of districts also decreased in that period, according to data furnished by the Geological Survey. The output, including lignite and coal coked, was estimated at 1,215,000 net tons, as compared with a production of 1,152,400 net tons for the week ended October 19. An increase of 411,000 tons is shown over the corresponding period of 1917, when production reached 10,804,000 net tons. The decline in production during the last few weeks now makes necessary an average daily production in the remainder of the coal year of 2,047,000 net tons, an increase over the daily requirements of about 1.6 per cent and over the average daily production for the coal year to date, 1,988,000 net tons, or 3 per cent.

Production of anthracite in the week ended October 26, estimated at 1,714,000 net tons, is exactly the same tonnage as produced in the preceding week, although it is a decrease of 339,000 net tons, or 17 per cent, from the production in the corresponding week in 1917. The daily average production in the last week is estimated at 286,000 net tons as compared with 334,000 net tons for the coal year to date and with 332,000 net tons in the corresponding period of 1917. From April 1 to date, the total production is estimated at 59,087,000 net tons, as compared with 58,789,000 net tons in 1917, an increase of 298,000 net tons, or .5 per cent.

In the week ended October 19, the total loss by all causes from 100 per cent production was 20.6 per cent, of which car shortage comprised 7.6 per cent, labor shortage 8.5 per cent, mine disability 3.0 per cent and all other causes 1.5 per cent.

Total coal loading on the railways during the week ending October 16 was 236,605 cars, as compared with 219,127 during the corresponding week of the previous year. The increase in 1918 up to October 26 is estimated at 724,978 cars.

War Emergency and Reconstruction Conference

Preliminary plans for the War Emergency and Reconstruction Conference of War Service Committees to be held at Atlantic City, December 4, 5 and 6, are announced by the Chamber of Commerce of the United States.

Reconstruction will be given a prominent place on the program.

The conference will be divided into groups at three sessions, the first to be held on the evening of December 4, the second on the afternoon of December 5, and the third on the evening of the same day. On the evening of December 4 each war service committee will meet with its chairman to consider the problems of reconstruction as they affect that particular industry as well as to take up other problems which the war has demonstrated are vital to industry. On the afternoon of December 5 the war service committees will meet in groups which are related as to their use of basic materials and as to their distribution problems, etc. With these groups will meet the commodity or section chiefs of the War Industries Board. Related groups will form themselves into ten major groups on the evening of December 5 to take up the question of raw materials, price control and subjects arising from related group meetings. After the general meetings of the committees of the related groups and of the major groups it is hoped there will be presented definite recommendations covering the reconstruction period, with the possibility of creating an executive committee empowered to gather data and to function with industries to meet the many problems that the nation's industries will be called upon to solve with the end of the war.

RAILWAY CARS OF REINFORCED CONCRETE.—The London Times reports that experiments are being made at the plant of the Ebbw Vale Steel Company in the construction of railway cars of reinforced concrete.

Commission and Court News

Interstate Commerce Commission

Conference Ruling on Average Agreement

The commission has modified conference rulings 409, 463, and 497 as follows: No average agreement made under the uniform demurrage rules may properly combine in one account the cars of more than one consignee; but an average agreement may be made with a public elevator, warehouse or cotton compress to apply to cars consigned to or handled by such elevator, warehouse or compress, so long as the elevator, warehouse or compress is held strictly responsible to the carrier for the detention of cars and for any demurrage that results from such detention. In pursuing this course carriers must accept full responsibility for the correct application of the rule. (See conference ruling 498.)

Personnel of Commissions

John R. Thompson, senior mechanical engineer for the Interstate Commerce Commission, in the central district of the Bureau of Valuation, Chicago, in charge of mechanical and electrical branches, has resigned to take a commission as captain in the engineer corps of the army. S. A. Chamberlain, senior inspector of motive power of the Commission, at Chicago, has been promoted to succeed Mr. Thompson.

State Commissions

The Public Service Commission of Massachusetts, on a complaint of the National Dock & Storage Warehouse Company, has declared illegal and discriminatory a switching charge made by the Boston & Albany on cars moved from its own pier, at East Boston, to that of the complainant. The decision continues:

"In view of the fact that the Boston & Albany is now under direct control of the Federal Government, which was not in any manner made a party to the proceedings, the commission feels that it is sufficient at present for it to state the facts, and its conclusion with respect thereto, believing that the United States Railroad Administration, when the situation is thus brought to its attention, will effect the desired change. In the meantime the case will be kept open, and the commission will be prepared at any future time to take such further action as may seem appropriate and necessary."

Court News

Injunctions Not Sustained

The United States Supreme Court, in a decision handed down on November 4, declined to review decrees of the lower courts dismissing injunction proceedings to prevent the ousting of the wires of the Western Union Telegraph Company by the Louisville & Nashville Railroad on its right of way. The suits also involved the Western Union's lines along the right of way of the Atlanta & West Point and the Nashville, Chattanooga & St. Louis.

Defect in Apparatus—"Terminal"

A railroad's rule required an engineer to report defects in his engine at terminals. In the case of an undesired emergency setting of air brakes, the South Carolina Supreme Court holds that the defect should have been remedied when the train reached a place where the work could be done, though this place was only a terminal for trains that began and ended their trips there and not for trains merely passing through; and the railroad would be liable for injuries to a conductor when thrown from the top of a car thereby.—Scott v. A. C. L. (S. Car.), 96 S. E. 305. Decided March 25, 1918.

Equipment and Supplies

Additional Steel Probably Available Soon

The prospects of peace and the curtailment of the steel requirements of the Emergency Fleet Corporation, which is already slowing down its activities, are expected to result in a rearrangement of steel requirements which will free additional steel for the use of the Railroad Administration, which will probably be able to place additional orders for cars, locomotives and rails earlier than has been expected of late. Plans have been prepared for some time for refrigerator, stock and general service cars and the orders placed during the spring for 100,000 box and coal cars were less than they would have been if more steel had been available.

Locomotive Deliveries

A total of 58 locomotives were shipped to roads under federal control during the week ending October 26, including 42 of the U. S. R. A. standard types, as follows:

Works	Roads	Number	Type
American	U. S. R. A. Standard	3	U. S. R. A. Mikado
	Erie	7	U. S. R. A. 6-wheel Switch
	T. & E.	11	U. S. R. A. Mikado
	W. & L. E.	6	U. S. R. A. Mikado
	H. V.	3	Miller
	Erie	4	U. S. R. A. Mikado
	Chic. June.	4	U. S. R. A. 6-wheel Switch
	Railroad	4	U. S. R. A. Mikado
	J. P. L. W.	1	Santa Fe
	Total	43	
Lima	Ill. Cent.	9	Mikado
	Total	9	
Baldwin	Penna.	1	Mikado
	C. C. C. & St. L.	3	U. S. R. A. Mikado
	Union Pac.	1	Mikado
	St. L.-S. F.	1	Santa Fe
	Total	6	
	Grand total	58	

Production of Locomotives

The standard gage steam locomotive industry of the United States, operating under the direction of the War Industries Board, has increased its rate of production approximately 100 per cent in the past three months, according to a statement authorized by B. M. Baruch, chairman of the War Industries Board. During the last week of October the output of the three standard gage companies was 144 locomotives. From 1910 up to August, 1918, the largest number ever turned out in a single year was 3,776, which would represent an average weekly output of 72.6 locomotives. The statement emphasizes the fact that this increase in production has been accomplished without any expenditure to increase plant facilities or enlarge the existing works, but has been made possible by a redistribution of orders and concentration by each of the plants on particular types of locomotives. Last August, the statement says, the government was seriously considering the establishment of government plants to meet the demand for locomotives, at a proposed expenditure of approximately \$25,000,000, but at the suggestion of the War Industries Board the expenditure was held up in favor of the plan of redistribution. Apparently the plan of extending government aid for the extension of the plants has also been abandoned. What the statement calls the "Pershing" locomotive, built on standard plans designed for the United States military railways, is said to have been made the sole type of steam locomotive in use behind the American lines in France and also to have been adopted by the British and French governments as the standard type for their armies on the western front; and under the arrangement adopted, the construction of all locomotives of standard gage for use in France was assigned to the Baldwin Locomotive Works, whereas orders for the Railroad Administration were divided

between the American Locomotive Company and the Lima Locomotive Corporation.

The statement expresses the opinion of J. Rogers Flannery, director of railway equipment and supplies of the War Industries Board, that during the next 30 days the rate of production will show a still greater increase. Normally the output of the Baldwin works has not exceeded 60 locomotives a week. During the week referred to it turned out 87 steam locomotives, 7 gasoline locomotives and 3 electric locomotives, besides making general repairs on 10 steam locomotives. The American Locomotive Company has also accomplished excellent results, for while the number of locomotives is not so great, the tonnage is proportionately as large. It is stated that the government is spending this year in the construction of locomotives for use in France and on the railroads in this country approximately \$200,000,000.

Freight Cars

THE BAY CITY FOUNDRY & MACHINERY COMPANY, Bay City, Mich., is inquiring for 17 pairs of freight car trucks.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a 40-ft. caboose car.

THE KANOTEX REFINING COMPANY, Arkansas City, Kan., has ordered 50 40-ton tank cars from the American Car & Foundry Company.

THE WHITE EAGLE PETROLEUM COMPANY, Wichita, Kan., has ordered 30 40-ton tank cars from the American Car & Foundry Company.

Passenger Cars

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for one second-hand combination baggage and passenger coach, not over 50 ft. long.

THE UNITED STATES RAILROAD ADMINISTRATION has begun the preparation of designs for 375 standard type passenger cars and 129 combination passenger, baggage, mail and express cars, and specifications will soon be issued on 886 baggage cars of the 60 ft. and 70 ft. types.

Signaling

CHICAGO, ROCK ISLAND & PACIFIC.—An order has been placed with the Union Switch & Signal Company for the material for alternating current block signals to be installed over the Peoria bridge, Peoria, Ill.

ALABAMA GREAT SOUTHERN.—An order has been given to the General Railway Signal Company for a 12-lever, all-electric interlocking, to be installed by the railroad company's forces, at Warrior River drawbridge, Alabama.

CHICAGO, MILWAUKEE & ST. PAUL.—Two Improved Saxby & Farmer interlocking machines are to be installed at Bensonville, Ill., and two at Shermerville, Ill., both to be furnished by the Union Switch & Signal Company.

PENNSYLVANIA, WESTERN LINES.—An order has been placed with the Union Switch & Signal Company for a Saxby & Farmer interlocking, 36 levers, to be installed by the railroad company's forces, at Crafton, Pa.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—A contract has been given to the General Railway Signal Company for a 48-lever electric interlocking machine, and other material, to be installed by the railroad company's forces.

PHILADELPHIA & READING.—A contract has been awarded to the Union Switch & Signal Company for the complete installation of a low-voltage, remote-control interlocking plant on the Lebanon Valley branch. The interlocking apparatus will be located in the station at Palmyra, Pa., approximately one mile from the switches and signals to be controlled. All apparatus will be operated from primary battery.

Supply Trade News

Francis Jordan, sales engineer for the George Cutter Company, of South Bend, Ind., with headquarters at Chicago, has resigned to go with the Wilson Welder & Metals Company at New York.

At a special meeting of the board of directors of the Independent Pneumatic Tool Company held in Chicago, October 30, Roger C. Sullivan was appointed a director and elected chairman of the board and a member of the executive committee, to fill vacancies caused by the death of the late John P. Hopkins.

J. Weinland, district manager of the Liberty Steel Products Company at Chicago, has been appointed assistant to the president of that company and the Davis Brake Beam Company, with headquarters at New York. S. W. Midgley, in charge of the railroad department of the Liberty Steel Products Company, with office at Chicago, succeeds Mr. Weinland as district manager; effective November 1.

Thomas D. Crowley, sales agent of the Madden Company, Chicago, has been appointed assistant general sales agent of the Sellers Manufacturing Company, Chicago. Mr.



T. D. Crowley

Crowley was born at Clinton, Iowa, on August 18, 1884. He first entered railway service in 1901, as a timekeeper in the track department of the Chicago & North Western. He was later assistant foreman and extra gang foreman in the same department and in 1907 was appointed assistant roadmaster on the Wisconsin division with headquarters at Milwaukee. In 1909 he was appointed supervisor of materials in the general storekeeper's department at Chicago and subsequently

was appointed roadmaster with headquarters at Sparta, Wis. In April, 1914, he went with the Madden Company as sales agent and continued with that firm until his appointment as assistant general sales agent of the Sellers Manufacturing Company, a new position in that firm.

Charles G. Du Bois has been elected vice-president of the Western Electric Company, Incorporated. Mr. Du Bois entered the employ of the company in 1891 at its New York office, and occupied successively the positions of chief clerk, secretary and supervisor of branch houses. In 1907 he became comptroller of the American Telephone & Telegraph Company and in this capacity inaugurated and supervised a comprehensive system of accounting for the Bell telephone system. During the winter of 1917-1918, Mr. Du Bois was in Washington in the capacity of comptroller of the American Red Cross, which position he still retains. Mr. Du Bois is 48 years of age and graduated from Dartmouth College in 1891. He is a director of the Western Electric Company, Incorporated, and other corporations.

Canadian Locomotive Company, Ltd.

The annual report of the Canadian Locomotive Company, Ltd., for the year ending June 30, 1918, shows a profit from operation of \$677,937, after charging business profits war tax and all other charges except bond interest and depreciation and adding interest from investments. This compares

with \$721,255 for the year ended June 30, 1917, and with the exception of last year, represents the largest profits since the first annual report of 1912. There was deducted from the profits \$90,000 for interest on first mortgage bonds; \$25,000 as provision for special replacements, and \$100,000 for depreciation; and \$225,000 was paid in dividends on the common and preferred stock. The balance to the credit of profit and loss at the close of the year, was \$929,417, as compared with \$690,577 last year. In his report, Aemilius Jarvis, chairman of the board, says:

"The prospects for the coming year are of the brightest. We have contracts in hand that will keep our shops fully occupied for many months to come, all taken at satisfactory prices, and unless something occurs in the matter of supplies, material, or something unforeseen, our next year's statement should be as satisfactory."

The general balance sheet follows in brief:

ASSETS		
Fixed assets—		
Real estate, buildings, plant and equipment, including goodwill (\$2,722,006):		
Balance, 1st July, 1917.....	\$5,495,072	
Additions during year.....	60,134	
	\$5,555,206	
Less: Sales and deductions.....	63,756	
	\$5,491,550	
Sinking fund investment account.....	47,907	
Investments in Dominion of Canada 5½ per cent Victory Bonds.....	\$248,916	
Current assets—		
Work-in-progress, at cost, less cash received on account thereof.....	496,885	
Materials and supplies.....	340,663	
Trade accounts receivable, less reserve for bad debts	415,239	
Officials' and employees' balances, including balance of amount due from latter for Victory Bonds purchased on their behalf.....	29,733	
Cash in banks and on hand.....	567,006	
	2,148,442	
Deferred charges to operations.....	7,045	
	\$7,694,944	
LIABILITIES		
Capital stock—		
7 per cent cumulative preference shares, fully paid.....	\$1,500,000	
Ordinary shares, fully paid.....	2,000,000	
	\$3,500,000	
First mortgage bonds.....	1,500,000	
Current liabilities—		
Trade accounts payable, wages and other charges accrued and due.....	\$936,370	
Bond interest accrued.....	45,000	
Dividend No. 26.....	26,250	
Dividend No. 4.....	30,000	
	1,037,620	
Reserves—		
General depreciation.....	\$450,000	
Amortization of expenditure on munition equipment.....	65,000	
Special replacement.....	165,000	
Sinking fund.....	47,907	
	727,907	
Profit and loss accounts.....	929,417	
	\$7,694,944	

Trade Publications

FLANGE OILERS.—The Detroit Lubricator Company, Detroit, Mich., has issued catalogue F-6, illustrating and describing the Detroit automatic flange oiler.

PORTABLE CRANES AND HOISTS.—The complete line of portable floor cranes and hoists manufactured by the Canton Foundry & Machine Company, Canton, Ohio, is listed in a 34-page catalogue issued by that company. The construction and operation of the cranes is described in detail and each type is illustrated and the principal dimensions given.

HEAT INSULATION.—Nonpareil high pressure blocks and cement for heat insulation is the subject of a 20-page catalogue published by the Armstrong Cork & Insulation Company, Pittsburgh, Pa. This material is used for insulating boilers, ovens, feedwater heaters, tanks, etc. Various installations in which Nonpareil blocks or cement were used, are illustrated in the catalogue.

HOISTING MACHINERY.—The equipment manufactured by the Brown Hoisting Machinery Company, Cleveland, Ohio, consisting of trolleys, traveling and portable cranes, electric hoists, etc., is presented in a complete and attractive catalogue, No. D-1919, containing 56 pages, 8½ in. by 11 in., and over 100 illustrations. A large amount of data is also given in tabular form as to prices, dimensions and clearances.

Railway Construction

CHICAGO & NORTH WESTERN.—This company will soon construct a passenger station and subway at Great Lakes, Ill., the aggregate cost of which is estimated at \$200,000. The station will be a one-story frame stucco building, with basement and composition roof, 110 ft. by 30 ft. The subway will be constructed of reinforced concrete. This will have a width of 66 ft. and will pass under the tracks of the Chicago & North Western and the Chicago, North Shore & Milwaukee. John Marsch, Chicago, has the contract for the subway; J. A. Sackley & Co., Chicago, the contract for the excavating, and the contract for the station building has not yet been let. The road's own forces will construct the retaining wall.

The North Western is also building a roundhouse and a repair shop addition at Ashland, Wis., the contract for which was awarded to L. O. Peppard, Minneapolis, Minn.

GRAND TRUNK PACIFIC.—Improvements are now being carried out at Edmonton, Alta., as follows:

Four stall extension to roundhouse; 10,000 ft. additional trackage in repair yard; 5,400 ft. additional trackage in freight yards, and extension to storage tracks, 11,000 ft.

ILLINOIS CENTRAL.—This road has awarded a contract to A. W. Stoolman, Champaign, Ill., for the construction of a one-story frame freight house, 200 ft. by 40 ft., and the alteration of a passenger station at Benton, Ill. A platform will be constructed on one side of the freight house, 18 by 200 ft. These improvements will cost about \$30,000.

The Illinois Central will also build additions on each end of an ice house at Waterloo, Iowa, which will increase the capacity of the structure by 5,000 tons. The cost of the additions will be about \$27,000.

The road plans to build a frame engine house, 38 ft. by 240 ft., at Birmingham, Ala., to provide space sufficient for four Mallet locomotives.

NEW YORK CENTRAL.—This road has given a contract to the R. W. Smith Corporation, New York, to build four yard offices of frame construction at Syracuse, N. Y. One of the offices is to be a two-story building, 36 ft. high, 30 ft. wide, and 60 ft. long, and the other three are to be one-story buildings, 18 ft. high, 25 ft. wide and 41 ft. long.

PENNSYLVANIA RAILROAD, EASTERN LINES.—This road has given a contract to Roydhouse Arey & Co., Philadelphia, Pa., to build a frame roundhouse at Emporium Junction, Pa. The work is now under way and will cost about \$60,000.

PENNSYLVANIA RAILROAD, WESTERN LINES.—This road has under construction at Wellsville, Ohio, various engine house and shop improvements, the plans for which have been prepared in the office of R. Trimble, chief engineer of construction, Pittsburgh, Pa., which office is also directly supervising the work.

PEORIA, HANNA CITY & WESTERN.—This company has been incorporated with a capital stock of \$75,000 to build and operate a railroad from Hollis Junction, Peoria county, Ill., to Hanna City. The incorporators are: E. J. Case, Thomas Newsam, Warren Sutliff, Wm. Newsam, George Deemy and Walter J. Marsh.

PHILADELPHIA & READING.—A contract has been given to A. L. Carhart for building a six-track rectangular brick engine house, supported on concrete foundations, at Rutherford, Pa. The building will be 133 ft. wide by 115 ft. long, with extension for fan house, foreman's office and equipment for boiler washing system. The contract also includes the construction of an outside inspection pit, 150 ft. long.

RARITAN RIVER RAILROAD.—This road has awarded a contract to the Austin Company, of Cleveland, Ohio, for the construction of a 12-stall, reinforced concrete engine house; a machine shop, 100 ft. long; a boiler house, and a store house, each 80 ft. long; to be built at South Amboy, N. J., in 100 working days, at an approximate cost of \$196,490.

Railway Officers

Railroad Administration

Central Administration

Charles A. Lutz has been appointed treasurer of the United States Railroad Administration, vice **L. G. Scott**, comptroller of the Wabash Railway Company, acting treasurer, resigned. Mr. Lutz was formerly chief of the bureau of carriers' accounts of the Interstate Commerce Commission and later comptroller of the American Express Company.

Federal and General Managers

E. E. Calvin, federal manager of the Union Pacific, with office at Omaha, Neb., has had his authority extended over the Salina Northern, effective November 1.

The jurisdiction of **C. M. Kittle**, federal manager of the Illinois Central, with headquarters at Chicago, has been extended over the Dunleith & Dubuque Bridge, effective October 30.

The jurisdiction of **C. G. Burnham**, federal manager of the Chicago, Burlington & Quincy and other smaller roads, with office at Chicago, will also have jurisdiction over the Hannibal Union Depot and the Winona Bridge Railroad.

The Eastern Texas and the Dallas Terminal Railroad & Union Depot have been added to the jurisdiction of **J. L. Lancaster**, federal manager, at Dallas, Texas, and the Valley Terminal Railroad has been included in the jurisdiction of **A. Robertson**, federal manager, with headquarters at St. Louis, Mo.

James Russell, formerly vice-president of the Denver & Rio Grande, has been appointed general manager of that road, the Rio Grande Southern, the Denver Union Terminal, the Salt Lake City Union Depot and Railroad and the Pueblo Union Depot and Railroad, with headquarters at Denver, Colo., succeeding **E. L. Brown**, resigned on account of ill health.

J. E. Gorman, federal manager of the Rock Island Lines, with headquarters at Chicago, has had his jurisdiction extended over the Des Moines Union, the Des Moines Western and the Iowa Transfer. **J. A. Wagner**, superintendent of the Des Moines Union, has been appointed general manager of that road, the Des Moines Western and the Iowa Transfer, with headquarters at Des Moines, Iowa.

Operating

The jurisdiction of **E. L. King**, superintendent of telegraph of the Southern Pacific, with headquarters at San Francisco, Cal., has been extended over the Arizona Eastern.

G. F. Hawks, general manager of the El Paso & Southwestern and the El Paso Union Passenger Depot, has been appointed federal manager, with office at El Paso, Texas.

W. T. Peyton, assistant general superintendent of the Ft. Worth & Denver City, has been appointed superintendent of Ft. Worth terminals, with headquarters at North Ft. Worth, Texas.

G. G. Moore has been appointed superintendent of the Southern Pacific Terminal Company and the Galveston Wharf Company, with jurisdiction over all terminals on Galveston Island. His headquarters are at Galveston, Tex.

J. R. Loftis, trainmaster on the Utah lines of the Denver & Rio Grande at Thistle, Utah, has been appointed assistant superintendent of the Green River division, with office at Helper, Utah, to succeed **E. F. Marshall**, transferred to the Colorado lines; effective November 1.

H. O. Halsted, general superintendent of transportation of the Pere Marquette, with headquarters at Detroit, Mich., has had his authority extended over the Pere Marquette, the

Ann Arbor, the Grand Trunk Western Lines and other roads and car ferry lines under the jurisdiction of Federal Manager **F. H. Alfred**.

F. E. Sanborn has resigned as general superintendent of the Maine Central, with office at Portland, Maine, and has been assigned to other duties; the office of general superintendent at Portland, has been appointed superintendent transportation, in charge of the transportation and car service departments, with office at Portland, and **H. R. Withee**, assistant superintendent at Bangor, has been appointed assistant superintendent, with office at Portland, vice Mr. Wood.

Financial, Legal and Accounting

Richard A. White, general auditor of the New York Central at New York, has been appointed federal auditor of the New York Central, the Lake Erie & Pittsburgh, the Troy Union Railroad, the Central New York Southern and the Cherry Tree & Dixonville, with headquarters at New York.

Frank J. Burke, assistant land and tax commissioner of the Texas & Pacific, has been appointed land and tax agent, in charge of land and tax matters for the receiver, with office at Dallas, Texas. **W. H. Abrams** will continue as land and tax commissioner, acting in an advisory capacity; effective October 15.

W. C. Logan, auditor of the Ft. Worth & Denver City, has been appointed also auditor of the Ft. Worth Belt, with office at Ft. Worth, Texas, succeeding **O. W. Matthews**, resigned. **W. O. Hamilton**, secretary and treasurer of the Ft. Worth & Denver City, with headquarters at Ft. Worth, succeeds Mr. Matthews as acting federal treasurer of the Ft. Worth Belt.

S. L. Merriam, general counsel, and **J. C. Bills**, assistant general counsel of the Pere Marquette, have been appointed general solicitor and assistant general solicitor, respectively of that road, the Ann Arbor, the Grand Trunk Western Lines and other roads and car ferry associations under the jurisdiction of Federal Manager **F. H. Alfred**, both with headquarters at Detroit, Mich.

W. H. Burns, general auditor of the Chicago, Rock Island & Pacific, has been appointed federal auditor of that road and the Chicago, Rock Island & Gulf, with headquarters at Chicago. **William Hodson** has been appointed acting federal treasurer of the Chicago, Rock Island & Pacific, with office at Chicago, succeeding **Carl Nyquist**, who has resigned to become treasurer of the corporation.

C. C. Gleesner, auditor of freight claims of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed freight claim agent in charge of loss and damage freight claims and their prevention, of the Baltimore & Ohio, Eastern Lines; the Coal & Coke; the Wheeling Terminal Railroad; the Western Maryland; the Cumberland Valley, and the Cumberland & Pennsylvania, with office at Baltimore, Md.

E. A. Stockton, general auditor of the Pennsylvania Railroad, Eastern Lines, with office at Philadelphia, Pa., has been appointed federal auditor of the same lines; the West Jersey & Seashore; the New York, Philadelphia & Norfolk, and the Huntingdon & Broad Top Mountain, and **J. S. Donaldson**, assistant controller, with office at Philadelphia, has been appointed assistant federal auditor on all the roads above named.

D. W. McLeod, auditor of the Gulf, Colorado & Santa Fe and the Ft. Worth Union Passenger Station, with headquarters at Galveston, Texas, has had his jurisdiction extended to include the Houston Belt & Terminal, succeeding **J. W. McCullough**, resigned. **A. C. Torbert**, local treasurer of the former roads, has also been appointed acting treasurer of the Houston Belt & Terminal, with office at Galveston, in place of **T. C. Dunn**, resigned.

Frank R. Austin, who has been appointed federal auditor of the Chicago & Eastern Illinois and the Evansville & Indianapolis, with headquarters at Chicago, was born at Evansville, Ind. He began railway work in August, 1890, in the auditor's office of the Evansville & Terre Haute, where he

remained for five years, when he was transferred to the treasurer's office. Two years later he returned to the auditor's office, serving in various capacities until March, 1906, when he was appointed auditor. He held that position until July, 1911, when the Evansville & Terre Haute was consolidated with the Chicago & Eastern Illinois, at which time he was promoted to assistant auditor of the latter road. His appointment as federal auditor became effective August 5.

T. O. Edwards, general auditor of the Southern Pacific, lines south of Ashland, Ore., with office at San Francisco, Cal., has been appointed also federal auditor of the Arizona Eastern. **W. F. Ingram**, acting federal treasurer of the former lines, with headquarters at San Francisco, will also have authority over the latter road. **Robert Adams**, assistant general auditor of Southern Pacific lines south of Ashland, and assistant federal auditor of the lines north of Ashland, with office at San Francisco, has been appointed also assistant federal auditor of the Arizona Eastern. The following officers of the Southern Pacific, all with headquarters at San Francisco, will also have jurisdiction over the Arizona Eastern: **F. L. McCaffery**, auditor of disbursements; **F. W. Pope**, auditor of freight accounts; **O. F. Giffin**, auditor of passenger accounts, and **W. H. Dewey**, auditor of equipment service accounts.

Traffic

Marius de Brabant has been appointed assistant general freight and passenger agent of the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., effective November 1.

M. A. Cummings and **A. G. Little** have been appointed assistant general freight agents of the Southern Pacific lines south of Ashland, Ore., both with headquarters at San Francisco, Cal.

F. V. Berry, assistant general freight agent of the Maine Central, at Portland, Maine, has been appointed general freight agent, with office at Portland, vice **W. K. Sanderson**, assigned to other duties; the position of assistant general freight agent has been abolished.

E. H. Shaw, assistant traffic manager of the Southern Railroad, with office at Washington, D. C., has been appointed traffic manager of the Southern Railroad lines and associated railroads, with jurisdiction over all lines except the Piedmont & Northern, vice **Randall Clifton**, deceased.

B. W. Herrman, general freight agent of the Norfolk & Western, with office at Columbus, Ohio, has been appointed general freight agent, with office at Roanoke, Va., and **S. S. Bridgers**, assistant general freight agent at Roanoke, has been transferred as assistant general freight agent to Columbus, Ohio; **S. M. Stevenson** has been appointed assistant general freight agent, assigned to special duty, with office at New York City, and **C. A. Cowles** has been appointed assistant general freight agent, with office at Roanoke.

The Grand Trunk Western Lines having been placed under federal control and grouped with the Pere Marquette, Ann Arbor, Detroit & Mackinac and other short lines under Federal Manager **F. H. Alfred**, the consolidation of the passenger department is announced with the following officers in charge of all lines: **W. E. Wolfenden**, general passenger agent, and **John Dumphy**, assistant general passenger agent, Detroit, Mich.; **J. D. McDonald**, assistant general passenger agent, Chicago; **A. E. Plumer**, general baggage agent, Detroit; **O. L. Kinney**, Chicago; **J. W. Kearns**, Detroit; **Neil DeYoung**, Grand Rapids, Mich.; **F. A. Young**, Saginaw, Mich.; **J. K. Cooper**, Toledo, Ohio; all division passenger agents.

R. P. Paterson, assistant general freight agent of the Pere Marquette, with headquarters at Detroit, Mich., has had his jurisdiction extended over the Grand Trunk, Western Lines; the Ann Arbor; the Detroit & Mackinac; the Detroit & Toledo Shore Line; the Detroit, Bay City & Western; the Port Huron Southern; the Port Huron & Detroit; the Fort Street Union Depot Railroad, and the Lake Michigan Car Ferry Association. **R. L. Burnap**, assistant freight traffic manager of the Grand Trunk at Chicago, has been appointed assistant general freight agent of the lines named, with the same headquarters. **H. S. Bradley**, traffic manager of the Ann

Arbor, has been appointed chief of the tariff bureau of all the roads mentioned above, with office at Detroit. **F. A. Butterworth**, assistant general freight agent of the Pere Marquette at Chicago, has been appointed division freight agent of that road and the Grand Trunk Western Lines, with the same headquarters. **W. H. Spicer**, division freight agent of the Grand Trunk at Detroit, will also have jurisdiction over the Pere Marquette; the Ann Arbor; the Pontiac, Oxford & Northern; the Port Huron Southern; the Port Huron & Detroit, and the Detroit & Toledo Shore Line; and **P. Birrel**, commercial agent of the Pere Marquette at Detroit, has been appointed general agent of those roads. **C. A. Gormally**, commercial agent of the Grand Trunk at Chicago, has been appointed general agent of that road and the Pere Marquette, at the same place. **F. M. Briggs**, division freight agent of the Pere Marquette at Grand Rapids, Mich., will also have authority over the Grand Trunk Western Lines. **A. Z. Mullins**, commercial agent of the Grand Trunk at Grand Rapids, has been appointed district representative of the Grand Trunk Western Lines and the Pere Marquette, with the same headquarters. **T. W. Avis**, traveling freight agent of the Pere Marquette at Grand Rapids, has been appointed district representative of that road and the Ann Arbor, at the same place. The jurisdiction of **W. Henderson**, division freight agent of the Pere Marquette at Saginaw, Mich., will include the Grand Trunk Western Lines and the Ann Arbor. **C. E. Wagner**, commercial agent of the Grand Trunk at Saginaw, has been appointed district representative at that point for the Pere Marquette; the Pontiac, Oxford & Northern, and the Detroit & Huron. **W. G. MacEdward**, general freight and passenger agent of the Detroit & Mackinac at Bay City, Mich., has been appointed division freight agent of that road and the Detroit, Bay City & Western, with the same headquarters. **R. W. Youngs**, division freight and passenger agent of the Pere Marquette at London, Ont., will retain the title of division freight agent only. **J. W. Redmond**, commercial agent of the Pere Marquette at Toledo, Ohio, has been appointed general agent of that road, the Ann Arbor, and the Detroit & Toledo Shore Line, with office at Toledo. **F. W. Goldie**, general agent of the Pere Marquette at Milwaukee, Wis., will also be agent for the Grand Trunk Western Lines. **W. F. Kerwin**, general agent of the Ann Arbor at Menominee, Mich., has been appointed district representative at that point, and **A. Allison**, general agent at Manistique, Mich., has been appointed district representative at the same place.

Engineering and Rolling Stock

O. A. Garber, master mechanic of the Illinois Central at East St. Louis, Ill., has been transferred to Waterloo, Iowa, as master mechanic of the Minnesota and Iowa divisions, succeeding **Norman Bell**, resigned to enter military service.

G. W. Cundiff has been appointed road foreman of engines of the Mobile & Ohio and the Southern Railroad in Mississippi, with headquarters at Jackson, Tenn., to succeed **A. J. Merriwether**, who has been appointed fuel supervisor, with office at Jackson, Tenn.

G. C. Wilson, electrical engineer of the Union Pacific, with headquarters at Omaha, Neb., has been appointed electrical engineer of the Central of Georgia, with headquarters at Savannah. **H. B. Gamber** succeeds Mr. Wilson as acting electrical engineer of the Union Pacific.

Fullerton P. McGough, manager of the Pittsburgh office of the North American Railway Construction Company, Chicago, has been appointed division engineer of the Baltimore & Ohio, with office at Grafton, W. Va., succeeding **G. F. Eberly**, who has been transferred to the construction department, in charge of the lines between Connellsville and Fairmont.

The jurisdiction of **Maynard Robinson**, division master mechanic of the Gulf, Colorado & Santa Fe at Temple, Tex., has been extended to include the old Galveston division. The Galveston and Southern divisions have been combined and will be known as the Southern division. **R. E. Bell**, division master mechanic at Galveston, Tex., has been appointed joint master mechanic of the Galveston Terminal Association.

J. E. Murray, chief electrician on the Chicago & North Western, with headquarters at Chicago, has resigned to become electrical and mechanical engineer of the Grand Trunk Western Lines, with headquarters at Battle Creek, Mich. **Irving A. Peters**, foreman of the electrical department on the Chicago & North Western at Chicago shops, succeeds Mr. Murray as chief electrician of the entire system under the jurisdiction of the mechanical department.

N. L. Arbuckle, resident engineer on the Cleveland, Cincinnati, Chicago & St. Louis, at Columbus, Ohio, has been appointed acting engineer maintenance of way of the Indianapolis Terminal division, with headquarters at Indianapolis, Ind., succeeding **I. M. Brown**, deceased. **R. B. Stokley**, acting engineer maintenance of way on the Cincinnati-Sandusky division, with office at Springfield, Ohio, has been transferred to the Peoria & Eastern division in the same capacity, with headquarters at Indianapolis, Ind., to succeed **L. B. Elliott**, who takes the place of Mr. Stokley. Effective November 1.

Ernest R. Breaker, whose appointment as assistant mechanical superintendent of the San Antonio, Uvalde & Gulf, with headquarters at North Pleasanton, Texas, has been announced in these columns, was born at Fayette, Mo., on July 5, 1886. He was educated at Washington University, and began railway work in April, 1909, as assistant engineer on construction on the San Antonio, Uvalde & Gulf, in charge of bridge work. In 1911 he was made chief engineer in charge of construction and maintenance, and in 1915 he was appointed also mechanical engineer. He was given complete charge of the mechanical and maintenance departments in January last, and when the road was placed under federal control recently was appointed assistant mechanical superintendent in charge of motive power and car departments and maintenance of way and valuation.

Corporate

Executive, Financial, Legal and Accounting

R. C. Vaughan, assistant to third vice-president of the Canadian Northern, with office at Toronto, Ont., has been appointed assistant to the president.

Louis C. Fritch, who was elected vice-president and corporate engineer of the Chicago, Rock Island & Pacific and appointed vice-president of the Minneapolis & St. Louis, as mentioned in the *Railway Age* of October 18,

was educated at the University of Cincinnati, where he studied civil engineering and also took a course in law. He entered railway service in 1884 with the Ohio & Mississippi as supervisor's assistant, and later was successively assistant engineer and engineer of maintenance of way. On November 1, 1893, he was appointed division engineer of the Baltimore & Ohio Southwestern, which had absorbed the Ohio & Mississippi, and in September, 1899, he became superintendent of the Mississippi division of the former road, which position he held until November, 1902. Mr. Fritch went to the Illinois Central in February, 1904, being engaged on special work until March, 1905, when he was made assistant to the general manager. In November, 1906, he was appointed assistant to the president, and on March 1, 1909, he was made consulting engineer. He left the Illinois Central in November of the latter year to go to the Chicago Great Western as chief engineer. In March, 1914, he became assistant to the president of the Canadian Northern, and from

August, 1915, to June 15, 1917, he was general manager of the lines east of Port Arthur, leaving that road in May, 1917, to become general manager of the Seaboard Air Line. He remained in the latter position until June of this year, when he established an office in Chicago as consulting engineer. He now becomes vice-president and corporate engineer of the Chicago, Rock Island & Pacific and the Minneapolis & St. Louis, with headquarters at Chicago.

R. P. Ormsby, assistant secretary of the Canadian Northern, with office at Toronto, Ont., has been appointed secretary of the company, succeeding **W. H. Moore**, resigned.

G. B. Wood, assistant to the president of the Kansas City Southern, with headquarters at Beaumont, Texas, has been transferred to Kansas City, Mo., with the same title, succeeding **R. J. McCarty**, vice-president, resigned.

R. M. Calkins, formerly vice-president in charge of traffic of the Chicago, Milwaukee & St. Paul, has been elected president, with headquarters at Chicago, succeeding **H. E. Byram**,



R. M. Calkins

who was appointed federal manager of the road. Mr. Calkins was born on August 12, 1863, at Ogdensburg, N. Y. He began railway work in 1879 as clerk and telegraph operator for the Chicago, Milwaukee & St. Paul at Monticello, Iowa, and from 1881 to June, 1892, was local agent at various points. He was then for four years agent at Kansas City, Mo., and from June, 1896, to June, 1898, was division freight and passenger agent at Mason City, Iowa. In June, 1898, he left the St. Paul to become

general freight and passenger agent of the Des Moines Northern & Western, at Des Moines, Iowa, returning to the former road in February, 1899, as assistant general freight agent at Chicago. On February 1, 1909, he was appointed general freight and passenger agent of the Chicago, Milwaukee & Puget Sound and the Montana Railroad, with headquarters at Butte, Mont., and in June of the following year he was made traffic manager of the Chicago, Milwaukee & Puget Sound. From January 1, 1913, to December 15, 1917, he was traffic manager of the Puget Sound lines of the Chicago, Milwaukee & St. Paul, with headquarters at Seattle, Wash., and on the latter date he was elected vice-president in charge of traffic for the entire system, including subsidiary lines, with headquarters at Chicago. When the St. Paul was placed under federal control, Mr. Calkins was appointed traffic manager, but resigned in August last to engage in ship-building work in Puget Sound.

M. Dailey has been appointed vice-president in charge of operation on the Edmonton, Dunvegan & British Columbia, the Alberta & Great Waterways Railway and the Central Canada Railway, with headquarters at Edmonton, Alta.

M. H. McLeod, general manager and chief engineer of the Canadian Northern, with office at Winnipeg, Man., has been appointed vice-president of operation, maintenance and construction, with jurisdiction over all lines and headquarters at Toronto, Ont.

F. B. Simpson, assistant secretary of the Chicago, Milwaukee & St. Paul, has been elected treasurer; **R. J. Marony**, assistant secretary, has been elected assistant treasurer; **John A. Peterson** has been elected assistant treasurer, and **L. J. Tracy** has been appointed controller.

H. W. Wenham has been appointed auditor of the corporate organizations of the Alabama & Vicksburg Railway Company and the Vicksburg, Shreveport & Pacific Railway Company,



L. C. Fritch.

superintendent of the Mississippi division of the former road, which position he held until November, 1902. Mr. Fritch went to the Illinois Central in February, 1904, being engaged on special work until March, 1905, when he was made assistant to the general manager. In November, 1906, he was appointed assistant to the president, and on March 1, 1909, he was made consulting engineer. He left the Illinois Central in November of the latter year to go to the Chicago Great Western as chief engineer. In March, 1914, he became assistant to the president of the Canadian Northern, and from

with office at New Orleans, La., in place of **H. H. LeRoy**, who is now auditor of those railroads under the United States Railroad Administration.

William U. Moyer has been appointed assistant to the president of the Pennsylvania Railroad Company, with headquarters at Philadelphia, Pa. Mr. Moyer was born in 1881, at Philadelphia, and has been in the service of the Pennsylvania for 21 years. He first served in the office of the auditor of passenger receipts, and in September, 1900, was transferred to the office of Samuel Rea, who was then fourth vice-president. Later he served as chief clerk to Mr. Rea when he became second vice-president and afterward president. Mr. Moyer now becomes assistant to president, as above noted.

W. H. Coverdale, chairman of the board of the Pittsburgh & Western, has also been elected vice-president of that company and president of the West Side Belt, with headquarters at New York. **H. E. Farrell**, president of the Pittsburgh & Western, also has been elected vice-president of the West Side Belt, with office at Pittsburgh, Pa. **Arthur H. Van Brunt** has been appointed advisory counsel, and **J. J. O'Brien** has been appointed assistant secretary of both companies, with headquarters at New York. **John S. Wendt** has been appointed general attorney of both companies, and **D. W. Summerfield** has been appointed secretary and treasurer, both with headquarters at Pittsburgh.

Operating

E. T. Mulquin has been appointed manager of the Sugar Land Railway, with office at Sugar Land, Texas.

J. L. Jamieson, trainmaster of the Canadian Pacific at Ignace, Ont., has been promoted to superintendent, with headquarters at Kenora, Ont., succeeding **J. M. MacArthur**, who has been transferred to Medicine Hat, Alta., as superintendent.

Engineering and Rolling Stock

W. Walton has been appointed division master mechanic of the Canadian Pacific, with office at Farnham, Que., succeeding **W. Wells**, transferred.

George S. Goodwin, mechanical engineer of the Rock Island Lines, has been appointed corporate engineer of equipment of the Chicago, Rock Island & Pacific, with headquarters at Chicago, having jurisdiction over matters relating to the maintenance of equipment department involving the corporation's interests. Mr. Goodwin was born at Corinth, Me., on November 29, 1876, and was graduated from Cornell University in 1899, with the degree of mechanical engineer. While attending college he spent his vacations in railway shop work and specialized in railway engineering during the last year. He entered the service of the Chicago, Milwaukee & St. Paul in June, 1899, as a special apprentice at West Milwaukee, Wis., and subsequently was employed in special test work, etc., during which time he had charge of the company's dynamometer car on other roads as well as the Chicago, Milwaukee & St. Paul. In May, 1904, he entered the mechanical engineer's office of the Great Northern at St. Paul, Minn., where he was engaged in work connected with the standardization of locomotive and car details and also the design of new equipment. Mr. Goodwin went to the Chicago, Rock Island & Pacific in January, 1906, as chief draftsman at Chicago, and in May,

1910, he was promoted to assistant mechanical engineer at Silvis, Ill. He was appointed mechanical engineer of the Rock Island Lines, in charge of locomotive design, with headquarters at Chicago, in June, 1913, which position he held at the time of his recent appointment as corporate engineer of equipment of the Chicago, Rock Island & Pacific Railway.

D. W. Gross, valuation engineer of the Atlantic Coast Line and the Charleston & Western Carolina, has been appointed corporation engineer of those companies, with headquarters at Wilmington, N. C.

Railway Officers in Military Service

Daniel Willard, president of the Baltimore & Ohio, has been appointed colonel of engineers in the United States Army, and plans to sail at once for France, to report to Brigadier General Atterbury. Mr. Willard has been granted indefinite leave of absence, and **L. F. Loree**, who is a member of the executive committee of the Baltimore & Ohio, will act as chairman of the committee during his absence. Mr. Willard's selection was made by General Pershing at the request of the French Government, which desires the services of an experienced American railroad operating officer as an assistant to the French Transport Department. The French Government is said to have decided to take over the operation of all French Railways.

Obituary

H. Ruben, general baggage agent of the Chicago & Alton, died at his home in Chicago on October 26, aged 54 years.

W. G. Dungan, assistant superintendent of the Chicago, Burlington & Quincy, at Deadwood, S. D., died on October 22.

Captain William Wallace Newcomb, a former employee of the *Railway Age*, died of pneumonia, October 10, three days after the arrival of the transport on which he crossed to France. Captain Newcomb received his commission in the Ordnance Department shortly after the entrance of the United States into the war. He had but recently been made New York manager of the brokerage house of Jackson & Curtis. He was graduated from Yale University in 1908 and he was in charge of the copy service department of the *Railway Age* from 1911 to 1913, and did much to build up this service. He was a man of unusually fertile and original thought, and advertising came to him rather as a natural gift than as the result of labored study. The underlying reason for his rather surprisingly continuous flow of new ideas was the remarkable capacity he had for close observation. His brain was apparently in a peculiarly receptive mood for detailed impression. His almost boyishness of manner sometimes failed to convey to a stranger the power of analysis and minute observation which he possessed. In 1913 he was offered the position of assistant to the new president of the McCall Publishing Company, New York. Within the year he was elected secretary of the company, and for four years had the duties and responsibilities in the management of a very large business that are not often entrusted to so young a man or to a man whose early training had not been directly in that particular business.



G. S. Goodwin



Captain W. W. Newcomb

EDITORIAL

Railway Age

EDITORIAL

"Railroad men tamper with switches." This is the somewhat startling headline on a safety bulletin which has been

Safety First and the Prayer Book

issued by George Bradshaw, supervisor of safety of the Pere Marquette, the Grand Trunk Western and other Michigan railroads. The substance of the bulletin is to the effect that by leaving main-line switches unlocked, breaking locks to save the trouble of finding or keeping a key, and other loose practices, yardmen and trainmen are seriously impairing proper discipline, as related to switches, and thereby may wreck trains. He calls upon the intelligent and thoughtful employees to aid in condemning bad practice and arousing the proper spirit in the thoughtless. This bulletin is commendable not only by reason of its substance, but also in its style. It fills just one page, 6 in. x 9 in.; but there is another page on which a very large photographic picture of a switchman, at a switch, helps to enforce the lesson of the bulletin; while on the front cover, or title page, in large type, the bulletin board where the sheet is to be posted and the classes of men to whom it is to be given, are set forth in graphic style, thereby impressing on employees that the bulletin must be read and heeded. Printing bulletins and then neglecting to see that the men give due attention to them has been one of the persistent sins in the railroad world. Mr. Bradshaw's document enforces this lesson. To "read, mark, learn and inwardly digest" is just as essential an injunction in the promulgation of railroad rules, as it is in the study of the truths of the prayer book.

With the demand for prompt handling of trains and for a general increase in the efficiency of transportation, every

Air Brake Conditions Must Be Improved

means must be taken to insure a train reaching its destination without delay when once it leaves a terminal. No better service to this end can be given by the mechanical department than to insure that the air brake equipment is properly inspected and well maintained. It has been found far better to hold a train at the terminal until the brakes are in proper condition than simply to make a perfunctory inspection and take the chance of a failure on the road. In order to do this properly there must be adequate facilities at the terminals for making the tests and repairs and a thoroughly competent and painstaking corps of air brake men to do the work. One of the western roads in particular makes a very determined effort to reduce its train delays on the road by careful inspection at terminals. From 10 to 16 men are assigned properly to inspect and repair each freight train before it is allowed to leave the terminal. By doing this it has been found that the trains can be run over a distance of 500 miles with despatch and without unnecessary delays at intermediate points which cause serious interruption to the operation of the road. It is far better to hold one train a few hours longer at a terminal than to send it out in a defective condition with a possible delay of a few hours on the line and the resulting delay to other trains. Cases are known where reinspections have shown a decrease of over 10 per cent in the operative brakes on a train. This is nothing short of criminal negligence and should be stopped.

Every road should be made to do its share of the work, and where facilities for testing and repairing are not available they should be provided.

There are few industries that can look forward to the problems of reconstruction with greater easiness of mind than

Supply Field Already

"Reconstructed"

the railway supply field. The fact that railways are of equally great importance in peace or war puts the equipment builders among the fortunate few who will have to make but comparatively minor changes to get back on a peace basis. In fact, the industry has been referred to as having been on that basis for some time, or more particularly since various of the larger equipment builders were able to turn from munitions manufacture to the building of cars, locomotives or specialties for the use of railways here or in France. It seems to be generally agreed, further than that, that the coming of peace is going to prove most advantageous to the railway supply field. For the immediate present the supply companies are working on orders both for the Railroad Administration and for the American armies overseas. New and additional orders have been placed within the last few weeks for both and there is now in prospect an order for 100,000 freight cars for the Railroad Administration, the building of which will be facilitated by the release of steel from more direct war purposes. Following this there will have to be orders placed for the rehabilitation of the railways of France and Belgium, which will no doubt require a period of years. Extending into the more distant future there is the necessity for making up the demand for railway equipment and material of a world that has been practically unable to secure such supplies since the Kaiser (since retired) "cut loose" in 1914. An article on another page of this issue emphasizes that to fill this great demand for railway supplies there are but two sources, the plants in the United States and Great Britain, and it is a foregone conclusion that both countries will be overwhelmed with demands upon them for material. The railway supply field is indeed fortunate in having such splendid prospects before it for both domestic and export trade.

Now that the Railroad Administration can no longer call upon the public for co-operation in order "to win the war,"

The War Incentive for Economy

it will be interesting to note what changes will develop in the attitude of the railroad patron toward transportation service. Will he reassume a spirit of pronounced individualism with regard only for his own selfish interests or will the habit of working for the common good, acquired during the great conflict, persist? In this connection it is fitting to call attention to a typical result achieved through the excellent teamwork of the shippers and carriers. Loading statistics for government-controlled roads in 25 of the more important railroad terminals of the country, showed an average carload of 36 tons for the week ended September 21, 1918, as compared with 34.1 tons for the corresponding week in 1917. In addition, the figures indicate an increase

of 5.30 per cent in the tonnage and a decrease of 0.2 per cent in the cars used to carry the increased traffic. These data are conclusive evidence of the sincere efforts exerted by the shipping public during the war to conserve transportation facilities. With the incentive of military necessity gone, undoubtedly some will relax into careless practices. It is to be hoped, however, that the thorough lesson in co-operative effort learned during the historic period about to be closed, will not generally be forgotten. Under fear of defeat and economic disaster, the American people were forced to discard their wasteful habits and to husband their resources to the utmost. The shipper learned that he had to place his country's interests before his own immediate advantage. In doing so, he was working for his own benefit in the long run. Capacity car loading meant adding to the car supply. Loading heavily, he knew, increased his chances of loading again. Likewise the reduction of car detention for loading and unloading was known to be an effective means of accelerating car circulation and, consequently, of increasing the working supply of equipment. As it is unlikely that the freight traffic of the United States will materially decrease while the countries of Europe are being rehabilitated, it would seem that an intelligent conception of his own selfish interests would demand that the railroad patron continue, for some time, all the practices introduced during the war in order to make the most economical and efficient use of our transportation facilities.

The Railways and the Armistice Terms

IN NO INSTANCE has the importance of railways in warfare been better shown than by the terms of the armistice to which the German emissaries had to submit on Monday. The text of the armistice requires in section 6 that roads and means of communication of every kind, railroads, waterways, etc., shall be in no manner impaired. Section 7 demands that all civil and military personnel at present employed on them shall remain. Five thousand locomotives, 150,000 freight cars, 5,000 motor lorries, etc., shall be delivered to the associated powers within a period of 31 days. The railways of Alsace-Lorraine shall be handed over within a period of 36 days "together with all pre-war personnel and material. Further, material necessary for the working of railways in the country on the left bank of the Rhine shall be left *in situ*. All stores of coal and material for the upkeep of permanent ways, signals and repair shops, left entire *in situ* and kept in an efficient state by Germany during the whole period of armistice. . . ." Without further information at hand, it is a bit uncertain as to whether the "pre-war personnel and material" which must be handed over with the railways of Alsace-Lorraine are additional to the 5,000 locomotives and 150,000 cars specifically mentioned, but presumably they are additional. At any rate it is worth noticing that in section 2 of the text of the armistice demanding the immediate evacuation of invaded countries, Alsace-Lorraine is classed with Belgium and France and not with the Rhinelands mentioned in section 5. In thus losing Alsace-Lorraine, Germany loses about 3.6 per cent of its total railway mileage or about 1,250 miles. Assuming that Alsace-Lorraine has a similar proportion of the equipment of the German railways it will also mean to Germany the loss of about 1,000 locomotives and about 25,200 freight cars.

In view of the small amount of news that has come out of Germany since the beginning of the war, it is difficult to "guess" as to what proportion of Germany's total railway equipment will be handed over to Marshal Foch through the armistice. Excluding the 3.6 per cent for Alsace-Lorraine, the 5,000 locomotives and 150,000 freight cars given up for the period of the armistice will be about one-fifth of all of Germany's equipment of this kind. Before the war Germany

had 29,520 locomotives and 692,053 freight cars. How many it has to-day Marshal Foch has not yet told us, but there is no doubt that its ill-gotten gains in the way of railway equipment from northern France and Belgium in 1914 have long since been compensated for by losses through shell-fire, bombing and wear and tear such as the builders could never hope to make up for. The handing over of this vast amount of railway equipment, representing probably one-fifth of all the locomotives and freight cars in Germany, ranks with the important provisions of the armistice. The extent of the demand for it shows that despite the increased importance of motor transport in the war, the railways have again shown themselves of first importance as a weapon of warfare.

Precautions Against Freezing

A FEW WEEKS AGO the director general of railroads issued a statement asking the co-operation of shippers in the conservation of perishable food products. He said, "The loss of fruits and vegetables on account of freezing during the course of transportation in winters past has been enormous." He asks them to take extra precautions in packing and to watch the weather bureau reports and withhold shipments when very low temperatures prevail, or when they are forecasted. Is this an attempt to shift the responsibility for possible losses in foodstuffs this winter to the shoulders of the shippers? Can they be held responsible for inadequate equipment for transporting their products or the delays that are occasioned in transit, or again, for the lack of care given these products in transit? We must have food, cold weather or not. After a consignment is received by the railroads it is up to them to protect it to its destination. The food situation this winter will approach the seriousness of the fuel situation last winter, unless proper protection is afforded the perishables from the time they leave the hands of the producer until they are received by the consumer. What has been done to insure its protection? Can the responsibility be placed successfully on the shipper because of a lack of "extra precaution in the packing?"

It cannot be said that the seriousness of the situation has not been realized. The director general acknowledges it in his statement. The press has called attention to it repeatedly. In January, 1916, G. C. White of the Department of Agriculture, in a paper before the Second Pan-American Scientific Congress, called attention to the extremely poor conditions and classed as "archaic" the methods followed to provide adequate heater service for the protection of perishable freight.

The government is appealing to every citizen in the country to conserve food. We see signs everywhere, "Don't stop saving food." We are morally bound to persist in conserving food for the sake of our less fortunate allies and for people in the devastated sections of Europe. Are the railroads going to do their part? They must, or be ready to shoulder the responsibility for wastage, which if as great as that of previous years will be a most severe indictment. This loss can be controlled and materially reduced. There are insulated cars which are designed for proper protection of perishables in hot weather, but very few have adequate facilities for protection of their contents in cold weather. It is as necessary to provide artificial heat in winter weather to prevent freezing as it is to provide ice in summer to prevent decay, and this heat must be provided. There are heaters particularly adapted for just such service.

The big job for the railroads this winter will be to equip the cars with adequate heaters, to provide the proper equipment for handling the perishable freight and to eliminate delays between the shipping point and the point of delivery.

A Necessity in Time of War, A Virtue in Time of Peace

THE SHORTAGE OF STEEL, culminating in the drastic regulations governing the use of this material for non-war purposes, placed a serious responsibility on the railroads as heavy users of steel in the curtailment of their requirements by the salvage and re-use of old materials released from service. This did not mean the introduction of new or untried methods, but rather the general extension of practices that had been subject to more or less desultory application on the roads for years. There was room for much improvement in this direction. Some roads were giving little or no attention to such measures as is evidenced by the fact that one large road has been meeting its entire requirements for a certain class of equipment for the last three years by the reclamation of discarded equipment of this type purchased from a junk dealer, who in turn had acquired his supply from a neighboring road. Obviously if the second road could afford to reclaim this material after paying the junk dealer for handling it, the first road could reclaim it at an even greater saving. Even on the roads which have studied reclamation most thoroughly, new opportunities for savings have been disclosed by the increased study of this subject in recent months.

The conditions brought about by our participation in the war have, of course, done much to intensify this work and bring about a more general application of the practices followed by certain of the roads for years, and through the pressure brought to bear by the War Industries Board and in some cases through an absolute lack of the necessary new materials, the railroads of the country were being forced to do what they should have done of their own volition in times of peace.

Now that peace is at hand and the necessity for economy in the use of steel as a war measure has been largely removed, there is a danger that the advantages of the careful and conscientious reclamation of all materials released from service will be largely lost by a decreasing enthusiasm in the work. To avoid this there must be no lessening in the educational work which has been so largely responsible for the results produced thus far. The war has taught us the advantages of educational measures and such work must continue. The men must be taught that even in times of peace economy in the use of materials is just as important as the efficient performance of the full day's work.

Standard Car Lighting Specifications

THE SPECIFICATIONS for the electric lighting of cars, adopted by the Railroad Administration and published in the *Railway Age* of November 8, page 827, are an excellent example of what extreme standardization means. By these specifications the Railroad Administration has eliminated the high speed axle generators and a type of storage battery that has several desirable characteristics and which is widely and successfully used in this country. By limiting the pulley ratios to $2\frac{1}{2}$ to 1 and specifically mentioning the size of the pulleys it has offered discouragement to the manufacturers of high speed machines to further develop their products. For instance, one important manufacturer finds that in order to meet these specified requirements it will be necessary to use a generator weighing approximately 700 lb., whereas if a different pulley ratio were permitted a machine of 520 lb. which is a standard product, would meet approximately the same U.S.R.A. requirements of cut-in and full-load speeds, and with a different pulley ratio and a cut-in speed of 18 miles per hour

and a full-load speed of $20\frac{1}{2}$ miles per hour, a machine weighing 475 lb. could be used. With this reduction in weight there would be an accompanying decrease in the cost of the generator. High speed equipment has proved satisfactory and has its adherents.

Furthermore, for the sake of standardization but one size of ball bearing is specified, which if consistently followed will require one important manufacturer to redesign his unit with no operating advantages gained. The specifications also call for batteries of the Plante type, thus shutting out entirely the Edison battery. The latter type has many characteristics in its favor. It has been made standard on one of the largest roads of the country and is used extensively on other roads. It is particularly rugged, light in weight and easily handled, and in cases where the equipment is required to stand for a considerable time with the lights in operation, it is found particularly desirable.

While the specifications represent good practice they are so narrow that further development in the electric car lighting industry will be materially hampered and economical operation will be restricted. This is contrary to American ideals and will result in the subjugation of progress for the idealistic and undesirable plan of extreme standardization. These specifications represent perhaps the most drastic attempt thus far made to limit progress and confine railroad practices to narrow limits.

The Railroads After the War

ALTHOUGH THERE STILL REMAIN unsettled numerous important and complicated problems growing out of the government's action in taking over the railways last December, the virtual termination of the war naturally brings to the front again the question of the future of the railways, a question by no means lost sight of, although rather kept in the background during the past few months. This represents one of the important reconstruction problems now to be faced and although it is less immediately pressing than some of the others, because of the provision in the federal control act for a period of readjustment, it is not too early to begin the consideration of concrete plans.

Several courses are theoretically possible, including government acquisition of the railway properties, a continuance of government operation with private ownership under something like the present plan, a return of the railways to their owners as if nothing had happened, and a return to corporate control under somewhat different conditions. The law under which the government is now operating the railways distinctly states that it is "emergency legislation enacted to meet conditions growing out of the war," and that federal control shall continue during the period of the war and for a reasonable time thereafter not exceeding 21 months after the peace proclamation. The President may also relinquish the railroads at any time. Affirmative action by Congress is, therefore, required to prevent the return of the properties to the management of their owners and incidentally to the regulation of sundry commissions and the restrictions of several laws which also have been kept more or less in the background since last December.

There has prevailed a rather general impression, which we believe there has been no official effort to remove, that the present administration has had no expectation of returning the roads to private management, but that it has hoped and expected to demonstrate to the American people that the government can operate the roads more successfully than they could be operated under corporate control. Others have gained the impression that the effort has been not necessarily to demonstrate the superiority of government over

corporate management but to bring about certain reforms and take advantage of the government control for war purposes to conduct a laboratory experiment in unified operation, free from the restrictions of the Sherman law and the harassing influences of state regulation, as an example for the future.

Director General McAdoo has carefully refrained from committing himself as to the future of the railroads, on the very plausible ground that he was too busy with the war to take thought for the morrow, although he did once allow the use of his name on a statement referring to an ambition to "humanize the science of railroading and negative the idea that corporations have no souls." At any rate some of the activities of the Railroad Administration have, in the opinion of many, gone far beyond what could be classed as temporary or war measures.

Director General McAdoo's ideas as to the future, and undoubtedly those of the President, whose authority he is exercising, may be indicated before long by the character of the activities of the Railroad Administration, whether they are principally devoted to a continuance of the process of unification and scrambling or whether they are turned in the direction of the readjustment.

However, what the government and the Railroad Administration may have desired or intended to accomplish may now be of less consequence than what they may be able to accomplish and whatever the plans and purposes may have been, it is quite possible that they may have been changed by circumstances over which the administration had no control. It is generally assumed that the possibility of Congress voting for permanent government ownership, if such a possibility ever existed, has been materially lessened by the election of a Republican majority in both Houses of Congress on November 5. It has often been predicted that the question of the disposition of the railroads might be the big issue at the next presidential election in 1920, but it now seems possible that it will have to be decided, if not before that time, at least before the Congress and the President elected in 1920 take office in March, 1921. It therefore becomes important that attention be given to what the decision shall be.

While the public has been inclined to postpone critical discussion of the results of government control while the nation was engaged in war, we strongly doubt whether it has been convinced that the government has made such a success of railroad operation as to warrant its adoption as a permanent policy. On the other hand, in spite of the handicaps created by war conditions, such as the shortage of labor and materials, it has possessed numerous advantages which the corporations did not have, such as the power to fix rates with some reference to increasing wages and its freedom from regulation, and to return the roads to their owners subject to the former conditions of regulation might be something like subjecting a hot-house plant to the rigors of the weather.

The only definite plan that has attracted general attention, between government ownership or operation on one side and a mere return to former conditions on the other, is that of regional consolidation of railroads under corporate management, but under strong federal control and possibly a government guarantee. Chairman Daniels of the Interstate Commerce Commission outlined some advantages of such a plan in his address before the National Association of Railway and Utilities Commissioners this week. His idea apparently was to retain the advantages derived from the elimination of competition and from a considerable degree of centralization while avoiding the dangers of a single control of the entire railway system of the country. Perhaps some such compromise between the old regime and the new might be acceptable.

Letters to the Editor

An Interesting Record of Earlier Days

NEW YORK, N. Y.

TO THE EDITOR:

The recent death of Augustus Mordecai brings to mind a feat of railroad engineering which in its day was considered a great achievement and in which he participated. That was the change from the 6-ft. gage to the standard of 4 ft. 8½ in. on the old Atlantic & Great Western Railroad, now a part of the Erie system.

The longest day of the year—June 21—in 1880 was selected to change the gage on 280 miles of main track and sidings between Salamanca, N. Y., and Dayton, Ohio. About 1200 trackmen, carefully instructed beforehand and distributed for this special piece of work attacked the track at 4 o'clock in the morning and the last section was completed by 10:30, in 6 1/2 hours, so that the regular express trains from opposite ends were not delayed and met at Galion, Ohio, at 4 p. m. There was no interruption of traffic.

The work had been prepared for about a year. It was excellently organized by Charles Latimer, chief engineer of the road, who died in 1888. He was aided at that time (in 1880) by a staff of young, ambitious engineers, all of whom afterward made their mark. Henry C. Thomson, Arthur M. Wellington, Jonathan Wainwright, Augustus Mordecai and the writer, who is the only one living now. Augustus Mordecai was the only one of that staff that remained on the road and grew up with it through all its different administrations.

He had a real affection for it and when it became an integral part of the Erie system it was appropriate that he should become its chief engineer in the line of promotion.

GUSTAV LINTHALL,
Consulting Engineer

Compensation for Railway Officers

NEW YORK

TO THE EDITOR:

I notice on the editorial page of the August 23 issue of the *Railway Age* an article entitled "Compensation for Railway Officers".

I am glad to see someone, after all these years, come out and back up this class of railroad men who are so notoriously underpaid.

As far back as 1901 I knew cases of trainmasters and division engineers on some of the big trunk lines who were drawing salaries of \$150 to \$175 per month, while locomotive engineers made from \$225 to \$250. In these cases the officials mentioned were subject to call any hour of the twenty-four; trainmen under the sixteen-hour law were required to be given eight hours' rest. I have been to train wrecks and wash-outs where officials have been on duty for 72 hours without sleep and train crews were relieved regularly at the end of the time required by the law. It seems to me that the railroad officers should at least get as much money as the men who report to them. I know of one case at the present time of a division engineer on one of the big trunk lines in the Middle West, who after 18 years of service, is now drawing the magnificent salary of \$2,000 per year and trainmasters are paid \$175 per month, i. e., unless the Railroad Administration has taken them into consideration in the recent advance of wages to railroad men.

SUPPLYMAN.



Central Avenue Bridge Showing the Recession Abutments and the Manner of Supporting the Ends of the Span

Lackawanna Improvements in Orange, N. J.

**A Very Heavy Traffic and Adverse Physical Conditions
Contributed to the Difficulties of Construction**

THE DELAWARE, LACKAWANNA & WESTERN is now completing an interesting grade separation project through Orange, N. J., which involves the elimination of 26 crossings at grade with the tracks, the replacement of the two-track portion of the old line within the limits of the improvement with three tracks built largely on an improved alignment, and the enlargement of the freight and passenger facilities. Work on this project was begun in May, 1916, and is now complete except for minor details. About 382,000 cubic yards of filling were placed in making the embankment necessary for the raise of the grade: 43,000

the present work on the east, to complete the entire improvement. This will involve the elimination of 14 grade crossings.

Work Carried On Under Difficult Conditions

The Orange section of the improvement, with which this article is concerned, embraces 2.25 miles of line and extends from the boundary between East Orange and Orange on the east, west to the east end of the recent improvement through South Orange. The unimproved line through Orange had two tracks east of Forest street and three tracks west of the point. The alignment west of Orange station involved a five-degree curve, and the line occupied an unsatisfactory location along Scotland street where the tracks closely adjoined the street driveway. There were no large industries to be served by sidings within the limits of the improvement, but it was necessary during construction to maintain service to seven coal yards, a branch depot of Swift & Company,



Overhead Highway Bridge at Scotland Street

cu. yd. of concrete were required in the retaining walls and station foundations, and 30,000 cu. yd. of concrete were placed in the bridges and trestles where 625 tons of structural steel and 800 tons of reinforcing steel were also required.

This project is a part of an extensive program of reconstruction on the Morristown line of the Lackawanna, which includes the renewal of stations and the elimination of all grade crossings. This line constitutes one of the two approaches to Hoboken, the eastern terminal of the road. It extends west from that terminal through the most highly developed residential section of New Jersey within commuting distance of New York City, and for this reason the line has been developed especially for suburban traffic, although a number of local freight trains and four through passenger trains are operated over it daily.

The improvement of the Morristown line has been under way for years. An account of the changes made at South Orange appeared in the *Railway Age Gazette* of March 24, 1916. With the completion of the work in Orange there remains only the section through East Orange, which adjoins



Layout at Orange Station

an ice plant, a brewery and for several small lumber dealers.

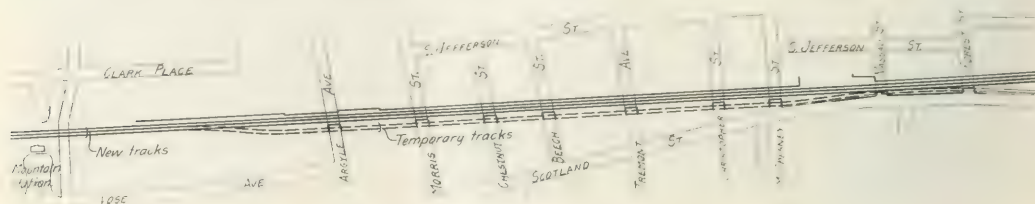
The district included within the limits of the improvement is a populous section, and the right of way is limited in width. There were 140 train movements to be handled daily over the improvement, consisting of the local freight and the four through passenger trains mentioned above, and the suburban traffic. The suburban train equipment is of the

heaviest type, the trains in the rush hours, for the most part, being made up of 8 to 10 steel cars each.

The plans for the improvement contemplated the elimination of the 26 grade crossings; the replacement of the original tracks with a three-track line throughout the entire

the best development of the temporary tracks and a temporary station was built.

The freight and express business of the two stations in Orange and the three in East Orange is all handled at Orange station, and the freight house and yard had long



West End of the Improvement

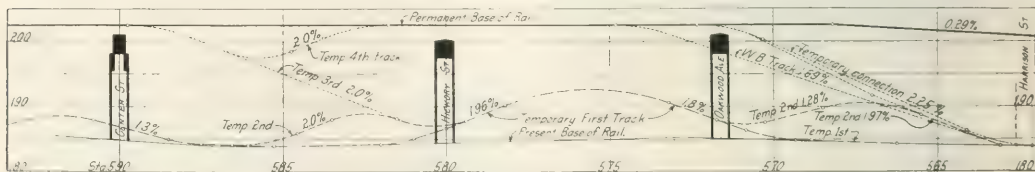
district, the third track to be used as an express track New York bound in the morning and outbound in the evening; and the improvement of the alignment west of Orange station by extending the tangent at the west end of the improvement to an intersection with the tangent on the east end, and connecting them by a 2-deg. curve compounded with a 2-deg. 52-min. curve. This shift in alignment extends over nearly one-third the total length of the improvement and the change simplified the construction, in that eight of the bridges and one-third of the line could be constructed without interference with traffic. It also improved Scotland street, as the old location was abandoned in that vicinity. The plans also provided for the enlargement of passenger and freight facilities, improved layouts for the coal dealers and other shippers along the line, and, most important of all, the elevation of the tracks to a new grade throughout the entire improvement.

The carrying out of this construction program under the conditions outlined above presented several special problems. The limited right of way available made the construction of the temporary tracks necessary for operation during construction a difficult matter. All these tracks for shifting the alignment had to be made substantial to carry the heavy suburban equipment as well as the heavy freight traffic

ago outgrown their capacities. The freight layout was crowded in the area of greatest activity between Essex avenue and Lincoln avenue, where both vehicular and pedestrian traffic was very heavy to and from the temporary station. The handling of the freight business during construction was another important problem. How this and other problems were met will be described in the sequence of construction.

Grade and Alinement Changes

In planning the improvement it was found to be desirable to elevate the tracks rather than the streets, and with the exception of Scotland street, all the streets were carried under the tracks in subways. The profile was determined by a 12-ft. 6-in. vertical clearance over the streets, except at the west end of the improvement where the height of the grade line was controlled by the connecting grade with the recent improvements through South Orange. At this point a 1.3 per cent ascending grade was installed, beginning at the east face of the Montrose avenue overhead highway arch at Mountain station. This grade was continued east until the desired clearance over streets was obtained. The first five streets under the 1.3 per cent grade were depressed to give the 12-ft. 6-in. under clearance, and at Cone street



Profiles of Temporary Track Shifts East of Center Street

of the Boonton branch in the event of a blockade on that line. The necessity for maintaining street traffic across the improvement also complicated the construction plan. The city authorities gave their co-operation in this regard, permitting the closing of streets wherever necessary to conform with plans favorable to the simplest and most expedient methods of operation and the construction of the temporary tracks necessary to maintain traffic.

In planning the enlargement of passenger station facilities it was necessary to move both stations to blocks adjoining their old locations, where the additional property necessary was more easily available. At Highland avenue this arrangement permitted keeping the old station in service during the construction of the new one, but at Orange station the building was on the wrong side of the tracks for

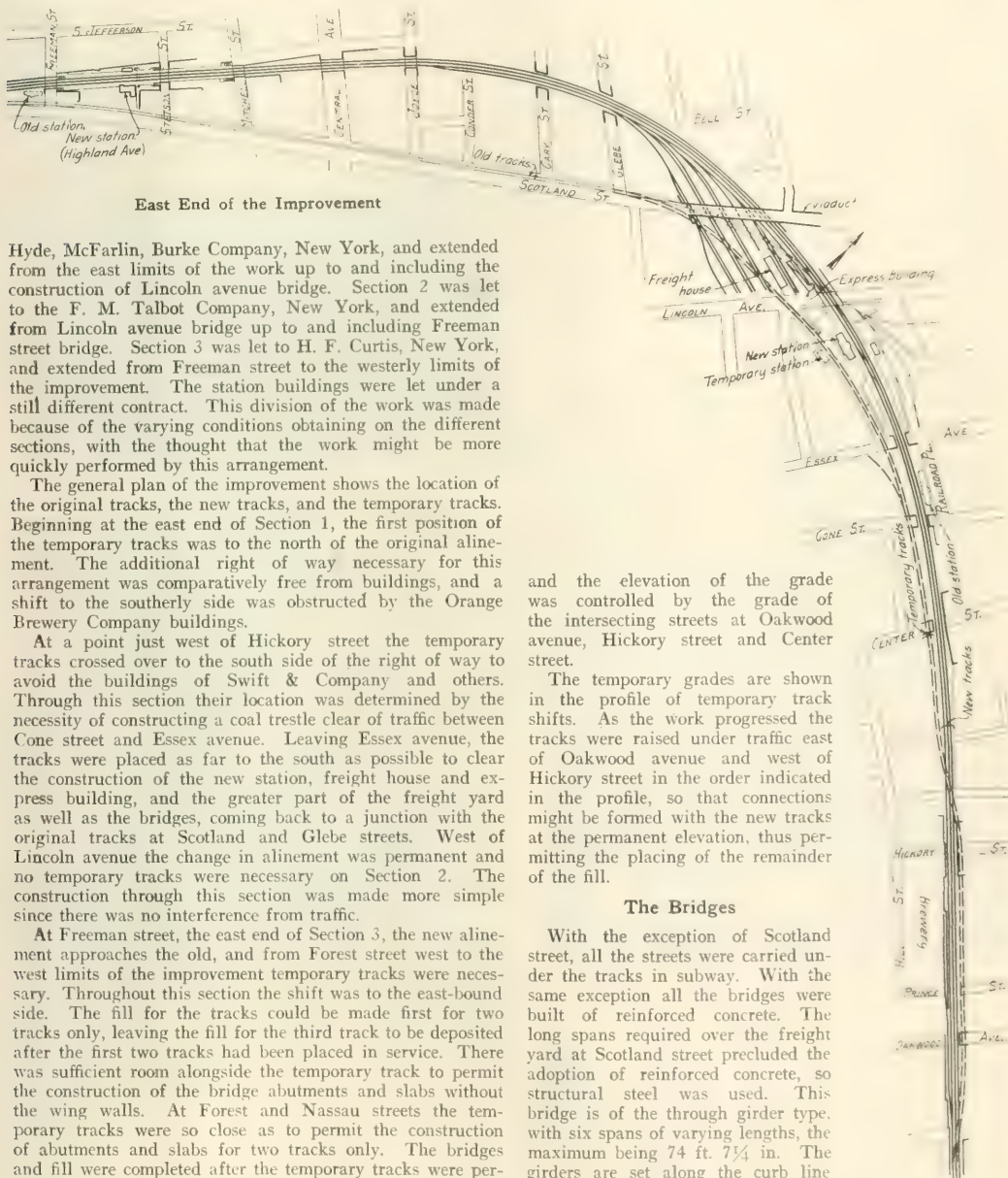
where a 13-ft. 6-in. clearance was necessary because of a trolley line, the street was depressed for the additional clearance. The grade installed at the east end of the improvement is temporary and will be changed when the proposed improvements through East Orange are made.

The change in grade involved embankments containing 382,000 cu. yd. of fill. Approximately 68,200 cu. yd. of the material was secured from the cut necessary to bring the new freight yard site to the proper level, and the remaining 313,800 cu. yd. was hauled from Madison, N. J., a distance of 14 miles, where it was obtained by widening a big cut opened in a recent improvement through that section. The material secured at Madison was loaded by steam shovel, hauled by work trains to Orange, and unloaded by the contractors from temporary trestles. The 68,000 cu. yd.

secured at the freight yard was moved to place over a narrow-gage track and trestle.

The construction work was divided into three sections, each section being let under a separate contract and to a different contractor. The first section was awarded to the

construction of the embankment at the permanent grade. Through this section the limited right of way and the necessity of shifting the temporary tracks from the north to the south of the center line prevented the construction of the temporary tracks clear of the slopes of the new embankment



East End of the Improvement

Hyde, McFarlin, Burke Company, New York, and extended from the east limits of the work up to and including the construction of Lincoln avenue bridge. Section 2 was let to the F. M. Talbot Company, New York, and extended from Lincoln avenue bridge up to and including Freeman street bridge. Section 3 was let to H. F. Curtis, New York, and extended from Freeman street to the westerly limits of the improvement. The station buildings were let under a still different contract. This division of the work was made because of the varying conditions obtaining on the different sections, with the thought that the work might be more quickly performed by this arrangement.

The general plan of the improvement shows the location of the original tracks, the new tracks, and the temporary tracks. Beginning at the east end of Section 1, the first position of the temporary tracks was to the north of the original alignment. The additional right of way necessary for this arrangement was comparatively free from buildings, and a shift to the southerly side was obstructed by the Orange Brewery Company buildings.

At a point just west of Hickory street the temporary tracks crossed over to the south side of the right of way to avoid the buildings of Swift & Company and others. Through this section their location was determined by the necessity of constructing a coal trestle clear of traffic between Cone street and Essex avenue. Leaving Essex avenue, the tracks were placed as far to the south as possible to clear the construction of the new station, freight house and express building, and the greater part of the freight yard as well as the bridges, coming back to a junction with the original tracks at Scotland and Glebe streets. West of Lincoln avenue the change in alignment was permanent and no temporary tracks were necessary on Section 2. The construction through this section was made more simple since there was no interference from traffic.

At Freeman street, the east end of Section 3, the new alignment approaches the old, and from Forest street west to the west limits of the improvement temporary tracks were necessary. Throughout this section the shift was to the east-bound side. The fill for the tracks could be made first for two tracks only, leaving the fill for the third track to be deposited after the first two tracks had been placed in service. There was sufficient room alongside the temporary track to permit the construction of the bridge abutments and slabs without the wing walls. At Forest and Nassau streets the temporary tracks were so close as to permit the construction of abutments and slabs for two tracks only. The bridges and fill were completed after the temporary tracks were permanently replaced by the operating of the two westerly tracks on the finished embankment.

On Section 1 it was necessary to change the grade of the temporary tracks from time to time in conjunction with the

and the elevation of the grade was controlled by the grade of the intersecting streets at Oakwood avenue, Hickory street and Center street.

The temporary grades are shown in the profile of temporary track shifts. As the work progressed the tracks were raised under traffic east of Oakwood avenue and west of Hickory street in the order indicated in the profile, so that connections might be formed with the new tracks at the permanent elevation, thus permitting the placing of the remainder of the fill.

The Bridges

With the exception of Scotland street, all the streets were carried under the tracks in subway. With the same exception all the bridges were built of reinforced concrete. The long spans required over the freight yard at Scotland street precluded the adoption of reinforced concrete, so structural steel was used. This bridge is of the through girder type, with six spans of varying lengths, the maximum being 74 ft. 7½ in. The girders are set along the curb line 51 ft. apart, with two sidewalks 9 ft. wide carried on cantilever brackets. The structural steel brackets and floor beams are encased in concrete and support reinforced concrete slabs. The railing is made of concrete

and is composed of precast panels with the posts cast in place after the panels had been set. The superstructure is supported on reinforced concrete piers.

Most of the streets included in the improvement are 50 ft. wide, and as slab top reinforced concrete bridges with center pier supports dividing the street into the two clear openings of 24 ft. were well adapted to the width of the streets, this type was generally used in the subways. The reinforcement of the slabs is placed normal to the axis of the center pier, even in bridges built on a skew. The parapets of these structures are built integral with the slabs and are reinforced for girder action to carry the triangular loading on the slab adjacent to the parapet.

The piers are made up of a series of 10-ft. elliptical arches separated by columns about 4 ft. in width. These columns are supported on a continuous footing, which is an inverted T-beam in section, the stem of which projects 8 in. above the crown of the roadway to form a curb and protection to the columns. A chamfer 6 in. wide on all exposed edges of the pier and carried along the face of the bridge produces a pleasing effect.

At Essex and Lincoln avenues, adjacent to the station, the street width is 60 ft. Here, in addition to the pier in the center of the street, piers were placed along the curb lines, effecting a reduction of span.

In Section 2 the surface of the ground along the changed alignment was considerably lower than the existing crossings on Section 3, which determined the profile of the tracks. The greater vertical clearance prevailing made possible the use of three flat segmental arches spanning the full width of the streets at Joyce, Mitchel and Stetson streets instead of the multiple span flat top structures. The abutment quantities of the arch type were very small because of the low springing line placed 7 ft. above the sidewalk. The arch type had a slight advantage in cost over the high flat top. The 12-ft. 6-in. clearance at the curb line was maintained in these bridges.

An interesting development resulted in the design of the



This Type of Bridge Was Used Extensively at 50 ft. Streets

bridges over Cone and Center streets. A trolley line in the center of the former and a 5-ft. sewer in the latter prevented center piers in these streets. A shallow floor depth was maintained for the 30 ft. clear span from curb to curb by using 30-in. 200-lb Bethlehem girder beams. These were entirely encased in concrete to conform in appearance with the other structures. A lower bearing sub-soil was encountered at these bridges than elsewhere, and as the foundation pressures would not exceed a maximum of three tons per square foot, a reinforced concrete box abutment was developed which effected a considerable saving compared with a gravity abutment. The same arch pier effect previously

described was given to the wall of the box along the curb line of the street.

The bridge over Central avenue is an innovation in the design and construction of the small type railway bridge. This is a four-way, reinforced, flat-slab bridge. Columns on the curb and along the center line of the street divide the deck, which is two feet in thickness, into eight rectangular panels, two in the width and four in the length of the bridge. The ends of the slabs are also supported on columns set in recesses built in the abutments. The slab is cantilevered beyond the abutment and is entirely independent of it. A suspended beam or apron is built integral with the slab to prevent the back-fill and drainage from per-



Coal Trestle with Shed

colating through the horizontal joints. The abutments take no slab reaction and are, in effect, retaining walls. It was possible to reduce the section for the reason that the suspended apron reduces the live and dead load surcharge pressure against the back of the wall, thus effecting an appreciable saving over the massive abutments required in support of structural steel bridges, where the bridge seat is a source of much trouble on account of the collection of water, snow and ice on its wide surface. Reinforcing steel was placed in the curb to provide a tie between the columns and footing of this bridge, insuring a greater degree of fixedness in the column and slab connection. In addition to the improved appearance, the arch parapet face adds greater stiffness to the edge of the slab and columns. The parapet including the coping was built with the slab and substantially reinforced. The panels of the concrete balustrade were precast. The posts were cast in place.

Bridges of the types described above were built at 23 of the 26 intersecting streets within the limits of the improvement, the three remaining streets being closed across the right of way. All bridge decks were waterproofed with two plies of Minwax saturated cotton cloth laid in and covered with hot asphalt. Two $\frac{3}{4}$ -in. layers of asphaltic mastic protect the membrane from injury by the ballast. Before applying the mastic the membrane was covered by asbestos paper to prevent fusion of the mastic with the higher grade asphalt covering the cloth. The waterproofing and protection coat is carried in a reglet up the back of the parapet wall to the base of rail and down over the ends of the slab to an offset in the back of the abutment two feet below the construction joint between the slab and the top of the abutment.

Reinforced Concrete Coal Trestles

Within the limits of the improvements were seven coal yards, and with the change in grade of the main tracks it was necessary to provide new facilities for them. The usual type of open trestle, expanded in design to serve as a retaining wall, which would have been necessary to support

the embankment had there been no demand for a trestle, was adopted. The foundations for these trestles differ to meet the varying conditions. Several of them support sheds over the tracks; others are without shed; several dealers plan to build bins between piers with hopper bottoms for discharge directly into wagons. Where no shed is provided, the piers are 10 ft. wide, and on the far side a wooden platform and railings are cantilevered from the piers. The trestle shown in the illustration supports a shed.

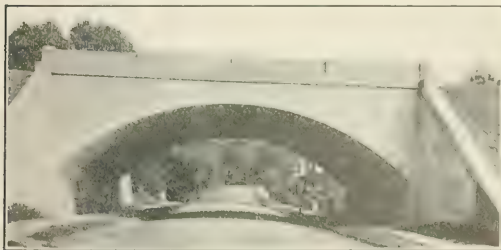
The piers are not reinforced and are used as buttresses, bracing a two-foot curtain wall. The footing under this wall is extended to provide the additional weight necessary to balance the overturning and sliding movements in sup-



Type of Bridge Used Where Center Supports Were Impractical—A 30 ft. Span I-Beam Encasement

porting the embankment. The sections are tied together to make the entire mass effective. The outline of the foundations in plan, while varied as described above, is a series of T-sections so proportioned that under maximum loading the resulting pressure is very nearly uniform. The track stringers are reinforced concrete beams with removable track fastenings extending clear through the beams. This type of fastening has been found very satisfactory.

Provision has been made throughout the improvement for carrying the wiring in a battery of 4-in. fiber ducts set in concrete. These ducts are carried across the bridges, in retaining walls where they exist and in the fill where there



Arch of 51 ft. Span at Joyce Street

are no walls. Nine ducts are for low tension wires, three for signal work, three for Western Union wires, one for company telephones and two are spare. Six ducts are provided for future high tension wires, one being used at present for the wires of the lighting system.

In the embankments the ducts were set in concrete below the shoulder of the embankment after it had settled. The cross-section of the bridge slab shows the method of carrying the ducts across the bridges. The slab and duct were built in separate operations. The dovetail joints between them are insulated by waterproofing membrane to prevent a possible electrolytic action by stray currents following the reinforcing steel of the slab. This insulation is carried over the top of the duct and covered with three inches of concrete.

The Passenger and Freight Facilities

The most important of the station improvements was made at Orange station. This layout includes the passenger station, the shelter house, the freight house, express building and a signal tower grouped in a comparatively small area. The old site for these facilities was cramped by the improved property adjoining it. This applies particularly to the approaches, and it was impossible to reach the site with freedom. For this reason a new location was chosen at the point where the new line departs from the old, permitting ample driveways to be developed at the station level.

The passenger station and shelter house are of the Byzantine type of architecture with exterior walls of dark red wire cut brick laid in flemish bond and trimmed with artificial stone. The roof is of glazed tile. The interior walls of the main waiting room are laid up with pressed brick above a sanitary marble base. From the bottom up to the springing line of the arches, at which line there is a belt course, the brick is laid up in a special diaper pattern. Above the belt course they are laid in flemish bond.

The floors in the station are terrazzo, broken into panels by strips of mosaic. Ceiling lights are used for general



A Section of Coal Trestle Almost Completed

lighting. The seat lights are of the reading lamp type and bracket lights serving the same purpose are provided over the seats along the walls.

The main waiting room is 30 feet by 65 feet in area, with a central ticket office, built in as a booth, with a bay window provided on the track side. The retiring room for women and the smoking room, together with toilets for each, are located in the east end of the building and the baggage room, news stand and telephone booths at the west end. The entrance to the baggage room from the waiting room is between the news stand and telephones.

A subway connects the main station and shelter house. This subway is lighted with vault lights placed in the platforms instead of between tracks, an arrangement which is very satisfactory, as the walking on them keeps the lights clean. A mixture of alundum in the top half inch surface finish of the stairs forms a safety tread. This surface is placed on a concrete base.

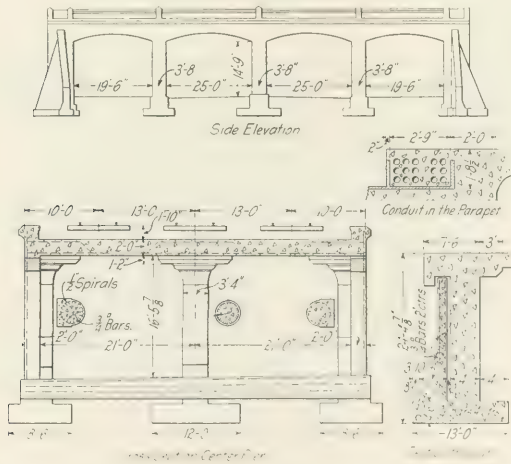
The platforms, about 700 feet long, are partly covered with canopies built on concrete columns with timber overhead construction and tile roofs. The platforms end in stairs leading to the streets.

The freight house, 33 by 210 ft., the express building 20 ft. by 345 ft., and the signal tower are all designed in keeping with the main station building. The old freight

facilities were badly distributed on both sides of the main tracks. In the new layout they have been centralized and ample driveways paved with concrete have been provided. This was accomplished by locating the new plant just west of Lincoln avenue between the old and the new right of way at the point of their separation. By this arrangement much of the old right of way could be utilized.

The surface of the ground at the site chosen was considerably higher than the grade of Lincoln avenue, which has been made the principal thoroughfare to the station, freight and express buildings. In preparing the site 68,200 cubic yards of earth was moved and utilized in the track embankment.

The handling of the freight business during construction was a problem in itself. The portion of the yard on the north side of the tracks was kept in operation by a switch track, leaving the westbound temporary track with a trailing point switch opposite the temporary passenger station. This switch track was connected with the lead track of the old freight yard and during the construction of Lincoln avenue bridge this connecting track was carried across the depression of the street to the north of the bridge on a pile trestle.



Details of the Central Avenue Subway

The express building is located adjacent to the freight yard and the retaining wall, starting from the west abutment of Lincoln avenue bridge. This wall forms the inner wall of the building, and the continuation of the station platform over Lincoln avenue forms the roof. The signal tower is also an integral part of the platform construction and space is provided in it for an elevator to handle express between the platform and the ground floor of the express building.

The signal tower is a three-story building extending down into the express building. The heating plant for the entire layout is located in the basement of the tower. The plant is of the combined pressure and vacuum type designed for a 5-lb. pressure in severe weather. Once the air is expelled from the system no pressure is necessary for heating in mild weather, thus effecting more than 25 per cent saving in coal as compared with an ordinary plant. The piping system is of the flat layout type. There is, however, sufficient grade to carry the return back to the boilers.

The station layout at Highland avenue is similar to the above, but smaller. A simple heating plant in the basement furnishes the heat for the station and shelter house.

The design and construction of this improvement was carried out under the general direction of G. J. Ray, chief engineer of the Lackawanna. The design of the buildings was directed by F. J. Nies, architect, and of structural steel by A. E. Deal, bridge engineer. A. B. Cohen, concrete engineer, was in charge of the concrete design. G. T. Hand, division engineer, supervised the construction with W. H. Speirs, resident engineer, in direct charge of the work.

With an American Railway Regiment

THE FOLLOWING is a portion of a letter received by J. F. Holden, traffic manager of the Kansas City Southern, from his son James, who is now a private in the 14th Engineers (Railways) in France. The company of which he and his brother are members was with the British for eight months in northern France. The young men escaped with their lives in the German drive of March 21, when the company retired to a base point. Recently they re-entered the war zone at another point, and the letter is descriptive of their trip back to the front:

The troop trains over here remind me of the circus trains at home, so many cars for the animals, including men, as they are put in with the horses, a string of flat cars for trucks and wagons, then another string of "animal" cars with a couple of passenger cars for the officers. It was on such a train that we left — on August —. We have no horses in our regiment so with clean, new straw which they have at embarking points for such purposes, the men made themselves comfortable. I was in a cupola. There are no air brakes on the freight trains over here but every third or fourth car has a hand brake with protection for the man who applies it. There is always such a car at the rear of a train. The other cars simply have a lever on the side, which when pushed down holds a brake shoe against the wheel for the purpose of holding cars when standing on sidings. We had a British engine, a big Consolidation with "R O D" on the tank, R O D meaning Railway Operating Division. The British have great numbers of these engines on all lines in the north of France, including a large number of American and Canadian built that make one homesick when they go by. The road trains usually have a French train crew, the idea being, I suppose, that an English crew would be up against it sometimes on a French railroad. Switching or transfer jobs, of course, have a complete "Tommy" crew. I have seen some tremendous yards.

Our trip, which took a day and night, was most interesting. At one station we saw a whole row of bomb holes where some Fritz had tried to hit the railroad, including an important bridge. There was a great deal of construction work in progress. We passed trains constantly and when one with Americans went by, there would be cheering. As you no doubt know, American detachments are in with British battalions; so there would usually be a car or two with just Yanks in it.

We lost our R O D engine in the afternoon and got a big French engine with high drivers, which is typical of their locomotives. Most are balanced compound. The country became hilly and we had a pusher for miles. It was necessary for the train to stop in order to feed the men but until dark there was no let-up in the going. I dropped off to sleep in a corner and awakened about two hours later with the train standing and a regular air raid overhead. The searchlights were sweeping the sky right over us, the tracer bullets were going in the same direction and there seemed to be guns all around. We were in a yard at the time and of course Fritz likes yards. The cooks, who were in the next car, had seized the opportunity of feeding the men whose greatest concern at the time was not about the raid but some-

thing to eat. As the train might start any moment, it was necessary to do a lot of running up and down along the train to see that everyone was fed. No one seemed to have a thought for the raid. In our old camp, I have seen a bunch playing poker and not quitting for a second with bombs dropping all around. Must admit my nerves are a little too excitable to take such an indifferent view of an air raid.

The next morning we awakened in a yard on the outskirts of Paris. Commuters' trains were going by in a peculiar type of car, an enclosed double decker with four wheels. An engine could pull twenty or thirty at a great rate. It was raining hard. We pulled out for the front about nine. We went by some beautiful homes and attractive towns, suburbs of Paris. The line was a busy one with the trains rushing by. War seemed very far away and yet in a couple of hours at a slow gait we would be right into it. Imagine an enemy at Bridgeport, Conn., trying to reach New York; the suburban traffic of New Rochelle and other such places is still going, and as you take the "7:51" to town you pass troop trains on their way to Bridgeport to help hold the line. The trains passing—as we were coming out of Paris—with the people reading their papers as at home, put in mind such a

simile and gave me an idea how anxious Frenchmen have felt over the defense of Paris.

We came out of a tunnel and crossed the Marne and there on the bank was a "dough boy" washing up. The Marne and the American soldier will always associate themselves in my mind, because the Marne is the place where the Yanks, through their wonderful fighting, stopped the Germans and drove 'em back. The country became more interesting with signs of war. Shell holes, wires down, villages shot up—but not to the extent we had become used to up in the British front. As we passed the stations we saw more and more of the American army. At one place were numerous brand new guns, tractors, trucks, with every one busy getting them unloaded and working. The sight of American soldiers certainly looked good after one year of nothing but British. When one lad at a station told us what outfit he belonged to, the ——— Artillery, and how they had been ordered up to help take a position, and when half way there, had received word to turn back as they were not needed, the position having been taken, it was hard for me to suppress an individual cheer of my own. We soon reached our destination, were billeted and two days later left for our present home.

Federal and State Commissioners in Convention

Termination of War Removes Some Restraint on Discussion of Railroad Administration Policies

THE THIRTIETH ANNUAL CONVENTION of the National Association of Railway and Utilities Commissioners began its sessions on November 12 at Washington. At the opening of the convention the Interstate Commerce Commission and 25 state commissions were represented, the total number of delegates being more than one hundred. Winthrop M. Daniels, chairman of the Interstate Commerce Commission, delivered the address of welcome, the Executive Committee presented its report and Charles E. Elmquist, of Minnesota, acting president of the association, delivered the annual address.

The association has 18 standing committees and each was scheduled to present a report. The first on the order of business was the report of the Special War Committee, which was presented by its chairman, Joseph B. Eastman, of Massachusetts. The other members of this committee are Frank H. Funk of Illinois, Travis H. Whitney, first district, New York, Paul P. Haynes of Indiana, C. B. Garnett of Virginia and Charles E. Elmquist of Minnesota.

William G. McAadoo, director general of railroads, was expected to address the convention, but, owing to a recurrence of an attack of influenza, sent in his stead Charles A. Prouty, director of public service and accounting of the Railroad Administration.

The status of the state commissions during federal control and of the railroads after the war apparently were the subjects uppermost in the minds of those present, and the fact that the war is now regarded as over seemed to present an opportunity for a freer discussion than has heretofore been considered advisable or patriotic. This fact was particularly emphasized in Mr. Elmquist's address and in the report of the Special War Committee, both of which deplored the lack of interest displayed by the Railroad Administration in the offers of co-operation of the state commissioners and the tendency, which they ascribed to the railroad men in Director General McAadoo's organization, to ignore the jurisdiction of the states.

Mr. Elmquist said the representatives of the carriers had

rallied under the banner of exclusive federal control and were following the plans outlined by the railroads before the Newlands Committee to such an extent that they had "cracked the boundaries of states and scrambled both state and interstate rates in one omelet." The state commissions, he said, had taken the position that they should not resort to litigation to protect their prerogatives during the war, but now they should proceed to exercise their authority and to continue the activities they have largely suspended during the war. He urged the committees to give special consideration to the proposals of the administration to standardize class freight rates, the proposal to increase express rates and the future disposition of the railways. On this last point he said he did not believe there is a friend of public ownership in the country who thinks government operation has had a fair chance to demonstrate its possibilities. He hoped the convention would adopt a resolution asking the Interstate Commerce Commission to suspend the class rate scales until peace is restored and people have had an opportunity to adjust their business affairs, and that the Railroad Administration would give early consideration to the possibility of reducing the rates it recently increased.

An abstract of Chairman Daniels' address follows:

Chairman Daniels' Address

No other year in our history has recorded so fundamental a revolution in our transportation system as the year just elapsed. So numerous and far-reaching have been the changes involved in federal control of carriers that it is perplexing to single out a particular topic upon which to dwell. The war railroad problem—the maximum utilization of transportation systems to subserve the government's military necessities—seems to have been solved. The eventual status of railroad control and regulation, now that peace is at the door, is so complicated and intricate that I shall content myself with but a few general observations thereon at the close. In this situation it has occurred to me that it might be helpful to the national association if I confine myself

mainly to indicating the causes which led up to federal control, and to outlining the way in which, to date, federal control has affected the functioning and the activities of the Interstate Commerce Commission.

It may come as a surprise to those whose wish is father to their thought to learn that the commission's activities have persisted through this troublous time. They should rest assured, however, that—as Mark Twain once remarked of his own rumored demise—the report of our death is grossly exaggerated.

I. First, as to the transition to federal control.

The work of the commission has traditionally not involved actual participation in railway management. The only exception of moment has been in the domain of locomotive and safety appliance inspection. We have more than once disclaimed the role of general manager of railways. But the exigencies of war-time transportation would not permit our standing wholly aloof. As early as March, 1916, the freight congestion at eastern seaboard terminals became so acute that the commission deputed to Commissioner Clark the task of meeting railroad executives in New York to organize relief; and until the dissolution at the end of May, 1916, of the organization then effected, he served as a member ex-officio, but in active participation in its work. Commissioner McChord at a later period when car supply problems became acute undertook at Louisville a similar task. In our annual report to Congress in the fall of 1916, the commission recommended that it be vested with power to control the supply, distribution, interchange and return of cars. Responsive to this suggestion the Esch car service act was enacted in May, 1917. A new bureau of the commission, that of car service, was created; and in collaboration with a joint committee of the carriers exerted wide regulatory powers in the actual distribution of car equipment. While the carriers' executives were in control of operation generally, the commission was thus simultaneously charged with a task of actual railway management in the matter of car distribution. Similar functions had devolved upon other governmental bureaus. The priority director, for instance, had been entrusted with the control of the issuance of priority orders; and the requirements of the food administrator as to car loading, and of the fuel administrator in relation to coal movements, threatened to precipitate a situation of divided power and responsibility in railroad administration.

The carriers, despite what co-operative measures they had united in, were still operating in competition with each other. Rather than forego remunerative traffic they chose to see their own rails overtaxed and their jealously guarded terminals congested. The law itself which forbade the pooling of traffic was an obstacle to the maximum fluidity of movement. In short, the operating situation was grave, and war exigencies were acute.

There was another equally threatening situation connected with rates and railway finances. And this leads me to observe parenthetically that neither the law nor the theory of utility regulation had ever addressed itself to a condition where unit costs for labor, material and supplies advance sharply and continuously by a series of rapid shocks, each seemingly more radical than its predecessor. The general principles of utility regulation have assumed that increases or decreases in unit costs for labor and supplies will proceed in a fairly gradual and leisurely manner; that a compensatory movement might be anticipated whereby slight rises in certain unit prices would be offset by corresponding decreases in other unit prices; and where even a gradual increase in all unit prices would be in a large degree or even wholly offset by the economies attendant upon a larger volume of business or traffic. It is unnecessary to say that in time of war these assumptions broke down completely.

Moreover, the normal rates of return, whether in the form of interest on bonds, or dividends on new investments, were

largely revolutionized by war conditions, when the government was in the market for enormous amounts of capital for war loans, and when the profits in many war industries were reputed to be extraordinarily large. If rates were to keep pace with ever-rising costs, not only would their level have to be unusually high, but continuously rising and absolutely unstable. Moreover, it was doubtful whether rates could be raised high enough so that prospective earnings would attract sufficient additional investment to carrier securities to guarantee the necessary and indispensable additions, extensions and betterments made imperative by war exigencies. Both on operative and on financial grounds some drastic reorganization was inevitable.

In December, 1917, the commission formulated and sent to Congress a special report supplementing its annual report. We there insisted upon the unification of carrier operation during the war.

Federal control became a fact by virtue of the President's proclamation of December 26, 1917. While the railroads were to remain subject to all existing statutes and orders of the Interstate Commerce Commission and to all statutes and orders of regulating commissions of the various states in which they were situated, any order, general or special, made by the director general was to have paramount authority and to be obeyed as such.

II. The colossal magnitude of the director general's task, no less than the war emergency which had created it, rendered imperative on the commission's part a prompt offer to the Railroad Administration of any assistance that lay in our power. This tender was promptly and cordially accepted by the director general, and for some weeks after the beginning of federal control, the individual commissioners, in addition to their regular work, were engaged in prosecuting various investigations at his request. (a) This first phase of our activity as shaped by federal control was one of individual, unofficial, volunteer co-operation with the director general and his railroad cabinet.

I will not venture upon a comprehensive enumeration of the various undertakings by my colleagues in this early formative period, but will cite a few illustrative examples. Arrangements were perfected whereby the tariffs to be filed by the director general should conform, essentially, to our tariff circular 18-A, and the formal integrity of tariff publication was thus secured. The momentous problem of railway wage increases was entrusted by the director general to the Railroad Wage Commission, a body of four, of which Commissioner McChord was a member. Studies to suggest possible economies of operation were prosecuted by Commissioner Aitchison along the line of short routing and the elimination of cross hauls. A similar study of fuel economy was made by Commissioner Woolley, with far-reaching results affecting not only the wider utilization of improved coking processes, but involving also the eventual establishment of central power super-stations which promises eventually to effect revolutionary economies in transportation. Various concrete situations such as the threatened discontinuance of track elevation in Indianapolis, the matter of disputed elevator rentals, and the institution of store door delivery at New York were committed to Commissioner Harlan. During this period, as well as subsequently, our bureaus were freely put at the disposition of the director general,—the Bureau of Safety Inspectors, the Bureau of Carriers' Accounts and the Bureau of Statistics being conspicuous contributors to the successful launching of the new regime.

There has continued until quite recently another co-operative enterprise resulting from the passage of the federal control act which ought not to be overlooked. The framing of the compensation contract with the carriers according to the terms of the federal control act presented a matter of no little difficulty. Four of my colleagues, Commissioners Clark, Meyer, Hall and Anderson, have collaborated for months in

the tedious and oftentimes vexatious drafting of the standard contract. A new bureau of the commission, called the Compensation Board, was constituted to cope with the necessities of this work. In this instance our voluntary administrative co-operation extended well beyond the initial period of federal control, but in essence has been akin to the work of individual commissioners previously cited.

A second and wholly new and distinct phase of the commission's activity resulting from federal control is the *advisory function*,—the rendering of advice at the instance of the director general in matters involving large administrative readjustments affecting the shipping and traveling public.

This second function is unlike the first in being not one of voluntary co-operation, but having its legal foundation in section 3 of the federal control act. We interpret this as laying upon us the legal obligation of responding to the requests of the director general for advice or expert opinion upon administrative matters which he submits for our consideration, and, when necessary or appropriate, of taking testimony and hearing arguments from all interested parties in the premises to enable us to discharge this function.

Two pending and pertinent illustrations of this second new function come readily to mind. I refer to the Railroad Administration's endeavor to effect uniformity in freight descriptions in the three classifications, and to the Railroad Administration's recent request that the commission advise as to the effectiveness of the proposed method of increasing express rates and of distributing the same between different sections of the country.

It will be observed in both instances that the commission is not requested to advise whether the end contemplated—uniformity in classification description or the augmentation of express revenue—is or is not desirable. That responsibility the Railroad Administration assumes as its own. But the *effectiveness of the methods* by which these proposed ends are to be attained is submitted to the commission for its deliberate judgment and opinion.

III. The third new phase of the commission's activity is the formal adjudication of complaints brought under section 10 of the federal control act. Without pausing to inquire how far the commission is to be governed in its findings by various considerations recited in this section of the statute, attention is directed to the point that it is *upon complaint*, and apparently *upon complaint only*, not in cases where upon our own motion or initiative an investigation has been started, that the commission is empowered to enter upon a hearing involving presidential rates. This consideration taken in conjunction with the fact that by General Order No. 28 practically all fares and rates became presidential-made rates and fares involved a temporary stoppage in the issuance of many matured and maturing reports and decisions of the commission. The rates attacked in practically all of our pending cases had been displaced by presidential rates. The presidential rates could not be passed upon by us nor a lawfully effective order issued affecting them until the presidential rates as such had been assailed by complaint to the commission. The commission had, therefore, no alternative but to institute new rules of procedure adapted to this situation, holding in abeyance a large number of cases until by supplemental complaint the pleadings had been so amended as to make the director general a party, thus enabling him to have his day in court.

The commission has already issued two reports and decisions in cases to which, by supplemental complaint, the director general had been made a party. The first was the Willamette Valley Lumbermen's Association *vs.* Southern Pacific Company. In this case mills upon the Willamette Valley had been required to pay upon their lumber traffic, in carloads, rates based upon the combination over Portland to various destinations in Montana and points east thereof. The decision and report found that rates so made were rela-

tively unjust and unreasonable and unduly prejudicial to the extent that they exceeded rates contemporaneously maintained from the Pacific Coast group, including Portland, to the same destinations and joint rates upon this basis were required to be established.

The second case was the Kaw River Sand & Material Company *vs.* the Atchison, Topeka & Santa Fe Railway Company, and was decided upon the second of this month. Here the complainant, located beyond the switching limits of Kansas City, was accorded the Kansas City rates to destinations upon the Santa Fe, but rates higher than the Kansas City rates if the destination was to a point upon a connecting line. The commission held that under present conditions involving the elimination of carrier competition, where there was absorption of switching charges within a switching district, the provisions therefor should be uniform where similar circumstances and conditions prevail, and the complainant was accorded relief in conformity to this finding.

THE RAILWAYS AFTER THE WAR

The recital hitherto has concerned itself wholly with the transition to federal control and the commission's activities as affected thereby. Let me, in closing, venture a few suggestions relating to our *post-bellum* railroad policy. Permit me to say in passing that these suggestions reflect not the views of the commission, but only my individual views and are necessarily tentative because of the impossibility of forecasting conditions as they may exist a twelve-month hence.

I am inclined to think that most well-posted students of transportation are coming to the conviction that the future of railroad operation in this country after the provisional arrangement now existing shall have terminated will conform to either one of two types. The first is complete government ownership and operation; the second is corporate control, not of the *ante-bellum* type, but modified and transformed in essential particulars.

Should the government continue the operation of railroads there will be difficulty in satisfactorily answering the contention that the government should own outright the property which it operates rather than pay rental therefor. In what method the government should acquire title, whether by expropriation or by an exchange of government securities for corporate securities, and if so, on what terms of exchange, I do not here stop to inquire, as the problem is involved and complex.

On the other hand, if there is a reversion to corporate control, there will be, in my judgment, certainly the following changes which must hereafter be imposed upon corporate ownership and operation.

First, the elimination of competitive waste. The reduction of passenger train mileage between important terminals has not evoked widespread complaint as to inadequate service. It has served to eliminate much of the conspicuous display and competitive waste of running a number of half-filled trains where a smaller number of more completely filled trains suffice. Similar economies in locomotive and freight car mileage have resulted from the utilization of shorter routes, and this possibility of economy should not vanish even should there be a reversion to corporate control.

Second, the system of open instead of closed terminals has, I think, come to stay; and it would perhaps be equally probable that common use of equipment in the general interest of the commerce and transportation of the country will not be readily surrendered.

Third, the realization of additional transportation economies which might result from the regional consolidation of parallel and competing lines or systems is unquestionably desirable in the public interest.

Fourth, the financing of railroads if corporate ownership continues will, in my judgment, be subjected to federal control whereby a competent tribunal will have to pass upon

proposed security issues and perhaps in co-operation with regional tribunals, will probably have to pass also upon the propriety and necessity for the construction of additional projected lines of railroad.

Fifth, a scientific system of cost analysis ought to be devised so that whether carriers are operated by the government or by owning corporations there will be greater accuracy than now exists as to the proper charges to be made for maintenance and depreciation in order to determine with some approach to certainty what the real earnings of the carriers are, in contrast to the earnings as computed at present.

In essence, the mission of the highway is to open the narrow gates of the parish upon the broad thoroughfares of the world; and our modern, steam-traversed highways will best fulfill their destiny when they accommodate, whether under government or corporate operation, the maximum of traffic with the minimum of friction.

Report of the Special War Committee

The report of the Special War Committee, which recommended that Congress should be asked to determine more definitely the relation which state regulations should bear to federal control, was in part as follows:

The state commissions have a record, since the war began, in harmony with the spirit and needs of the times. They have helped their country by allowing and facilitating reductions of service needed for the conservation of labor and fuel; by refraining from requirements, reasonable under ordinary conditions but wasteful of capital and energy in time of war; and by permitting without undue delay or controversy increases in rates fairly demanded by the rapid advance of wages and prices, and necessary to relieve utilities of more than their fair share of the burden of war conditions. On the positive side, they have also helped their country by special investigations and proceedings directed toward the more efficient handling of freight by both carriers and public, the conservation and better use of electrical energy and of labor, provision of transportation facilities for war industries, co-operation with fuel administrators, and the like. They have responded loyally to every call for assistance made upon them by those more directly connected with the prosecution of the war, and it is our only regret that such calls have been too few and that those in authority have too seldom appreciated the capacity for assistance which the commissions possess.

It was inevitable that in the war emergency radical changes should have been deemed necessary in the conduct of the affairs of the transportation and utility companies. It was inevitable that these changes should have raised perplexing questions of practice and of policy affecting the future as well as the present. It was equally inevitable that these questions should have caused doubt and anxiety to the state commissions, for they have occupied a difficult position. On the one hand has been the earnest desire not to interfere with measures, however drastic, which were essential to the prosecution of the war. On the other hand has been their duty to safeguard the public and to protect and preserve rights established after long struggle in the past. It is with some of the more important of these vital questions that the committee wishes to deal in this report.

RAILROADS

The situation has been productive of uncertainty and unrest. The act of Congress provided that the carriers, while under federal control, should be "subject to all laws and liabilities as common carriers, whether arising under state or federal laws or at common law, except in so far as may be inconsistent with the provisions of this act or any other act applicable to such federal control or with any order of the President." It was also provided that nothing in the act should be construed "to amend, repeal, impair, or affect the

existing laws or powers of the states in relation to taxation or the lawful police regulations of the several states, except wherein such laws, powers, or regulations may affect the transportation of troops, war materials, government supplies, or the issue of stocks and bonds."

The language quoted leads to the inference that Congress did not intend to reduce state regulation to a nullity, but wished to preserve it, so far as it did not interfere in any proximate and tangible way with the transportation of troops and munitions, and that this regulation which it sought to preserve included authority over intrastate rates, for the regulation of rates is undoubtedly an exercise of police powers. The interpretation placed upon the act by the Railroad Administration, however, has apparently been very different. We say "apparently," because no authoritative and comprehensive statement upon this subject has been made either by the director general or by his immediate legal advisers. In practice it has been assumed by the Railroad Administration that the President, acting through the director general, has power to initiate intrastate as well as interstate rates, regardless of the provisions of state statutes, and that the state commissions have no power of review over rates so initiated. They have been filed with the state commissions "for information only" and not in accordance with state statutory provisions. In the case of service, the practice has varied, but it has seemed to be the assumption that the power of the director general over service and accommodations is complete and that the state commissions may exercise authority, if at all, on sufferance only. In certain instances their authority has been directly challenged, even in matters of purely local concern. Recently, for example, representatives of the Illinois Central Railroad under federal control have formally declared that the Board of Railroad Commissioners of Iowa "has no power to render an order effective in any way affecting the property in any manner connected with the use and operation" of that railroad, and that all its property "is in the possession and under the control of the United States government; that said control and possession are exclusive of all other controls and possession."

Confronted by this situation it has been the belief of this committee that the state commissions ought not to embarrass the government, at least while the war continued, by litigation, but should seek the adjustment of differences by friendly negotiation, and endeavor in every way, regardless of jurisdictional questions, to aid in making federal operation a success. We have acted from the beginning upon this belief, and it is our information that this has been very generally the attitude of the state commissions.

On December 27, 1917, the president of this association wrote the director general tendering the hearty co-operation of the state commissions and stating that their organizations were at his command for the service of the country. This was followed by a conference at Washington on January 16, and by a further conference at White Sulphur Springs on June 26, at which as many as 30 states were represented. The director general was told that the state commissions wished to be of all possible assistance, but were perplexed by doubt and uncertainty; that shippers and the general public were calling upon them for relief, while many railroad officials challenged their jurisdiction. The following paragraph from the resolutions then presented indicates the remedy suggested:

"The state commissions do not desire to work at cross-purposes with the national railroad administration. We know that in unity there is strength and we want to help present a common front in this hour of need. We believe that most of the difficulties which now portend would be swept away if you would issue a general order or in some other way set forth clearly and definitely your conception of the relationship between the national railroad administration and the state commissions. We believe that a definite plan can be worked out under which, waiving for the time bothersome questions of jurisdiction, the states will know definitely your views on what they should do and what they should not do. While we cannot prevent any passenger or shipper from raising issues of jurisdiction, and while we are on our best even the commissions, we can say to you that

such a plan, worked out between you and ourselves and generally announced by you, would undoubtedly receive the hearty and loyal support of most of the state commissions and would go far to prevent questions of jurisdiction being raised from other sources.

Subsequently, at the director general's recommendation, this matter was taken up by the war committee with Judge Prouty of his staff and a definite draft of a general order on the plan suggested was prepared.

Up to the present time, neither this general order nor any order with similar intent has been issued by the director general. But even if one should be issued, while the situation would be clarified and improved, there would still be need for further action, at least now that the war is over. There will no longer be the same need for concentration under a single leadership upon one end, regardless of all others, and the powers and duties of the state commissions with reference to the railroads ought not, we think, to be dependent either upon the sufferance of the director general nor, so far as it can reasonably be avoided, upon interpretation by the courts of ambiguous provisions after prolonged litigation. Undoubtedly the question could be raised in the courts, for there are many who believe that the Railroad Administration has gone, even in time of war, beyond constitutional right in limiting state regulation, and the power of the federal government over intrastate matters is certainly far more restricted in time of peace. But, without waiver of legal rights, it is desirable that the subject should receive renewed consideration by Congress. In other words, if federal control is to continue after the war ends,—and we assume that it will, for some time at least,—the issue ought to be faced squarely, and there should be a more definite determination by Congress than is contained in the present act, of the status of state regulation with reference to such control.

CONCLUSIONS OF COMMITTEE

From the experience already gained, it seems to your committee that the following conclusions, among others, may fairly be drawn:

(1) The operation of a national system of railroads in the United States is not like the conduct of an ordinary business, if for no other reasons, because of tremendous size. There is danger in too great centralization of control and the creation of a bureaucracy too far removed from the immediate influence of public opinion. However well intentioned they may be, the chief executive officers of such a system cannot have any adequate knowledge or understanding of local conditions and problems, and the inevitable tendency is to arbitrary action and the development of rules superficially uniform, but often discriminatory and unfair in their application to particular cases.

(2) While this difficulty may be overcome in some measure by delegation of authority, subordinates are responsible to the man who appoints them and tend, in the last analysis, to rely upon what they believe to be his wishes rather than upon independent judgment. This has been well illustrated in the case of the present federal control. The attempt has been made to delegate authority in rate controversies to regional and district committees, but, in its actual working, this plan has caused dissatisfaction. A common result has been confusion, delay and final reference of the dispute to the central authorities in Washington.

(3) Under normal peace conditions the people of this country will not be satisfied, we believe, with a mere opportunity to bring their complaints in regard to rates and service before railroad executive officers who can refuse public hearings, if they so desire, and say "Yes" or "No," without giving their reasons, subject to appeal to Washington which, in most cases, is a long distance away.

(4) It is our belief that local tribunals of semi-judicial character for the consideration of local questions will be necessary to a successful and democratic administration of

the railroad properties, even under federal control, and that the state commissions are well suited to the purpose. A similar result might, it is true, be secured by the appointment of regional federal commissions; but tribunals directly responsible to the local communities will be far more satisfactory in the long run. They will offset bureaucratic tendencies, and introduce an element of home rule which the size of the country and the complexity of its conditions make essential.

(5) Railroad regulation started with the states, and every advance in the law has been prompted by and secured as the result of the experience of local commissions. Disregarding the past, however, we believe they have, since federal control was established, amply demonstrated their usefulness to the public because of their intimate acquaintance with local conditions. Even before the act of Congress was passed, the widespread publicity given by the secretary of this committee to the proposed car spotting charge at industrial tracks resulted in its abandonment, and influenced Congress in reserving to the Interstate Commerce Commission power to revise rates upon complaint. Activity of state commissions after General Order No. 28 was issued, resulted in a speedy elimination of a provision which would, by the immediate raising of all intrastate rates to the interstate basis, have inflicted great injury upon large sections of the country, and also in broad changes in the minimum charge provisions. Their continued activity has since resulted in other important modifications, and many complaints in which they have interested themselves are now pending.

(6) The need for local public tribunals is accentuated by the fact that the men now operating the railroads under federal control, aside from the director general, are very largely the men who operated them under private control. Broadly speaking, the situation could not well be different, but in view of the training and acquired prejudices of these men, and the fact that many of them believe that federal control will be temporary, the desirability of preserving established means of public regulation is evident. At the time when the war began they were united in an endeavor practically to eliminate the states from the field of railroad regulation. It was both necessary and desirable to place the operating management of the roads in the hands of experienced railroad men, but policy-determining power is a different matter. Men who for years have viewed railroad policy in the light of railroad interest do not over night become satisfactory exponents of the public interest. It is for this reason that the War Committee has urged larger representation of the public upon the director general's staff, and it is equally a reason for maintaining state regulation.

(7) This need is further emphasized by the fact that the present Railroad Administration has shown a tendency to go far beyond immediate war purposes in its conduct of railroad affairs. It is considering, and to some extent has already introduced, radical and far-reaching changes in operation, management and rate structure. While such changes may prove desirable, it is clear that they require most careful consideration and that state commissions, because of their special knowledge and experience, can be of great value in this connection. As this committee pointed out in a letter to the director general, however imperfect the old rate structure may have been, it was upon this structure that the business of the country has developed, and sudden or violent changes are likely to do more harm than good.

(8) Finally, it may be said that federal control does not remove the need, upon general grounds, of a co-ordinate but independent system of public supervision. One of the dangers of public operation of utilities is that it may be subject to political or financial abuse, involving waste, graft and inefficiency. This danger is more likely to develop in time of peace than in time of war, and the only known

preventive is eternal vigilance. The value of separate state regulation in this respect is obvious.

Stating the situation concisely, while a federal control of railroads, which excludes local regulation may, perhaps, be tolerated in war time, it is neither expedient nor wise in time of peace. This view is based upon the merits of the question, without regard to any constitutional right which the states may, and probably do, have to regulate commerce within their own borders, even when carried on under federal auspices.

So far as service and accommodations are concerned, we believe that this proposition admits of no reasonable dispute. It surely is unwise to leave solely to the discretion of an organization centering at and responsible to Washington the operation of local passenger trains, the establishment, maintenance and sanitation of station facilities, the investigation of accidents, the protection of railroad crossings, the provision of spur tracks and other matters affecting local service, safety and equipment. We know of no way in which adequate consideration can be given to local conditions, and the time and rights of the public protected, unless independent local tribunals like the state commissions are permitted to retain the same direct authority in dealing with such matters which they have exercised for many years past. The idea, apparently held in some quarters, that this problem can be met by the establishment of a central bureau at Washington is manifestly ill-conceived. Complaints cannot be handled satisfactorily by long-range correspondence. One of the most valuable features of state commission work has been the informal adjustment of innumerable disputes by personal investigation and direct dealing with parties.

The same may be said of general supervision exercised over accounts, expenditures and methods of administration. Publicity is a cure for many evils, and the mere fact that a government bureaucracy is substituted for private management does not make such publicity any the less desirable. If state commissions, independently appointed, are given general powers of investigation and supervision over accounts and operation, it will be a safeguard against the abuse of public management which so many fear, and a direct incentive to a conduct of affairs which will in other respects endure the light of day.

In the realm of rates there is more opportunity for dispute. One of the major themes of the railroad representatives who united last year in an appeal to the Newlands Committee for the practical elimination of state regulation was the confusion caused by the conflict between interstate and intrastate rates; and the problem presented by the so-called "Shreveport Cases" has been recognized and considered by this association. Clearly, more uniformity, greater concentration and better co-operation in the treatment of rate questions are desirable than have prevailed in the past. On the other hand, we think it equally clear that the knowledge and experience gained by the state commissions in long years of dealing with these questions are valuable assets which ought not to be lost to the country under either private or federal control. Their value has been demonstrated time and again in practice during the past few months.

Your committee has no hesitation in saying that under federal control, the state commissions should possess the right of review over intrastate rates. Loss of time and unnecessary conflict of treatment can be avoided in important cases by friendly co-operation between the state and federal regulatory bodies, by the making of a joint record, and by conference prior to final decision—in other words, by following the practice already successfully introduced in New England. We also believe that the right of review should and will be exercised in no arbitrary way and with due regard for the contracts which have been entered into between the Railroad Administration and the carriers and for the necessity of protecting the federal treasury.

Summing up what has been said above, the Special War

Committee believes that this association, if federal control is to be continued, should ask Congress to determine more definitely the relation which state regulation should bear to such control, this request being made, of course, without even implied waiver of any constitutional right. In our opinion, it is desirable in the public interest that the state commissions should possess, under federal control, substantially the same authority over service and rates and the same general powers of supervision and investigation which they have exercised under private railroad ownership. We believe that these recommendations are not inconsistent with the intent of Congress at the time when the existing act was passed. Action of the kind suggested is preferable to the litigation which seems likely to result if it is not secured. When the war emergency passes, however, it is to be assumed that each state commission will in any event exercise such jurisdiction as it believes that it possesses.

Regardless of these questions, we further strongly urge the state commissions to do everything in their power to help the Railroad Administration in the successful operation of the railroad properties, and to help shippers and the general public to secure proper adjustments of reasonable complaints. They should respond promptly and frankly to any request for information which the Railroad Administration may make and, upon their own initiative, furnish further suggestions in regard to the operation or improvement of the properties which the public interest may seem to demand. In the case of shippers, we believe that the commissions should continue their activity in investigating changes in rates, interstate as well as intrastate, and in endeavoring to secure reasonable adjustments. In particular, we recommend thorough consideration of the tentative class rate scales for the different sections of the country which have been prepared by the Railroad Administration, and which have been or are to be sent to the Interstate Commerce Commission and to the state commissions for criticism and suggestions. This is an exceedingly important matter. While it is true that railroad rates often seem illogical and crudely complex and inconsistent, too bold surgical treatment of such imperfections is likely to produce more ills than it cures, and cautious consideration is peculiarly desirable.

Whether or not federal control should continue even beyond the time specified in the present act, or, if not, what alternative plan should replace it, are questions which lie, in our judgment, beyond the province of the Special War Committee. They seem certain to provoke widespread controversy, and the state commissions should prepare to aid Congress in their consideration. The alternatives seem likely to be the continuation of federal control in its present or some modified form; the resumption by the carriers of their former status unchanged; or some midway plan, which we understand owners of their securities are formulating, for the creation of regional railroad systems under federal charter, with private management, but subject to a centralized and comprehensive system of public regulation accompanied by some public guarantee of a minimum return on securities. In order that the state commissions may be informed and in a position to act, we recommend that either the Executive Committee of this association or a special reconstruction committee be directed to keep in touch with the situation as it develops, with power to advise the commissions fully and to represent them before Congress or other tribunals in the discussion of these questions when so authorized.

EXPRESS COMPANIES

On July 1, 1918, the four principal express companies of the country transferred to a new corporation, known as the American Railway Express Company, all their property, excepting cash or treasury assets and certain real estate; and upon the same date a contract became effective under which the director general employed this new express company as the sole agent of the government, under his supervision, to

conduct the express business upon all lines of railroad under federal control.

Without undertaking to analyze all the terms of this contract, of which the members of this association are fully informed, it is sufficient to say that the director general has assumed that he has the power to initiate changes in express rates, exempt from suspension of either the Interstate Commerce Commission or state commissioners, and has acted upon this assumption. Whether or not he deems rates so initiated to be subject to review by the commissions has not, to our knowledge, been stated.

The right of the director general to exercise exclusive authority over express rates and charges is shrouded in even greater doubt than exists in the case of railroad rates and charges. Presumably it is dependent, if it exists at all, upon the general war power of the President. If this is the case, it is a right which will cease to exist when the war is over.

The desirability of positive action by Congress with a view to narrowing the opportunity for litigation, and determining more definitely the status of the express companies and of their public regulation, is quite as desirable as in the case of the railroads, and similar arguments apply.

With the railroad and express properties under unified control, the time is opportune for an investigation of this question which will determine whether the railroads should receive, as now, a certain percentage of the express revenue, and what that percentage should fairly be, or whether their compensation should be fixed upon some more equitable basis. Such an investigation would also, we think, throw needed light upon the question as to whether the maintenance of separate express companies is desirable or whether the railroads should do this business directly with their own facilities.

Proposed Class Rates Opposed

The proposed standard scales of class rates to be applied to both state and interstate traffic were the subject of a special session on Tuesday evening, called to offer an opportunity for an informal discussion. This meeting was made the occasion for many criticisms of the Railroad Administration with particular reference to its attitude toward the state commissions. There were many statements that the proposed revision of rates could not in any sense be called a war measure and there were other objections on the ground that the proposed scales would in many specific instances bring about large increases in rates in certain states. Some of the commissioners proposed to rest their objections on the ground that the railroad Administration has no authority to fix rates for state transportation, while others wished to attack the rates on their merits.

A special committee appointed at the meeting presented a resolution, which was adopted, declaring to the director general and to the Interstate Commerce Commission that it is the opinion of the association that the present is an inopportune time to establish uniform standard scales of class rates to apply on all traffic and calling attention to the fact that the state commissions are charged with the duty, under the statutes of the several states, of prescribing and establishing reasonable schedules of freight rates. These commissions cannot and do not subscribe, the resolutions stated, to the view that they can be required in times of peace to surrender their jurisdiction over such matters, and they believe that the present abnormal conditions, with high unit costs due to the war, make it inadvisable to enter upon an investigation for the purpose of establishing standard schedules revolutionary in character. When the times again favor the work of readjustment and the establishment of uniform scales they should be taken up by the Interstate Commerce Commission in co-operation with the state commissions and after full investigation orders should be made by the commissions covering their respective jurisdictions.

Jurisdiction of State Commissions

The question of the jurisdiction of the state commissions again came up when Director Prouty addressed the meeting. He said the director general had not made announcement of his attitude toward the question because his staff has not agreed and the director general has not reached a final conclusion on the interpretation of the law and also because he has considered it more important to go ahead than to spend time in talking about jurisdiction. He hoped that the administration and the commissions could get together on that basis for the purpose of accomplishing the things that ought to be accomplished. He thought Congress had intended to put in the hands of the President the power to do what it was necessary to do with the railroads but now that the military pressure has been relieved there should be no more practical difficulty over the question of jurisdiction of the state commissions. He said the director general recognized that the state commissions could handle local matters more satisfactorily but he advised them, instead of issuing orders, to make recommendations to Washington.

Judge Prouty then offered to answer any questions; these disclosed considerable resentment because railroad officers had displayed a tendency to ignore the state commissions and because they had been advised to take up rate matters with the regional and district traffic committees. A. E. Helm, counsel for the Kansas commission, said it was doubtless proper for the director general to have selected experienced railroad operating men as his assistants but he did not see the necessity of his doing the same with the traffic officials and asked whether a state commission was expected to continue to take instructions from a traffic committee. Judge Prouty said they had the option of going to the committee or direct to his office in Washington, depending on whether or not they thought it worth while to try to enlist the support of the traffic committee. He said he thought a common understanding of the question of jurisdiction would be advisable but that apparently the state commissions had one idea of it and the administration another; the most satisfactory way to get along would be to ignore the question and "not start another war."

Director Prouty also discussed the progress of the valuation saying it would not be necessary to change his prediction of last year that the field work would be completed as of the average date of January 1, 1920, but that the office work had been more seriously impeded by the war and that more than another year would be required to complete it. He thought the land and accounting work could be finished by January 1, 1920, but that the completion of the work would depend on how much time the railroads spent in contesting the tentative reports. The bureau has been instructed, he said to include a final value in the ensuing tentative reports.

Other Committee Reports

Among the reports of committees presented was one from the Committee on Public Ownership and Operation which, however, presented no conclusions, but merely recommended that the committee be continued with instructions to proceed with the general study of the subject. The committee recalled that last year in its report it had made a prediction that "higher rates appear inevitable unless the government becomes a directing force and takes its controlling part in the shaping of the new railway policy." Since that time, the committee said, the government has assumed the actual operation of the railroads with the result that rates have become very much higher than the imaginations of a year ago could have pictured. For this reason it did not care to venture any further predictions and stated that it is impossible at this time to present anything approaching or even suggesting specific conclusions or recommendations.

The Committee on Safety of Railroad Operation, of which C. C. McChord of the Interstate Commerce Commission is chairman, presented a report in which it called attention to the fact that the method of enforcement of the federal safety statutes has been changed by General Order No. 8 of the Railroad Administration and that it is still too early to say whether the application of disciplinary measures as contemplated by that order will prove an effective substitute for court procedure. It appears from the results of inspections during several months following the promulgation of the order that the fear of punishment of the individual has not served as a sufficient deterrent to bring about any marked improvement in the addition of safety appliance equipment.

The report also shows that the number of cases of excess service reported by 10 railroads in the eastern section shows a very material increase for the year ending June 30, 1918, from 28,755 in 1917 to 126,856 in 1918. For the four years 1914 to 1917 the total number of cases was over 9,000 less than in the single year 1918. On one of the roads the number of cases of excess service reported increased from approximately 4,000 to nearly 37,000. Many of these cases, the report says, are reported to be due to inability of railroads to secure necessary men and the disturbed industrial conditions present other problems affecting safety of railroad operation. It is true of railroading as well as of other hazardous occupations that accidents increase alarmingly when large numbers of inexperienced men are employed in responsible positions. It is not necessary, the report says, to look for undeveloped devices and inventions to bring about an increase in safety because the general adoption of the best devices available and the best methods and practices which have been developed as a result of years of experience and which are now commonly employed by the more progressive roads would result in a very material reduction in the increasing annual list of railway casualties.

Officers of the association were elected as follows. President, C. E. Elmqvist, of Minnesota; first vice-president, C. M. Candler of Georgia; second vice-president, J. B. Eastman of Massachusetts. J. B. Walker, secretary and L. S. Boyd, assistant secretary, were re-elected.

A resolution passed on Thursday is appended on page 867.

Train Accidents in September¹

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of September, 1918:

Collisions

Date	Road	Place	Kind of accident	Kind of train	Killed	Inj'd
9.	Penn. & N. Y.	No. Olean	bc	P. & F.	0	3
16.	Chi. & N. W.	Alhance	bc	P. & F.	11	21
20.	Boston & M.	Dummerston	bc	P. & F.	3	16
27.	St. Louis S. E.	Marshfield	bc	P. & F.	13	49

Derailements

Date	Road	Place	Cause of derailment	Kind of train	Killed	Inj'd
3.	Norfolk & W.	Portlock	neg.	P.	0	8
27.	Southern	Hot Springs	.....	P.	.....	0
29.	N. Y. Central	Cook, Ind.	b. truck	P.	8	4

Other Accidents

Date	Road	Place	Cause of accident	Kind of train	Killed	Inj'd
5.	Lehigh Valley	Corfu, N. Y.	boiler	F.	3	0
12.	New York Central ..	Fonda, N. Y.	boiler	F.	2	1

The trains in collision at North Olean, N. Y., on the

evening of the ninth were southbound passenger No. 9336 and a locomotive, without train, standing on the main track. Three trainmen were injured. The collision was due to the error of a telegrapher in reporting the track clear while the yard engine was still occupying the section.

The trains in collision near Alliance, Neb., on the 10th were west-bound passenger No. 43 and a work train. Both locomotives were wrecked, and the first coach of the passenger train was partially telescoped. Six passengers were killed and 18 injured, all of them in the first coach. Five employees (not on duty) were killed, and three injured. The collision was due to the failure of the men in charge of the work train to protect against No. 43.

The trains in collision on the Boston & Maine at Dummerston, Vt., on the afternoon of the tenth were a southbound local passenger and a following southbound freight. The three rear cars of the passenger train were badly damaged; three passengers were killed and one trainman and 15 passengers were injured. The line at this point is operated by automatic block signals. The train which was run into was passed at Dummerston by the White Mountain express. After the express had cleared the block section the switch was opened and the train moved immediately from the siding to the main track. It had stopped to permit the trainman to set the switch straight, and while standing was run into. This movement from the side track was made in disregard of the rule that after the switch had been opened the train should not enter the main track until sufficient time had elapsed to allow a train that had passed the signal in the rear to be brought to a stop before reaching the switch. The freight train had received a caution signal 8,400 ft. in the rear of the switch. This signal was held in the caution position by the express train then traversing the block in advance. The local train was standing just at the entrance of that block.

The trains in collision near Marshfield, Mo., on the evening of the 17th of September, were an eastbound extra carrying United States troops, and a westbound freight train. Both engines, several passenger cars and a number of freight cars were badly damaged. Twelve soldiers and three trainmen were killed and 37 soldiers and two trainmen were injured. The troop train was being run on a schedule order, but no copy of this order had been furnished to the freight train; and in addition to this the troop train had run past an automatic block signal set against it.

The train derailed on the Norfolk & Western at Portlock, Va., on the evening of the third was eastbound passenger No. 4. The engine and first four cars were overturned and the fifth car derailed. The engineman was severely scalded and the fireman seriously injured. Three other employees and three passengers were slightly injured. The train had run past a signal set against it at the grade crossing of the Virginian Railroad, and was thrown off the track at the derailling switch.

The train derailed near Hot Springs, N. C., on the 27th was a westbound freight. The engineman and fireman were killed.

The train derailed on the New York Central near Cook, Ind., on the 29th, was a northbound freight. By the breaking of a truck, six cars were thrown off the track and fell down a bank; and five boys (trespassers), riding on one of the cars, were killed.

The train involved in the accident near Corfu, N. Y., on the fifth was an eastbound freight, drawn by two engines. The boiler of the leading engine exploded, was blown off the frame and lodged on the westbound track. Its wheels and frame and running gear were not thrown off the track, and were pushed some distance until the train could be stopped. The engineman, fireman and one brakeman were killed. The explosion was due to low water.

¹Abbreviations and marks used in Accident List—bc, Rear collision—bc, Buffering collision—acc, Other collisions—b, Broken—d, Derailment—unf, Unforeseen obstruction—ins, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc, obst., Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P, or Pass., Passenger train—F, or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

The train involved in the accident at Fonda, N. Y., on the 12th was an east-bound freight. The boiler of the locomotive exploded and the fireman and a student fireman were killed and one other trainman was injured. The explosion was due to low water.

Accidents to electric cars were reported in September from Hammond, Ind.; Jamestown, N. Y.; Turners Falls, Mass.; and Bryan, Tex. The last named, a derailment occurring on the 23d, is the only one in which, according to the reports, a fatality resulted; one passenger killed, two injured.

Supply Field Expects Continuing Good Business

Requirements of Railroad Administration, Rehabilitation Overseas and New Markets the Reason

THE SIGNING OF THE ARMISTICE with Germany has promptly brought forth many expressions of opinion as to the effect of the coming of peace on the business of the railway equipment builders. The need for new cars and locomotives for our own railroads, the need for new equipment in the rehabilitation of the railway lines of Belgium and France, as well as the demands from other countries which have been practically unable to secure new railway material for replacements and extensions since the outbreak of the war, it is felt all point to a continuing favorable business in railway supplies.

Westinghouse Air Brake Company

In a memorandum to the stockholders of the Westinghouse Air Brake Company, dated November 7, President John F. Miller says:

In view of the fact that the change in the company's fiscal year has postponed until March the issue of the annual report and accompanying financial statements which you have heretofore received in October, it is proper that you should be advised in general terms of the present condition and future outlook of the company's business. This action seems especially pertinent since there is now more or less uncertainty as to the probable effect of an immediate peace upon the prospects of the larger manufacturing concerns, many of which have been principally employed in war work.

Contrary, perhaps, to the general opinion, the Westinghouse Air Brake Company is not now engaged in the execution of any contract or contracts involving munitions or other products used directly or solely for war purposes. The brake equipments and draft-gear now being supplied for application to the cars and locomotives ordered by the United States Railroad Administration include a relatively small number originally intended for use on American lines in France, but the demand for additional locomotives and cars for use in the United States is so great and so insistent that even if the United States government should for any reason decide not to ship additional locomotives and cars to France, there is no doubt that the entire number of equipments on order will be required in the United States as promptly as they can be produced. Again, the assistance that the United States must lend in the rehabilitation of Belgium and France will undoubtedly continue the increasing demand for additional transportation facilities in this country, so that there is no reason to anticipate any reduction in the volume of brake business during 1919.

Current monthly shipments of air brake material and accessories exceed in value the shipments of any corresponding period in the history of the company, and the value of unfilled orders on November 1, 1918, approximated \$11,000,000.

The same statements apply with equal force to the signal business of the Union Switch & Signal Company, which promises to show unusually favorable figures for the fiscal year ending December 31, 1918, with every prospect of their continuance through the year 1919. The war work of that company, which has been handled with distinguished success and without any interference with normal activities, will bring the net earnings for the year 1918 much beyond any previously reported for a similar period. The Switch company's principal contract with the United States government is nearing completion, and the supplementary contracts on which work has been commenced can be canceled without loss, if the government so elects.

The business of the company's other subsidiary and associated companies, the National Brake & Electric Company, of Milwaukee; the American Brake Company, of St. Louis, and the Loco-

motive Stoker Company, of Pittsburgh, has been, and continues to be extremely satisfactory.

Pressed Steel Car Company

President F. N. Hoffstot of the Pressed Steel Car Company, replying to inquiries concerning the effect of the termination of the war on the business of the company, is quoted in Monday's issue of the Wall Street Journal as saying:

"It is my opinion that an early peace would be greatly to the advantage of this company.

"Strictly war business, subject to cancellation and adjustment by the government, represents but a small percentage of our present unfilled orders, although our entire capacity is engaged on government work of one kind or another, but as this production is used essentially for construction and upbuilding, we feel our business would be increased rather than decreased as a result of peace. It is only recently that companies in our particular line of business have been able to secure even the promise of a uniform, adequate supply of materials and men, but the curtailment of non-essential industries should greatly improve conditions both as to materials and labor.

"It is my opinion, that there will be a large and increasing demand for our products, not alone from the suspended and accumulated demands due to the war, but from foreign countries whose stocks of our products have been completely exhausted."

United States and Great Britain Only Locomotive Exporters

An interesting analysis of the export prospects in the locomotive field has been made by the New York stock exchange firm of Clark, Childs & Co. This analysis emphasizes that there is a severe shortage of locomotives the world over and shows that the great demand for motive power for the railways of the world that will follow the coming of peace will have to be met entirely by the plants in the United States and England. The analysis follows:

Annual capacity of America's only two big locomotive building concerns, the Baldwin and the American, was between 5,500 and 6,000 high pressure type engines. It is reasonable to estimate that war-time efficiency and plant extensions have enabled these concerns to increase production possibly 1,000 locomotives per annum.

Domestic demand a year ago was such as to consume the entire production of the country. In the meantime railroad equipment the world over has been deteriorating, and when the war ends only two countries, America and Great Britain, will be in a position to supply their own needs, and to take locomotive contracts from the rest of the world.

Indeed, it appears that England and the United States are likely to be snowed under with contracts for motive power. British works are about the only competent ones left in the world outside the United States. Great Britain's capacity at the beginning of the war was about 2,500 locomotives per annum, and the shops were kept busy supplying home demands, as well as those of "the Possessions," and in building locomotives for those companies in other countries wherein British capital was strongly represented.

When war broke out the shops were taken over by the British government, put to work on munitions and ordered to build no more new locomotives, and to merely keep old ones in repair. Thus the condition of locomotive equipment in the British Isles and in the Colonies must be such it will keep the English fa-

cilities busy for a long time, leaving other markets pretty much to America, provided that this country can give assurance of prompt deliveries.

In Germany, before the war, locomotive production was about 4,800 per annum, but it is unlikely that Germany will get a great deal of "outside" locomotive business, and her home needs for equipment must be pressing.

France, before the war, was always short of locomotives, and five of her six shops were in territory ravaged by the Germans. Before French works can be reconstructed France will be forced to buy enormous numbers of locomotives in some other market.

Belgium had eight locomotive works, sufficient to supply her own needs and to manufacture a surplus for sale to neighbors, but her factories have been razed and machinery carried off to Germany.

Austria bought most of her locomotives in Germany.

Russia's locomotive works, of which there were several of considerable proportions, have either been destroyed by her own people or by the enemy.

Holland, Denmark and Norway purchased their locomotives in foreign markets.

Italy manufactures merely enough railroad motive power for her own needs, and cannot at present increase her output.

There is bound to be great expansion in China, which has no locomotive building facilities. Japan constructs only enough for her own needs. There are no locomotive works of any consequence in the Balkans and none that are modern in Turkey. Every railroad in South America is short of locomotives. Asia and South Africa are suffering for locomotives and other equipment.

In short, it would appear certain that one great phase of reconstruction to follow cessation of hostilities is an era of locomotive building such as the world has never seen. Only two countries are in position to accept locomotive contracts, and in this country there are only a few companies to handle orders, which seem likely to come pouring in on a scale sufficient to keep them working day and night for a considerable period after the disbandment of the opposing armies.

Marked Success of "Sailing Day" Plan

THE RAILROAD MAN car conservation during a period of car shortage means much; but to some shippers, who look only to their immediate needs, car saving is a desideratum insufficiently tangible to appeal to them. But the sailing-day plan, as introduced in the Northwestern region, has demonstrated to them that economy in cars also produces greater regularity and promptness. This engages their interest and their co-operation. On June 6, previous to the inauguration of the scheme, a shipment of two crates of drugs left Chicago at 11:30 p. m. and arrived at Ossian, Iowa, at nine on the third morning. Under the present schedule similar shipments leave Chicago at 11:30 p. m. and arrive at Ossian at nine on the second morning, saving 24 hours. Formerly shipments were transferred at Dubuque, Iowa, transfer. Now they are loaded in a direct peddler car at Chicago, breaking bulk at Giard, Iowa, and peddling beyond that point. Innumerable instances of this kind could be cited. The committee has rearranged the loading from Wisconsin points through Milwaukee in both directions, cutting out the transfer at that point by establishing sailing days at Waukegan, Ill.; Kenosha, Wis.; Racine, Sheboygan, Manitowoc, Fond du Lac and Winona, Minn., Minnesota transfer; Eau Claire, Wis., and one or two other points. Practically 80 per cent of the merchandise formerly transferred at Milwaukee is now being loaded through in peddler cars. Milwaukee formerly transferred 75 cars a day; now about 15, and the committee is confident that a further reduction can be made. Between some points the new arrangement has saved 48 hours.

Theoretically it may seem possible to get freight through a big terminal transfer without loss of time; but, practically, the switching of cars through a congested terminal, moving them to freight houses, etc., is subject to many delays.

The sailing-day plan promotes regularity of movement. Sailing days are established only after a careful study of the volume of traffic, thereby insuring full tonnage on the days designated. Cars are never held back for additional

tonnage. At Green Bay, Wis., transfer in September of last year, when 1,195 cars were loaded, no less than 283 were set back for additional tonnage. In the same month of this year 1,090 cars were loaded, and not one was set back.

The improvement in service rendered under the plan is beginning to make an impression on the shipping public, and already a considerable number of letters have been received from shippers and consignees commending the new scheme. A typical letter says: "The sailing-day plan of handling freight is very satisfactory to us and meets with our approval, for the reason that orders come to us more regularly. This gives us a chance to put up our goods in better shape and get them to our customers in better condition."

The sailing-day committee in the Northwestern region was appointed last summer. At the present time practically every principal station in the region is sending cars to specific points on specific days. Cars carrying from two to three tons are now rare; the rule is full tonnage at regular daily, semi-weekly or tri-weekly intervals. The saving in cars in the Northwestern region at the present time amounts to over 20,000 a month, an economy which is reflected, of course, in a larger available supply of cars for other purposes. At Green Bay transfer the average loading per car in September, 1917, was 11,820 pounds; this year 15,930 pounds, an increase of 4,110 pounds. Last year 1,195 cars were loaded, this year 1,090, a reduction of 105 cars. It is expected that some of the transfer stations can be discontinued.

The sailing-day scheme is resulting in a decrease in the loss and damage to merchandise, according to claim departments of railroads in the region. At all of the principal stations in the region freight has been concentrated on one, two or more lines making the loading of through cars possible, whereas under the old system several transfers were necessary. Obviously, the fewer the transfers the less the damage resulting. The plan now includes the operation of pick-up cars on certain days, increasing the percentage of loaded cars in local trains.

The concentration at certain centers of freight destined to points in the East, thereby making possible through cars to Buffalo, Cleveland, New York, etc., has reduced the congestion at Chicago and other gateways, has expedited the movement of freight, and has helped to get rid of the embargoes on merchandise that formerly existed in Eastern territory. In all of the details it has been the aim of the Railroad Administration to operate the plan for the best convenience of the shipping public. At Chicago, the largest terminal in the region, with a large number of receiving and transfer stations, the sailing-day plan, under the immediate supervision of the terminal manager, was put into effect only six weeks ago.

Christmas Mail

The division superintendents of the railway mail service, following a conference at Washington, estimate that there will be 200 carloads or 100,000 sacks of mail arriving at New York during a 10-day period beginning about November 10, to be sent to soldiers and sailors who are in Europe or on the seas. It is expected that the Christmas mail throughout the United States will break all records, and that the volume of all classes of mail handled this winter will be greater than ever before. In previous years it has been possible for the railway mail service to reduce its force during the summer months, but during the past summer it has been necessary to greatly increase the working force over the entire country, due to the increased volume of mail matter. The winter months are always the heaviest, but during the past summer the volume of mail handled was greater than last winter, not alone in the eastern states, where most of the war work is done, but over the entire country. One superintendent of a division in the Atlantic coast states reports an increase of approximately 40 per cent over last summer.

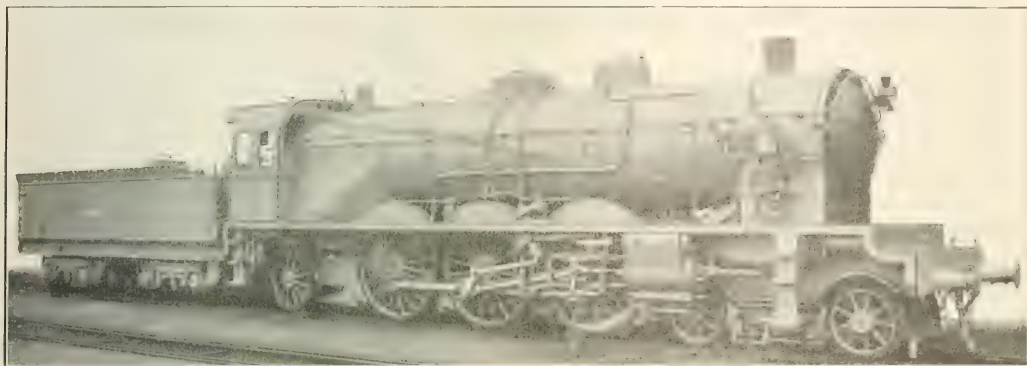
Recent Locomotives for the French State Railways

Four-Cylinder Compound Pacific Type and Simple Consolidation Type Built in Great Britain

By F. C. Coleman

A CONSIDERABLE number of British built heavy 4-6-2 express passenger locomotives and 2-8-0 freight locomotives have recently been put into service on the French State Railways. The passenger locomotives are four-cylinder compounds of the Pacific type, a class

coupled axle. The valves of the low-pressure cylinders are flat slides, their location being shown in one of the illustrations. In the case of the low-pressure cylinders, intercepting valves actuated by hand-operated pneumatic gear are provided to allow the working of the low-pressure cylinders at

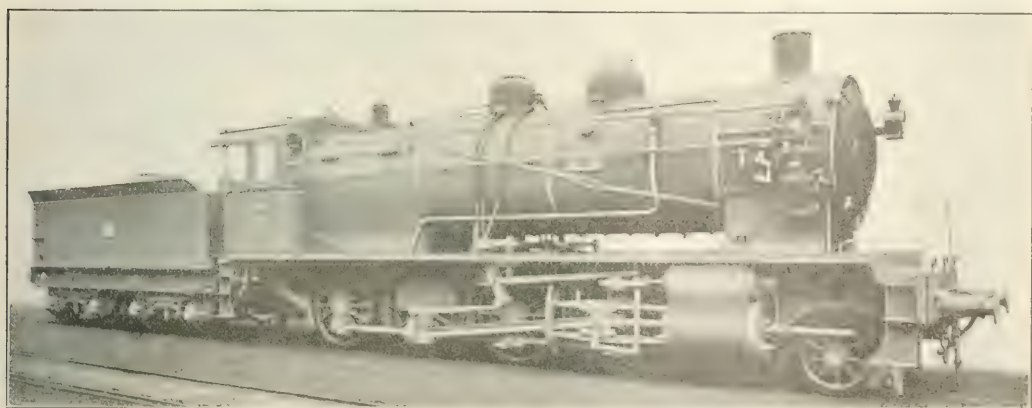


French State Railways Four-Cylinder Compound Pacific Type Passenger Locomotive

which, according to French notation, which takes account of axles instead of wheels, is known as the 2-3-1 type. The high-pressure cylinders are 16 17/32 in. in diameter and the low-pressure 25 3/16 in. in diameter, the stroke in both cases being 25 19/32 in. The high-pressure cylinders are outside the frames back of the saddle casting

low speeds with high-pressure steam. The valve gear of both high and low-pressure cylinders is of the Walschaert type.

The bearings of the coupled axles are 8.66 in. in diameter, the length being 9.25 in. in the case of the front axle and 9.45 in. in the case of the second and third axles. The high-pressure crank pins have bearings 5.11 in. in diameter by



Consolidation Type Freight Locomotive for the French State Railways

and the connecting rods drive on the second coupled axle. These cylinders are provided with piston valves and with a by-pass which is actuated by pneumatic gear coupled to the throttle handle. The low-pressure cylinders are inside the frames and their connecting rods drive on to the front

5.51 in. long, while the cranks of the crank axle on which the low-pressure pistons act have bearings 9.05 in. in diameter with a length of 5.51 in. The boiler has a barrel 5 ft. 9 1/4 in. in diameter outside at the back ring, while the length between tube plates is 19 ft. 4 5/16 in. The firebox shell is

10 ft. 2 in. long at the bottom, 3 ft. 11 3/8 in. wide at the front end where it has to pass between the frames, and 6 ft. 10 5/8 in. at the back. The roof of the firebox shell is of the round top pattern and is directly stayed to the crown of the inside firebox by screwed stays. The inner firebox is of copper and the stays are also of copper, except above the brick arch, where they are of a manganese alloy. The boiler tubes are of solid drawn steel. The grate is of the finger-bar, rocking type, with a drop section at the front end. The engine is fitted with a top header superheater which has 24 elements and is fitted with a Fournier pyrometer.

The general fittings of the engine include Lethuillier-Pinel safety valves, Detroit sight-feed lubricator and Flaman speed indicators. The front and rear drivers are fitted with a Leach pneumatic sander, while a hand sander is provided for the centre pair of drivers. A train-heating apparatus of the combined steam and compressed air type is included in the fittings. The buffing gear between the engine and tender is of the Roy type, this being also used in the case of the freight locomotive.

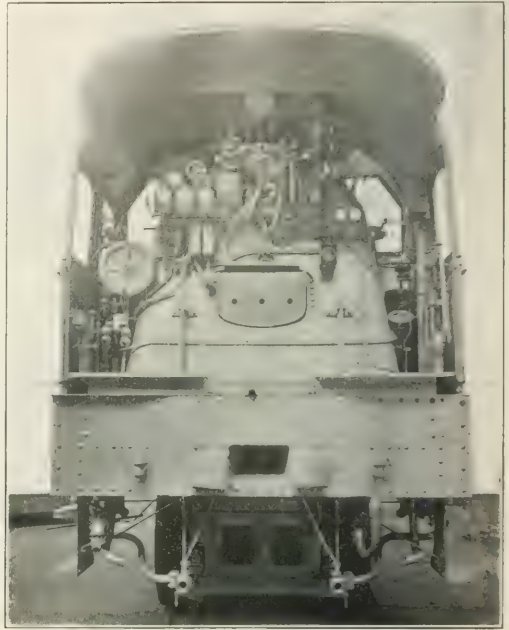
The bearing springs are under-hung, and compensating beams are provided between the coupled axles and between the rear axle and the trailing truck. The tender has a tank capacity of 5,400 gal., and carries 6.6 tons of coal.

With an effective pressure per sq. in. on the pistons equal to 50 per cent of the boiler pressure, the engine can exert a tractive effort of 20,760 lb. The boiler pressure is 227 lb. per sq. in.

The freight locomotives are each of the simple two-cylinder Consolidation type (1-4-0 by French notation), having outside cylinders 23 3/4 in. in diameter by 25 9/16 in. stroke, the connecting rods being coupled to the third pair of drivers. The cylinders are fitted with piston valves and are provided with a by-pass which is operated by a pneumatic cylinder and directly controlled by the throttle handle. The piston rods and tail rods are fitted with United States air-cooled packings, and the valve gear, as in the passenger engines, is of the Walschaert type.

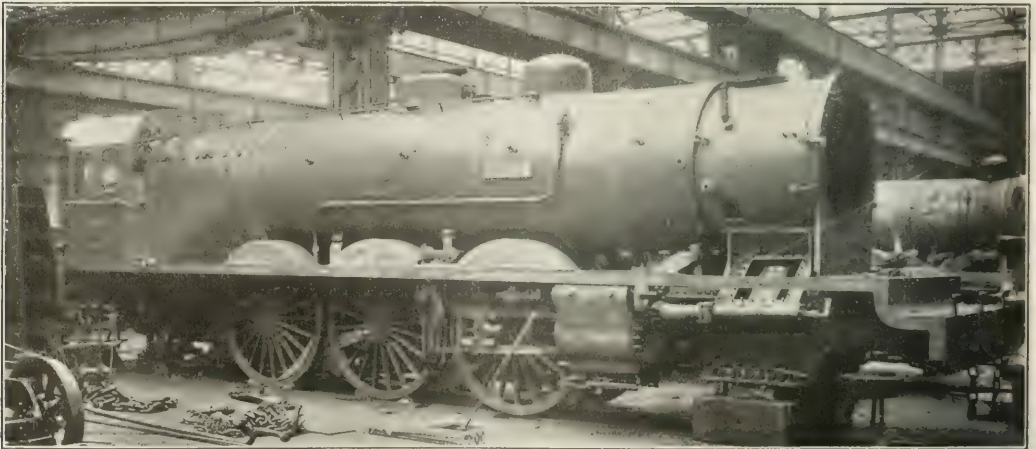
The truck is of the Zara type, the framing or cradle being pivoted at its rear end on the transverse equalizing spring of the leading drivers. The weight carried by the truck is

to the leading pair of drivers. The springs of the truck are arranged above the journal boxes, as is also the transverse spring of the leading drivers previously referred to. The remaining springs are under-hung, and they are equal-



Interior View of the Cab of the Pacific Type Locomotive

ized throughout. The coupled axles have bearings 8.26 in. in diameter by 9.84 in. long, while the bearings of the truck axle are 5.7 in. in diameter by 10.23 in. long. The journal



One of the Pacific Type Locomotives in Process of Construction, Showing the Location of the Low Pressure Valve in the Cylinder Saddle

taken by swing links on the cradle at a point between the leading driving axle and the truck axle, the effect being that a lateral movement of .43 in. is allowed in each direction

boxes are fitted with Perfection packing, a mixture of woolen waste, hair and asbestos. The main crank-pin bearings are 5.7 in. in diameter by 6.69 in. long.

The boiler has a barrel 5 ft. 7 $\frac{3}{4}$ in. in diameter inside at the front end, and 14 ft. 9 $\frac{1}{4}$ in. long between tube plates. The firebox shell is 10 ft. 10 in. long outside at the bottom and 3 ft. 11 $\frac{1}{4}$ in. wide. As in the case of the passenger engine, the firebox shell is of the round top type, the inside firebox is of copper, and the tubes are of steel, solid drawn. The boiler is fitted with the Robinson superheater.

These freight locomotives are capable of exerting a tractive effort of 14,125 kilos (31,140 lb.) when working with a mean effective pressure on the pistons equal to 75 per cent of the boiler pressure, which is 170 lb. per sq. in. Both types were constructed by the North British Locomotive Company, Limited, of Glasgow, Scotland.

The more important data relative to both the passenger and freight locomotives is given in the following table:

General Data		
	4-6-2	2-8-0
Gage	4 ft. 8 $\frac{1}{2}$ in.	4 ft. 8 $\frac{1}{2}$ in.
Service	Passenger	Freight
Fuel	Blt. coal	Blt. coal
Tractive effort	25,800 lb.	35,250 lb.
Weight in working order	212,800 lb.	165,400 lb.
Weight on drivers	127,100 lb.	145,500 lb.
Weight on leading truck	49,600 lb.	19,900 lb.
Weight on trailing truck	36,100 lb.	
Weight of engine and tender in working order	328,600 lb.	264,700 lb.
Wheel base, driving	13 ft. 5 $\frac{7}{16}$ in.	16 ft. 8 $\frac{13}{16}$ in.
Wheel base, total	35 ft. 9 $\frac{3}{16}$ in.	24 ft. 11 $\frac{1}{2}$ in.
Wheel base, engine and tender	64 ft. 3 $\frac{3}{4}$ in.	53 ft. 7 $\frac{3}{4}$ in.
Ratios		
Weight on drivers ÷ tractive effort	4.9	4.1
Total weight ÷ tractive effort	8.2	4.7
Tractive effort ÷ diam. drivers ÷ equivalent heating surface†	596.2	826.7
Equivalent heating surface ÷ grate area	72.1	71.7
Firebox heating surface ÷ equivalent heating surface† per cent	5.4	7.5
Weight on driver ÷ equivalent heating surface†	48.4	60.2

Total weight ÷ equivalent heating surface†	65.9	68.4
Volume both cylinders (equivalent simple) ...	7.4 cu. ft.	12.6 cu. ft.
Equivalent heating surface ÷ vol. cylinders	448.2	192.3
Grate area ÷ vol. cylinders	6.2	2.7
Cylinders		
Kind	Compound	Simple
Diameter and stroke	16 12 3/32 in. and 2 11/16 in. by 25 19/32 in.	18 1/2 in. and 2 11/16 in. by 25 19/32 in.
Pistons		
Kind	H. P., Piston; L. P., Slide	Piston
Driving		
Driving, diameter over tires	26 1/4 in.	26 1/4 in.
Driving journals, front, diameter and length	8 21/32 in. by 9 1/4 in.	5 3/4 in. by 9 13/16 in.
Driving journals, others, diameter and length	8 21/32 in. by 9 7/16 in.	5 3/4 in. by 9 13/16 in.
Engine truck wheels, diameter	37 13/16 in.	33 3/4 in.
Trailing truck wheels, diameter	48 3/4 in.	
Boiler		
Style	Straddle-top	Straddle-top
Working pressure	227 lb. per sq. in.	170 lb. per sq. in.
Outside diameter at first ring	60 1/4 in.	68 13/16 in.
Tubes and flues, length	19 ft. 4 5/16 in.	14 ft. 9 3/16 in.
Heating surface, tubes and flues	2,105 sq. ft.	1,647 sq. ft.
Heating surface, firebox	177 sq. ft.	182 sq. ft.
Heating surface, total	2,282 sq. ft.	1,829 sq. ft.
Superheater heating surface	683 sq. ft.	78 sq. ft.
Equivalent heating surface†	3,307 sq. ft.	2,418 sq. ft.
Grate area	45.9 sq. ft.	34 sq. ft.
Tanks		
Tank	Water bottom	Water bottom
Weight	115,800 lb.	99,300 lb.
Wheels, diameter	37 13/16 in.	37 13/16 in.
Water capacity	5,400 gal.	4,750 gal.
Coal capacity	6.6 tons	5.5 tons

* Calculated in accordance with American practice.

† Equivalent heating surface = total evaporating surface + 1.5 times the superheating surface.

Doings of the United States Railroad Administration

Effects of the Signing of the Armistice; the Railroads in Congress; New Wage Orders

THE first effect on the railroads of the cessation of hostilities will be felt in some reduction of the pressure for rush transportation. One of the first acts of the government after the signing of the armistice was to cancel outstanding draft calls, which together with a reduction of the number of troops to be sent overseas will bring about a reduction in the demands on railway facilities for the movement of men and supplies. Activity in the manufacture of munitions will gradually cease and hundreds of contracts for army supplies will be cancelled, thereby reducing the pressure on transportation facilities. The cessation of activity on war contracts will also release an additional amount of steel and other materials for railway uses and there will be no more draft calls to increase the shortage of labor. Registrants from 37 to 45 years of age will not be classified.

The War Industries Board began on Tuesday a modification of the restrictions whereby it has controlled American industry in the interest of the war program by announcing a list of commodities in respect to which the curtailment of production is modified to permit the resumption of activities by 42 classes of so-called non-essential industries to an extent of 50 per cent of their former activity. This will make possible a considerable increase in the traffic in these commodities to take the place of the war commodities as their production is decreased. The Fuel Administration also ordered removal of limitations on the use of fuel in the production of build-

ing materials. The order of the War Industries Board also removed the requirements of permits and licenses from a considerable list of construction projects, including all buildings, structures, roadways, plant facilities or other construction projects of every nature whatsoever undertaken by the Railroad Administration or by any rail or water transportation company, organizing or utility, where they are under the direction of the administration or by the American Railway Express Company. The priorities division will, so far as practicable, assist industries in procuring materials, fuel, transportation and labor to enable them to increase their operations to normal limits as rapidly as conditions may warrant. Precedence will be given to such activities as will tend to provide for deferred maintenance, additions, betterments and extensions of railroads, telegraph and telephone lines and other public utilities and to promote and stimulate intensive development of inland waterways.

It was officially stated at the office of the Railroad Administration that no reductions of the freight and passenger rates or of wages which have been increased during the period of the war are to be expected in the immediate future, but that consideration is being given to the possibility of eliminating the extra fare of one-half cent for Pullman passengers.

The Railroad Administration expects to be able now to turn its attention toward developing business in order to keep

up its revenues, instead of turning it away, and an improvement in passenger accommodations is expected. Several additional trains have been put in service recently and this policy is to be continued. Arrangements have been made to care for the usual winter travel to Florida and California.

As far as the railroads themselves are concerned the question of their disposition is not immediately pressing because the federal control law provides a period of 21 months after the peace proclamation. It also provides that the President may relinquish the roads before that time but if anything is done toward returning the roads to their owners it is more likely to come as a result of congressional action. There is a strong tendency in Congress toward the return of the roads to private management and a movement in that direction will doubtless be started at once if there is an extra session in the spring and the new Republican Congress takes the floor. This will take the form of the introduction of bills to repeal the federal control act. Senator Cummins of Iowa and Representative Esch of Wisconsin will head the interstate commerce committees of the two houses under the new line-up and both of them have serious objections to some of the things done by the Railroad Administration.

The advocates of government ownership are also expected to become active shortly, and it is understood that bills have already been prepared toward this end by Senator Cummins providing for government ownership, but proposing leasing to private corporations for operation and by Senator Norris providing for ownership and operation by a corporation representing the government.

The convention of the state and federal commissioners this week also indicated that the termination of hostilities abroad is likely to result in the renewal of domestic controversies regarding the railroads and to remove some restraint on criticism of the Railroad Administration that have been withheld during the war.

A bill to amend section 10 of the federal control act in order to restore to the Interstate Commerce Commission its former jurisdiction over railroad rates was introduced in the Senate by Senator Cummins on Monday shortly after the signing of the armistice terminating the war was announced. While the act now gives the commission the power of final review of rates initiated by the President, the proposed amendment would authorize the commission to suspend such rates before their effective date.

Weekly Report of Traffic Conditions

The weekly summary of traffic conditions in the various regions made public by Director General McAdoo on November 13 continues to reflect generally favorable transportation conditions in various parts of the country, although the effect of the influenza epidemic is still being felt in some places and shortages of labor and of cars are reported in some localities. As the lake season approaches a close, cross-lake routes are being used for the relief of the Chicago gateway. The consolidated ticket office program for the entire eastern region has been completed. The joint use of the Southern Pacific and Western Pacific tracks in Nevada has been made effective, using the Western Pacific eastbound and the Southern Pacific westbound. There has been no serious complaint of shortage of grain cars except in Illinois, Ohio and Indiana and the Car Service Section is arranging to provide relief.

Mechanical Committee to Consider Car Designs

The committee on standard appliances for cars and locomotives holds its regular monthly meeting at Washington on November 19 and will give attention to the designs for the 375 passenger coaches and the 129 combination cars which it is proposed to order. The drawings for the 60-foot and 70-foot baggage cars and for the 2,000 hopper cars for the Virginian are now in the hands of the purchasing committee.

Accounting Rules for Water Carriers

Director General McAdoo has issued General Order No. 52 prescribing rules and regulations for the accounting of transactions of water carriers under federal control.

Signal Supervisors Classified as Officials

The Railroad Administration announces that Director General McAdoo has decided that signal supervisors and assistant signal supervisors shall be considered as officials and that therefore, their compensation shall be fixed by the director general on the recommendation of the regional directors. The director general had previously made a similar decision as to train dispatchers, yardmasters, master carpenters, superintendents of bridges and buildings, claim agents and other classes of supervising officials, and in many cases increases in salaries have been made by the action of the regional directors and federal managers with the approval of the director general. Such a decision by the director general removes consideration of the salaries of such supervising officials from the jurisdiction of the Board of Wages and Working Conditions, which makes recommendations to the director general on employees' wages. Protests were made by the Switchmen's Union and the Brotherhood of Railroad Trainmen against negotiations by the regional directors direct with the yardmasters without recognizing the organizations of which many of them are members.

McAdoo Asks Railroad Men to Support War Work Campaign

Director General McAdoo addressed the following appeal to the American army of railroad men for support of the United War Work campaign:

"A great united war work campaign will begin on Monday, November 11, to obtain funds which are urgently needed to carry on the beneficent war work which is being patriotically performed in behalf of our army and navy by the Young Men's Christian Association, Young Women's Christian Association, National Catholic War Council, Jewish Welfare Board, War Camp Community Service, American Library Association and Salvation Army.

"The workers of these organizations have gone to the front and shared the dangers and hardships of our soldiers and sailors. Through their tireless energy, thoughtfulness and devotion they have carried cheer and comfort and assistance to our men fighting in the trenches and on the high seas, as well as to those in training camps here and abroad. The splendid work of these organizations has been officially recognized by the American government and they are worthy of the support of every loyal American. Every individual who can afford to do so ought to give aid by making the most liberal possible contribution.

"The service that each of these great organizations renders is distinct in that it has reference to the peculiar needs of those who differ in their religious beliefs or preferences, but this is a distinction without a difference for all seven organizations are inspired by the same ideals of helpfulness and imbued by a common desire to make the gospel of Faith, Hope and Love a reality to the men who are fighting for humanity. This unity of purpose is expressed in the unity of the appeal that is now being made to the people of the United States and I urge that every railroad employee shall respond to it generously and even to the point of foregoing the things that he can do without that those who are away from home and suffering from the war, be comforted, well-cared for, and feel that they are understood when they are 'Over There,' whether they are fighting or engaged in the work of reconstruction that must follow the war."

Data Requested for Maintenance Record

For the purpose of making a record of the amount and character of maintenance of way work performed on the railroads during federal control and during the three-year period ending June 30, 1917, in order to comply with the provisions of the federal control law requiring that the railroads be returned to their owners in substantially as good condition as when they were taken, the Division of Operation has issued circular No. 22 directing the roads to send to C. A. Morse, assistant director of the division in charge of engineering and maintenance, the following information, not later than December 31, 1918, as to each property for the fiscal years ended June 30, 1915, 1916 and 1917, and also the calendar year 1918:

"Name of maintenance organization, comprising such property, that make surveys, and I commit to the Interstate Commerce Commission, with their annual business reports and total miles of road.

2. List of operating divisions separated as between main and branch line mileage and side track mileage. Where there is more than a single main or branch line main track, mileage should be given separately for each additional main track. The termini limits of the main lines should be stated. If a division includes portions of two or more corporate companies, information should be divided to cover each corporation.

3. Gross ton-mile freight traffic and car-mile passenger traffic, by divisions, divided into main and branch line traffic, to be given separately for each of the four years.

4. Division charts to be furnished for main and branch lines showing rail in each main track December 31, 1917, with year laid, kind, section, weight per yard, and whether new or relays when laid. Charts should be 8 by 10½ in., or multiples for folding to that size, with 1 in. on left side for binding.

5. Division charts to be furnished for main and branch lines showing ballast in each main track December 31, 1917, with kind and depth of ballast. Charts should be 8 by 10½ in., or multiples for folding to that size, with 1 in. on left side for binding.

6. How many cubic yards of ballast of each kind inserted on each division during each of the four years, divided as between that charged to additions and betterments and that charged to maintenance, separated as follows:

- a. Main lines.
- b. Branch lines.
- c. Sidings.

7. A. How many cross ties were inserted on each division during each of the four years separated into kinds of wood, sizes, treated and untreated, divided as follows:

- a. Main lines.
- b. Branch lines.
- c. Sidings.

d. New work.

B. How many flat B. M. switch ties were inserted on each division during each of the four years separated into kinds of wood, treated and untreated, divided as follows:

- a. Main lines.
- b. Branch lines.
- c. Sidings.

d. New work.

C. How many tie plates were inserted on each division during each of the four years, divided as follows:

- a. Main lines.
- b. Branch lines.
- c. Sidings.

d. New work.

D. How many anti-creeperers were inserted on each division during each of the four years, divided as follows:

- a. Main lines.
- b. Branch lines.
- c. New work.

8. All information to be furnished on paper 8 by 10½ in., using separate sheets for answering each of the questions, and the data for each railroad to be bound together with suitable paper covers with name of road, etc., on front and bound on 10½-in. side.

Repairs to Refrigerator Cars

The mechanical department of the United States Railroad Administration has issued Circular No. 7 covering repairs to refrigerator cars. This circular requires that refrigerator cars having trucks of 60,000 lb. capacity or over will, when receiving general repairs or being rebuilt, be made to conform to the United States standard refrigerator car requirements. This affects the general arrangement, ice box, hatch arrangement, well trap, drain pipe, floor and walls, floor racks and doors, fastenings and cushions.

Van Dyck of the prints covering these requirements will be furnished each railroad on application to Frank McManamy, assistant director, Division of Operation. The railroads are also requested to send blue prints of cars which do not meet the specifications of the mechanical department, with the following information:

- (a) Number of cars owned that will need to be changed to meet the requirements.
- (b) Estimated cost of making the changes.
- (c) Location of shops where cars will receive such changes.
- (d) Number of cars that can be changed monthly at each shop.
- (e) Number of cars that can be changed in all shops per month.
- (f) Length of time that it will require to make changes on all cars owned.

All railroads owning refrigerator cars are requested to arrange immediately to apply floor racks in accordance with the standard specifications, where they have not already been so equipped. It is requested that a monthly report be furnished the general supervisor of car repairs at Washington, showing the number of cars equipped with floor racks, those equipped with similar racks and the number remaining to be equipped.

Bad-Order Car Situation

As a continuation of the weekly statement of car condition reports published in the *Railway Age* of October 25, page 748, the following three weeks' report is given, together with the percentage of bad order cars by regions, for four weeks ending October 12. It will be noticed that the percentage of bad order cars for all the roads under the jurisdiction of the Railroad Administration has been reduced to 5.8. For the week ending July 27 the percentage of bad order cars was 7.1. This shows a marked decrease and indicates an improvement which is particularly desired at this time.

CAR CONDITION REPORTS

	Sept. 28	Oct. 5	Oct. 12
Number of roads represented.....	137	140	139
Total revenue cars.....	2,484,491	2,492,862	2,448,437
Bad order cars.....	149,520	145,686	142,965
Heavy repairs.....	89,357	85,776	84,308
Light repairs.....	60,163	59,910	58,657
Percentage of bad order cars.....	6.0	5.8	5.8
Average bad order cars repaired per working day.....	97,863	94,840	92,583
Heavy repairs.....	10,737	10,203	9,922
Light repairs.....	87,126	84,637	82,661
Number of cars transferred to other shops.....	3,780	4,845	4,947
Number of employees.....	145,328	145,242	143,902

PERCENTAGE OF BAD ORDER CARS BY REGIONS

	Oct. 12	Oct. 5	Sept. 28	Sept. 21
Eastern.....	6.4	6.4	6.6	7.0
Allegheny.....	7.1	6.7	6.6	7.1
Piedmont.....	6.1	5.5	5.4	5.4
Southern.....	5.1	5.0	5.2	5.2
Central Western.....	5.3	5.1	5.1	5.2
Southwestern.....	5.8	5.8	6.0	6.2
Northwestern.....	5.8	6.3	6.5	6.6
All regions.....	5.8	5.8	6.0	6.2

Locomotives to Be Stored at Strategic Points

In order to provide a reserve of power in the congested districts in the eastern section of the country the Railroad Administration has arranged to store 50 of the new standard locomotives at Potomac yards, just outside of Washington, D. C., and 110 in the vicinity of Cleveland, Ohio. It is the aim of the administration to hold these locomotives to clear up any blockades that may occur during the winter.

McAdoo Not Moved by Strike Threat

Threats of representatives of the Order of Railroad Telegraphers in the South to call a strike unless their request for additional increases in wages was passed upon by Thursday of this week, elicited from Director General McAdoo the following statement to railroad telegraphers:

I regret to learn that efforts are being made by some persons to induce telegraphers in the railroad service of the United States in certain sections of the country to strike on the fourteenth of November unless the director general makes a decision before that date on the request of the telegraphers for increased wages. I cannot believe that genuinely patriotic men will listen for a moment to advice from anyone to strike against the government of the United States. All employees of the railroads are now in the service of the government and never in the history of the United States have its employees struck against their government. It is impossible for the director general to render a decision on the telegraphers' claims on or before November 14. The case is under consideration and will be decided at the earliest possible moment. A grave mistake will be made if any body of employees should quit their posts. It is just as essential now as it was during the war that the telegraphers should remain at their posts. France as it was while the war was actually raging. I earnestly request each patriotic employee to remember his duty to his government and to remain at his post and await with confidence the action of the director general which will be taken at the earliest possible moment. In this hour of national triumph for world peace, the telegraphers should stand by their posts to our posts, to our country, to our government, and to our people, and stand to their posts.

The petition of the telegraphers for further increases in addition to those granted by General Order No. 27 was considered by the Board of Wages and Working Conditions, and its recommendations are before the director general for a decision.

Other Wage Controversies Settled

In General Order No. 53 the director general approves an understanding reached between the regional directors and the officers of the organizations of telegraphers, switchmen, clerks and maintenance of way employees providing for the organization of Board of Adjustment No. 3 to adjust con-

troveries growing out of the interpretation or application of wage schedules similar to Boards No. 1 and No. 2 previously organized.

The director general has issued General Order No. 54 providing a method of settling disputes between the express company and its employees involving questions other than wages and working conditions which are to be referred to the Board of Wages and Working Conditions. In case an agreement is not reached with the officers of the company in the usual way the cases shall be transmitted to the director of the Division of Labor. This arises from a strike of some 600 express employees on a question of jurisdiction.

The threatened strike of telegraph operators in the south-east ordered for Thursday unless an order for increases in wages was forthcoming was called off after receiving a statement from Director General McAdoo saying that the order would not be issued by that time.

More Compensation Contracts Ready

Compensation contracts between the Railroad Administration and the Baltimore & Ohio and Atchison, Topeka & Santa Fe are nearly ready for signature by the director general and the first of the contracts with the short line roads also is expected to be signed this week.

Orders Issued by the Regional Directors

A Wide Variety of Subjects Are Considered Involving Many Phases of Operation

MAINTENANCE OF AIR BRAKE APPARATUS.—Order 500-62A225 of the Eastern regional director invites special attention to the need of following up the observance of M.C.B. Rule No. 60, relative to the maintenance of triple valves and air brake equipment.

Dining Car Rates for Postal Clerks.—Order 200-4-69A224 of the Eastern regional director states that the uniform charge of half rate for trainmen and Pullman employees in dining cars should include Railroad Postal Clerks engaged in service on the trains to which dining cars are attached.

Discontinuance of Mileage Charge for Electric Car-Lighting Equipment.—Order 500-60A218 of the Eastern regional director refers to M.C.B. Rule 10, code of passenger car rules, which covers charges for electric car-lighting equipment. As between roads under federal control, the payment of such charges has been discontinued by Section 1, Item 1 of General Order No. 31 from the Director General.

Employment of Women for Calling Train and Engine Crews.—Order 3000-441 of the Eastern regional director states that there has been some complaint about the use of women for calling train and engine crews. The service requires that the caller must find the train or engine man for whom he is looking, who is often asleep either at his home, hotel, boarding-house or caboose, where he must be awakened and his signature secured as acknowledging the call. The service is, therefore, considered as unsuitable for women and they should not in any case be so employed.

Nine Hour Day for Maintenance of Way Forces.—In Order 113 the Northwestern regional director announces that maintenance of way forces, including sections and extra gangs, the bridge and building department, and other departments of the maintenance of way service will work under a nine hour day, effective November 11.

Car Supply for Government Hay.—In Supplement 1 to Circular 35, the Northwestern regional director announces that the orders issued by the assistant chief of the Inland Traffic Service of the war department at Chicago for cars required for the loading of hay and straw for government account, will hereafter be sent to the shipper and will be his authority for ordering cars from the railroad agent for government loading. A copy of each order will continue to be sent to the transportation officer of the road on which the cars are to be loaded. Under the previous practice the orders were sent direct to the railroad agent at the loading point.

Rental for Cars Used in Inter and Intra-plant Switching. In Order 114 the Southwestern regional director states that in a discussion looking to the adoption of a uniform rule governing the use of railroad cars by industries in plant

switching and making a charge therefor, the decision was reached that while it is improper for a plant to use railroad equipment for its own intra-plant purposes, the difficulties of policing where plants perform their own switching are almost insuperable under present conditions and would be more expensive than results would justify. Therefore, to avoid the use of good equipment by plants which are utilizing railroad equipment freely for intra-plant purposes, railroads are requested to handle the matter with a view of substituting some equipment of their own or leasing them equipment of railroad ownership which is unfit for road service on some reasonable basis.

Yardmasters Wanted for Foreign Service.—In a circular dated November 2, the Central Western regional director announces the receipt of a telegram from S. M. Felton, director general of military railways, calling for 200 yardmasters and 75 assistant yardmasters for foreign service, whose rank will be that of 2nd Lieutenant. Candidates will advise the director general of military railways, Washington, direct of their names, occupations, draft status and the address of their local draft boards.

Movement of Oil.—In Supplement 4 to Circular 72 the Northwestern regional director announces that the train-lot method of handling oil which was first introduced in April, was adopted by the Chicago & North Western at the Casper (Wyo.) oil fields, effective November 11.

Regulations for Movement of Cotton.—In Supplement 2 to Order 82 the Southwestern regional director announces that the Western Weighing and Inspection Bureau has been authorized to inspect and check cotton in Arkansas and Louisiana. The duty of the bureau is to check cotton into the compresses, certifying to the agents the number of bales received and examining them for country damage; to check outbound compressed cotton for country damage on the same general lines that govern the Maritime Association at ports; to certify conditions to the agent before bills of lading can be signed, enforcing the rule as to minimum loading and keeping a record of the number of bales topped; and to maintain a force at ports to check cotton for delivery to steamships against the Maritime Association. The bureau inspector at each press will keep in close touch, through the railroad agent, with the amount of cotton for daily delivery to each press, and will notify superintendents of the railroads as soon as the situation at the press threatens to become congested, thereby giving the superintendents time to make their own investigations and to issue embargoes if necessary.

In order that each agent at a compress point may know

what cotton is enroute for each press the superintendents will arrange to notify the agent daily of the approximate number of bales signed for the previous day for delivery to the press. The expense in Texas and Oklahoma will continue to be divided between the several roads on the basis of the number of bales handled and the bureau is authorized to assess the new expense in Louisiana and Arkansas on the same basis.

Shippers' Export Declaration.—In Order 110 the Southwestern regional director and in Order 3000-440 the Eastern regional director calls attention to recent complaints on the part of the U. S. Treasury Department to the effect that the railroads and the American Railway Express are not complying with the amended regulations regarding shippers' export declarations, which provide that shippers shall prepare and sign four copies of a declaration if the goods are destined to foreign ports and two copies if destined to non-contiguous territories of the United States. Receiving agents must not accept shipments for export unless the regulations, referred to, have been complied with.

Disposition of Stored Material.—In Supplement 1 to Circular 44 the Northwestern regional director requests the roads under his jurisdiction to report promptly to T. C. Powell, manager of inland traffic, Washington, D. C., any accumulation of stored freight in warehouses, on tracks, piers, etc., at ports and interfering with railroad operation. It was recently decided that the responsibility for disposing of the large quantities of inert stores purchased largely for export, shall rest upon the Commodity Sections of the War Industries Board. The co-operation of the railroads in notifying the board of freight which should be disposed of, is therefore solicited. Hereafter reports will be sent at least monthly to Mr. Powell, and copies of them to the regional director.

Issuance of Free Transportation to Directors and Officers of the Corporations.—Order 1600-1A229 of the Eastern regional director quotes from a letter from Director of Operation Gray to the chief executive officer of each of the corporations for railroads under federal control, as follows:

With respect to the matter of railroad transportation for officers of the corporations: It has been decided that passes will be issued upon your request, for directors and for officers who are assigned to work on the line, which transportation will be good over the railroad owned by your company.

In addition to this, the chief executive officer will be furnished an annual pass over a much larger territory, and the vice presidents, where they devote substantially their entire time to the business of the corporation, will be given transportation good over all lines in the region in which the railroad owned by your company is located.

Issuance of Free Transportation.—Order 1600-1A215 of the Eastern regional director states that the following decisions have been reached by the U. S. Railroad Administration with respect to the issuance of free transportation:

It has been decided that the past practice in connection with Post Office Commissions shall be continued for the year 1919.

It has been decided that for the year 1919 a certain amount of annual transportation will be issued by the Railroad Administration good over all lines under federal control within a designated region. Revision of pass circulars or regulations by individual railroads should provide adequate instructions to conductors and others interested in establishment of this plan.

Exchange of Transportation with Canadian Railroads.—It is not the intention to discontinue or curtail the exchange of transportation with Canadian railroads. It will be proper to exchange trip transportation direct with Canadian railroads; also to request direct such annual transportation as your officers or employees require over Canadian roads. Canadian railroads, however, will send their requests for such annual transportation as they may need over federal controlled roads to the Director of the Division of Operation at Washington, who will furnish one pass to cover each individual's requirements.

It has been the custom in the past for railroads to furnish transportation to mechanical experts inaugurating service or giving attention to the maintenance and operation of certain specialties such as superheaters, electrical headlights, stokers, air brake equipment, etc. It will be proper for the federal managers and general managers to continue this practice, issuing transportation for such limited periods and covering such territory as may be necessary for these various experts to carry on their work.

Military Meals on Dining Cars.—Order 1200-4-69A221 of the Eastern regional director quotes from a letter from Edward Chambers, Director, Division of Traffic, as follows:

At a recent conference with the several military departments, an understanding was reached whereby the so-called military meal (breakfast, luncheon and dinner) would be served at 75 cents per meal, to all officers and enlisted men in uniform (with the exception noted below), including the selective draft men wearing arm brassards, whether payment is made by meal order or by cash.

Exception: There are a number of nurses and enlisted women in the Army, Navy and Marine Corps, who are not required by military regulations to wear street uniforms; nevertheless, they have a recognized military standing and should be accorded the privilege of purchasing military meals at 75 cents, provided they present for inspection furlough papers or other official documents clearly establishing their military status at time of entering car.

Menus typical of the meals that will be provided were submitted to, and received approval of the military authorities.

In order to insure uniformity of service and compliance with the requirements of the Army and Navy as to the character of the ration, the Inter-regional Dining Car Committee has been directed to supervise the installation of this plan.

Fuel Conservation.—Circular of Central Western regional director dated November 6—same as Circular 128 of the Southwestern regional director and Order 3000-434 of the Eastern regional director. See page 826, *Railway Age* of November 8.

Commissioners Desire Assertion of Jurisdiction of State Commissions

THE National Association of Railway and Utilities Commissioners at its session Thursday unanimously went on record in favor of asserting the jurisdiction of state commissions over intrastate affairs and the early determination of the future status of railroads, by adopting a resolution, which called attention to the fact that the war has closed, expressing the opinion of the association that suitable action should be taken by the Director General or the President to recognize the full and unimpaired authority of the states over intrastate rates, service and facilities of carrier properties under federal control, but that in any event it is the duty of each State Commission to exercise and maintain its constitutional and statutory authority to extend which it may deem the public interest demands, taking into account, as factors in any determination reached, the present status of the railroads and the responsibilities of the treasury and the desirability of achieving results by friendly co-operation wherever possible. It was also resolved that consideration ought to be given by the President and Congress to legislation defining the future status of the railroads and that the association is emphatically of the opinion that any plan for future operation of railroads should safeguard the powers of local tribunals responsible to the people of the several states with respect to matters essentially intrastate in character.

The Committee on Car Construction of the Master Car Builders' Association has sent on Circular 10 to members asking for suggestions for the modification of the methods outlined in Rule 22 of the interchange rules for the splicing of car sills. Recommendations are to be sent to W. F. Keisel, Jr., Pennsylvania Railroad, Altoona, Pa.



A Scene from El Gran Pacifico Railway in the State of Guerrero. Photo courtesy of Pan American Union

Mexico as a Potential Market for Railway Supplies

A Statistical Study of Our Trade in Such Material with That Country. Prospects for the Future

By Edward Scott Swazey

THE INTEREST OF RAILWAY MEN in the construction and reconstruction of Mexico's railways is inevitably linked up with the restoration of normal business and investment conditions in that country.

The report on Mexican railways by the Latin-American Division of the Bureau of Foreign and Domestic Commerce, published in the *Railway Age* of August 16, describing the location and development of the principal roads and assembling some of the scanty data available regarding present conditions, serves to remind us of the great future market in

play in Mexico's trade and development is absolutely predicated upon a proper understanding of conditions there.

In the railway field Mexico now signifies to the investor the reestablishing of the security of the old capital and the employment of new capital; to the manufacturers of supplies it means the reconstruction of badly damaged lines and eventually new construction, and the continuing sale of materials for maintenance; and to the operator Mexico means the movement by rail of international freight.

In 1912, according to an analysis of the government report

TABLE I.
RAILWAY MATERIALS EXPORTED FROM THE UNITED STATES TO MEXICO, 1910-1917
(Years ending June 30)

	Value								Quantity	
	1910	1911	1912	1913	1914	1915	1916	1917	1918	
Rails	1,916,640	1,838,585	893,758	551,576	101,705	64,633	123,652	72,341	233,798	
Locomotives	412,447	623,159	121,208	85,765	42,300	45,721	314,868	579,993	†529,767	
Passenger and freight cars for steam railways.....	391,148	1,734,717	651,768	462,236	95,424	32,192	72,899	365,673	*	
For other railways.....	187,980	496,741	125,004	217,331	169,156	24,417	43,736	46,937	*	
Car wheels	170,337	119,139	113,696	94,028	66,700	31,715	16,068	27,316	*	
Subtotal	2,698,552	4,812,331	1,905,734	1,413,936	475,285	198,678	571,223	1,092,260	*	
Spikes				54,540	30,483	20,819	16,499	25,808	*	
Ties		(Not listed separately.)		399,600	327,518	144,015	168,410	409,217	*	
Track material				354,570	95,543	44,336	98,229	47,971	*	
Grand total of items listed.....				2,222,655	928,829	407,848	854,361	1,575,256	*	
	1910	1911	1912	1913	1914	1915	1916	1917	1918	
Rails (tons).....	67,920	63,812	32,459	19,979	3,119	1,874	3,609	1,750	4,118	
Locomotives (number)	45	68	15	1	5	7	38	76	*56	
Car wheels (number)	70,951	16,125	16,141	13,608	11,141	4,215	2,373	3,259	*	
Spikes (reams).....				2,812,751	1,643,286	1,196,589	583,859	624,931	*	
Ties (number)				686,584	419,840	243,777	353,174	692,923	*	

* Not given by country in reports so far issued

† Figures for steam locomotives only available for 1918. Electric locomotives represented only small amounts in previous years.

the country to the south of us. It is not unreasonable that the recurrent revolutionary troubles (our war-born, almost automatic) foreign trade expansion, and of late our own war activity should have combined to nearly eliminate Mexico from our usual run of calculations of foreign trade and investment possibilities. But in looking ahead, and after reconstruction, the part which we should again be able to

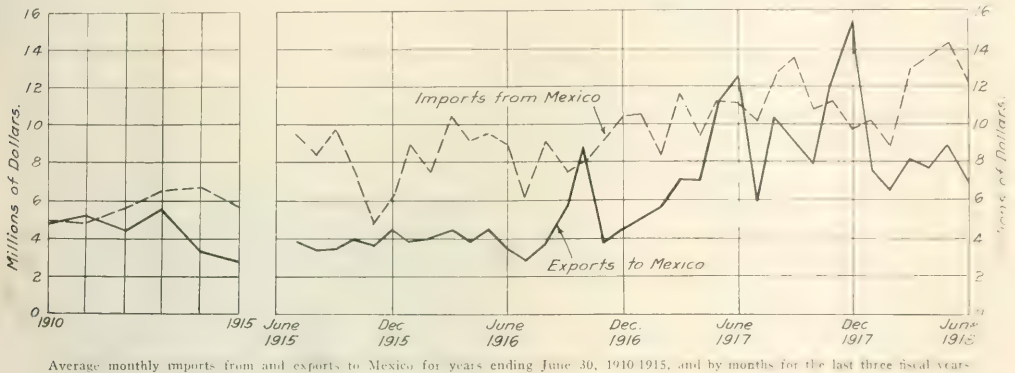
referred to above, \$557,000,000, or 60.5 per cent of all capital invested in Mexican railways was American, this same amount representing 52.6 per cent of all American capital invested in Mexico. What this equity is worth now or what it may come to be worth, it is idle to speculate. If the Mexican government retains control of the lines it may be expected that the necessity for raising additional funds will cause them to

protect at least the bondholders. If control is restored to private owners, the question of recompense for damages done becomes of prime importance.

Although railroad construction in Mexico is far from its possible state of development, attention for the next several years must be devoted to the rebuilding and reconstruction of existing lines, representing a probable outlay of over

1911 may be considered as of normal activity, with, for example, exports each year of about \$2,000,000 worth of rails, and of locomotives valued at \$500,000. During the next three years this trade fell off very considerably, though 1916 and 1917 show up somewhat better, as do the two items for which 1918 figures are available.

These figures of trade in specific articles are in themselves



United States Trade with Mexico

\$50,000,000 (United States gold) on the basis of normal prices.

Figures to show Mexico's total imports of railway materials and supplies are not available. Rails and track material, however, averaged about \$4,750,000 for 1910 and 1911, of which 78 per cent came from the United States, 12 per cent from Great Britain and 7.7 per cent from Germany. Of the

only roughly indicative of the potential market which we know exists for these products. To what extent this potential market can be made real, depends on the general trade conditions, controlled by the status of Mexico's internal affairs and by the determination of our own traders to make the most of every possible opening. The best index of these conditions, not biased by any personal beliefs, is an analysis



A Busy Scene at Hermosillo in Sonora

\$3,000,000 worth of "railroad cars and coaches" imported (the average of the two years) 95.5 per cent came from the United States.

Our own export figures for the different classes of material are somewhat more complete for the period from 1910 to date, although some items are not in all cases classified separately. Table I shows the value of the United States' exports to Mexico of rails, locomotives, cars and certain materials, and with two exceptions the quantities also. The years 1910 and

of the actual volume of trade which has taken place between the United States and Mexico.

Going back to more or less normal years, it appears that of Mexico's total imports, averaging about \$100,000,000 (U. S. gold) yearly, 58.7 per cent came from the United States in the five-year period 1904-08, dropping to 54.9 per cent for the next five years. Great Britain's corresponding percentages were 11.8 per cent and 12.1 per cent, with Germany's increasing from 9.4 per cent to 11.9 per cent. Of the

exports from Mexico, those to the United States increased from 70.0 per cent (1904-8) to 75.9 per cent (1909-13), Great Britain taking 11.8 per cent and 11.5 per cent, and Germany dropping from 7.6 per cent to 4.1 per cent. With Germany's trade disorganized after the war, we should control 65 to 70 per cent of Mexico's imports—and these imports should increase greatly with any betterment in the economic conditions of the people—and we should take in return about 80 per cent of Mexico's exportable products.

Table II shows this Mexican trade from our own viewpoint—that is, in relation to the total United States foreign trade. Though our imports from Mexico have been only from 3.6 per cent to 4.8 per cent of our total, and our exports to Mexico an even smaller proportion (the proportion itself dropping because of the great war increase in our foreign sales), the aggregate amounts are very appreciable.*

TABLE II
UNITED STATES TRADE WITH MEXICO
(Millions of Dollars)

Years ended June 30	Total U. S. exports	U. S. exports to Mexico	Ratio, per cent	Total U. S. imports	U. S. imports from Mexico	Ratio, per cent
1908.....	1,860.8	55.5	2.9	1,194.3	46.9	3.9
1909.....	1,663.0	49.8	2.9	1,311.9	47.7	3.6
1910.....	1,745.0	58.2	3.3	1,556.9	58.8	3.7
1911.....	2,549.3	61.2	2.9	1,527.2	57.4	3.7
1912.....	2,204.3	52.8	2.3	1,653.3	65.9	3.9
1913.....	2,465.9	54.4	2.2	1,813.0	77.5	4.3
1914.....	2,364.6	38.7	1.6	1,893.9	92.7	4.8
1915.....	2,768.6	34.2	1.2	1,674.1	77.6	4.6
1916.....	4,333.5	47.9	1.1	2,197.9	97.7	4.4
1917.....	6,390.0	79.0	1.2	2,659.4	112.1	4.2
1918.....	5,928.3	176.9	1.8	2,946.1	140.8	4.8

It is interesting to note that although we have been inclined to consider that conditions in Mexico during the last three years have continued to be hopelessly chaotic, and though the difficulties in the way of doing business have been and are severe, the actual value of our exports in 1917 passed the high pre-revolutionary figure and during the year just ended this value is nearly double the normal. Even considering the higher prices of all articles, it can be said that the volume of our old export trade has practically been restored.



On the Line of the Tropic of Cancer

The accompanying chart shows the way in which this trade has varied from month to month during the last three years, the very distinct upward tendency in our exports having been checked chiefly by our own export restrictions.

The Mexico of the next fifty years at least must be dependent upon foreign capital if she is to attain any worthwhile development, and she must make it safe for that capital if it is to be obtained. Capital will probably be scarce after the war, and in particular those European countries which have in the past financed the development of the newer countries, will be largely engaged at home. Mexico cannot therefore afford to continue to antagonize the United

* Our exports to Mexico averaged \$56,000,000 during 1908-1911, dropping to a low of \$34,000,000 in 1913, while our imports for these years have increased at a fairly regular rate from \$47,000,000 to \$98,000,000 in 1916 and \$141,000,000 in the year ending last June.

States and to make it unsafe for the investors of this country to co-operate with her in her upbuilding. Whether Carranza will come to understand this, whether he will gradually become powerful enough to exercise the necessary control over the outlying sections of the country, or even to maintain the present extent of his control, is still to be seen. Certain it is that his course of action will be largely determined by our ability to counteract the pro-Germanism so deeply imbedded there. Much will be accomplished along this line by the definite defeat of Germany in the world war. It can hardly be believed that the Mexicans have any great love for Germany or things German. It is rather to be supposed that the desire has been to land on the winning side, and if the Mexicans have been deluded into believing that most

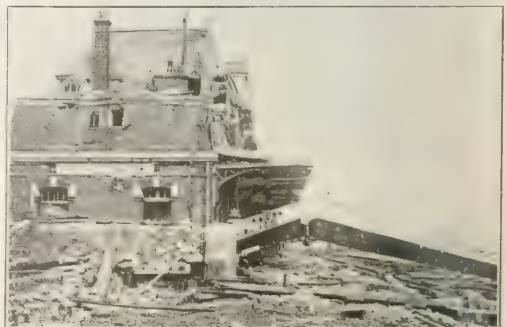


The Constitucional Railway Station at Queretaro

of Texas and New Mexico can be theirs if only they bother us sufficiently, they are to be pitied for their ignorance, and educated out of it. Pro-German rumor flies fast enough even in the United States, among those who read and are more or less accustomed to thinking for themselves.

The problem is as much ours as theirs. Where our capital and our enterprise properly applied can help to develop Mexico to her proper status among nations, it can also bring us our returns in increased markets for our products, in direct interest return, and in more complete Pan-American unity.

Certain it is that we must have Mexico's own best interests at heart actually and sincerely, and that we must endeavor to make them understand this. What diplomacy can do we may hope will be done; but for tangible results in the personal, as distinct from governmental sphere, we must depend on the pioneer trader to reb blaze the old trails and re-establish confidence in us.



The Station at Peronne as the Germans Left It

General News Department

Employees' Magazines, published by railroads for their employees, are to be delivered to all employees at the time when they are paid their monthly or semi-monthly wages. This is in accordance with a recent order of the director general.

Permission to lay tracks to connect with coal mines will no longer be granted by the Fuel Administration; announcement is made that applications will no longer be received at Washington, but should be made direct to the local railroad officers, as before the war.

The Alaska (Government) Railway is now completed for 211 miles from Seward, the gap of 15 miles along Turnagain Arm having recently been closed. The first train through to Anchorage carried Hon. Thomas Riggs, Jr., former member of the Alaskan Engineering Commission, and now territorial governor of Alaska.

A final order of the Interstate Commerce Commission, establishing zones for standard time is expected to be issued shortly; it is understood that the final order represents little change from the form of tentative report issued several weeks ago, because no objection was made at the hearing before the commission on the tentative report.

One thousand dollars was the fine imposed on one of the 37 dining car employees recently arrested for fraud or embezzlement, on complaints made by the New York, New Haven & Hartford Railroad, and some of whom have been under trial at Boston. The largest fine was imposed on the man who had counterfeit meal checks printed. A number of waiters were fined \$300 each. Thirty-two other men are to be tried in December.

Intensive car loading on the Big Four (the Cleveland, Cincinnati, Chicago & St. Louis) in the month of July last effected a saving of 24 per cent in the number of cars used for l. c. l. freight. The amount of freight loaded, 105,419 tons, was about 16 per cent less than in the same month of last year, while the number of cars used, 11,093, was 36 per cent less than in 1917. The average loading per car this year was, 19,006 lb., as compared with 14,445 lb. in 1917.

The spontaneous "peace holidays" of November 7 and November 11, which were celebrated in Chicago as everywhere else, seem to have resulted in a serious accumulation of live stock at the Union Stock Yards; and the directors of the Central Western and the Northwestern regions found it necessary to put embargoes on the shipment of animals to Chicago for 48 hours, beginning at midnight November 12. Extensive arrangements had to be made to feed and water the stock which was stopped in transit.

Five hundred houses are needed at Cumberland, Md., to provide homes for 1,500 men who are expected to move to that city during the first three months of the next year to work in the new shops of the Baltimore & Ohio, now under construction; and the Chamber of Commerce of Cumberland is looking for capitalists to provide the needed money. The railroad company has put up to the Chamber of Commerce the question of providing for this increased population, and the real estate and banking interests of the city thus far have not been able to meet the situation. The bankers say that their resources have all been taken up by Liberty Bonds and other investments made necessary by the war.

"Track Inspection" of grain, with some innovations, is again being tried by the Illinois State Grain Inspection Department at Clyde (Chicago), on the Chicago, Burlington & Quincy, and if found successful will be put into effect on other roads. Moisture testing machines have been placed

in the switching yard, with a deputy inspector in charge, and the grain is being inspected, tested and split there so that samples can be delivered direct to the board of trade as soon as the cars arrive. It is believed that this method will result in a saving of one or two hours. In the event of a great rush of grain, moisture testing machines in the city offices of the grain inspection department will take care of the overflow.

Enormous Shipments to Gen. Pershing

A press despatch from Tours, France, says that the tonnage discharged at the nine American base ports in France in October by the service of supply with the American Expeditionary Forces increased nearly 20 per cent as compared with the previous month. The total was more than 919,000 tons, as compared with 767,000 in September. An average of 7,020 soldiers were landed daily in October. Our Yankees assembled and placed in service 150 French and Belgian locomotives, 2,546 freight cars, and 1,262 American locomotives. Nearly 13,000 American freight cars are now being operated by the Service of Supply. American engineers repaired in October over 300 French locomotives and 1,000 cars.

The Post Office and the Railways

Under Federal Control

Slason Thompson, of the Bureau of Railway News and Statistics, Chicago, calls the attention of Director General McAdoo to the fact that the announcement made recently by the Post Office Department concerning the great volume of mail carried during the summer months does not seem to correspond with the statement of railroad companies, receipts as published by the Interstate Commerce Commission. One mail superintendent reports an increase of about 40 per cent of mail handled during the past summer over 1917; and at the Pennsylvania Terminal, New York City, the weekly increases in parcel post packages have been 160 per cent, 274 per cent, 233 per cent and such like figures. Now, says Mr. Thompson, the income account for class 1 roads, for the months when these rate increases were recorded, show as follows:

	1916	1917
February	\$5,949,646	\$10,734,687
May	5,077,593	4,674,681
August	4,477,000	4,838,118
Total, three months	\$15,504,239	\$20,247,486
Eight month average	\$1,938,030	\$2,530,936

Railway Fire Protective Association

The annual meeting of the Railway Fire Protection Association, which was recently postponed on account of the influenza epidemic, will be held in Chicago on Tuesday, Wednesday and Thursday, December 3, 4 and 5.

Chicago Car Foremen's Association

At the annual meeting of the Car Foremen's Association of Chicago, held at the Morrison Hotel, Chicago, on November 11, the following officers were elected for the ensuing year: President, E. C. Chenoweth, mechanical engineer, Chicago, Rock Island & Pacific; first vice-president, M. F. Covert, Standard Car Construction Company; second vice-president, James Reed, assistant master car builder, New York Central; treasurer, F. C. Schultz, chief interchange inspector; secretary, Aaron Kline, 841 Lawlor avenue, Chicago.

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of way and structures.		Operating expenses		Operating ratio.	Net railway operation.	Railway operating actuals.	Operating income (or loss).	Increase (decrease) compared with last year.
		Freight.	Passenger.	Total.	Way and structures.	Equipment.	Traffic.	Trans-shipment.					
Galveston, Harrisburg & San Antonio.	1,382	\$1,848,142	\$466,464	\$2,058,827	\$4,507	\$947,791	\$16,674	\$6,970,709	\$54,301	\$1,651,967	\$511,111	\$1,855,678	\$148,889
Galveston, Harrisburg & San Antonio.	1,382	\$1,848,142	\$466,464	\$2,058,827	\$4,507	\$947,791	\$16,674	\$6,970,709	\$54,301	\$1,651,967	\$511,111	\$1,855,678	
Galveston, Harrisburg & San Antonio.	1,382	\$1,848,142	\$466,464	\$2,058,827	\$4,507	\$947,791	\$16,674	\$6,970,709	\$54,301	\$1,651,967	\$511,111	\$1,855,678	
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Galveston, Harrisburg & San Antonio.	1,382	\$1,848,142	\$466,464	\$2,058,827	\$4,507	\$947,791	\$16,674	\$6,970,709	\$54,301	\$1,651,967	\$511,111	\$1,855,6	

Railroad Men Handle 14-Inch

Guns on Railway Mountings

Lieutenant-Commander D. C. Buell, of the United States Navy, well known to railroad men as director of the Railway Educational Bureau, of Omaha, Neb., has just returned from an interesting expedition to France where he had charge of the erection and putting into service of a mobile battery of 14-inch naval guns on railway mounting. This battery has been in active operation on railway lines at the front and has wrought considerable destruction back of the German lines, as described in a statement, authorized by the Secretary of the Navy, published in the *Railway Age* of November 7. Lieutenant-Commander Buell has been connected with the Bureau of Ordnance of the Navy since last February. He was in Washington to offer his services in connection with the fuel conservation campaign when he happened to hear that a railroad man was needed to supervise the construction and later the erection of the mounting and equipment for the big guns. Within a few hours he had enrolled in the navy as a lieutenant and he was allowed four days in which to arrange his business affairs at Omaha before reporting at the Baldwin Locomotive Works at Philadelphia. He was later promoted to lieutenant commander, in recognition of his services in expediting the work; and he was sent to France, with 200 railroad men, whom he selected from among the enlisted men at the Great Lakes Naval Training Station, to mount the guns, make up the trains of cars which accompany them, and organize the forces. This work was done at the locomotive erection shop operated by the Nineteenth Engineers (Railway).

Marked Increase in Passenger Traffic in August

According to statistics for the month of August, 1918, compiled by the Operating Statistics Section of the United States Railroad Administration, the railroads under federal control showed an increase of 11.6 per cent in passenger miles over the same month in 1917. All of the regions showed increases except the Northwestern territory, which showed a decrease of 6.8 per cent. Data are missing for a number of Class I roads appended to the table. According to the statement, the Boston & Maine is the only one of these lines which lost in passenger business. The decrease which it showed would reduce the percentage of increase for the New England district.

PASSENGERS CARRIED ONE MILE ON FEDERAL-CONTROLLED LINES

Region	Miles operated	Passenger Miles (Thousands)		Increase	
		August, 1916	August, 1917	Amount	Per cent
Eastern—					
New England District.....	4,286	234,388	218,001	16,386	7.5
Central District	20,274	619,028	570,190	40,637	8.6
Ohio-Indiana District	15,866	293,682	282,176	11,856	4.1
Total, Eastern Region....	38,426	1,147,098	1,070,367	76,730	7.1
Allegheny Region	12,549	791,112	709,142	81,970	11.6
Poconahs Region	4,290	89,875	70,385	19,470	27.7
Southern Region	37,002	598,427	447,121	151,306	33.8
Northwestern Region	46,632	450,519	483,628	d 33,109	d 6.8
Central Western	49,886	765,361	698,811	56,551	9.5
Southwestern Region	26,889	314,266	243,707	70,565	29.0
All Regions	215,674	4,156,659	3,723,156	433,503	11.6

REPORTS MISSING—CLASS I ROADS

Boston & Maine	Virginian
Grand Trunk in Maine	Charleston & W. Carolina
Maine Central	Georgia
Ann Arbor	Gulf, Mobile & Northern
Chicago, Detroit & C. G. T. J.	St. Louis-S. F. (Eastern lines)
Detroit & Mackinac	Duluth, S. S. & A.
Detroit & Toledo Shore Line	Mineral Range
Detroit, Grand Haven & Mil.	Denver & Salt Lake
Grand Rapids and Indiana	Western Pacific
Cincinnati Northern	St. Louis-S. F. (of Kansas & Okla.)

Traffic News

Grain loading this year up to November 2 amounted to 547,597 cars, as compared with 412,540 in 1917, according to the weekly report of the Railroad Administration.

Joint passenger train service in Nevada over the Southern Pacific and Western Pacific railroads was begun on November 3. All trains of both roads now run east over the Western Pacific and west over the Southern Pacific between Winnemucca, Nev., and Wells, 182 miles.

The production of bituminous coal during the week of November 2, as in the preceding four weeks, continued on the downward grade, being estimated at 10,965,000 net tons, a decrease compared with the preceding week and the corresponding week of 1917. The total coal loading of all kinds by the railroads for the week was 228,879 cars, as compared with 233,971 in the corresponding week of 1917. With the figures for the week ending November 9 estimated, the railroads have loaded 723,074 cars more of coal this year than during the corresponding period of 1917. The percentage of full time output lost on account of car shortage during the week of October 26 is reported as 8.4.

Volume of Freight Passing Through Chicago

Statistics recently made public by R. H. Aishton, regional director of the Northwestern region, show the volume of freight traffic passing through the Chicago terminal district during the month of October, 1918. In that period 182,368 loaded cars and 69,370 empties, or a total of 251,738 cars, were brought into the terminal. This is a daily average of 8,120 cars, equal to 100 trains of 81 cars each. During the same month there were forwarded from the terminal district 225,414 loaded cars and 159,781 empties, or a total of 385,195 cars, or an average of 155 trains of 80 cars daily; grand total, incoming and outgoing, 636,933 cars.

National Industrial Traffic League

The annual meeting of the National Industrial Traffic League will be held at the Hotel Sinton, Cincinnati, Ohio, on November 21 and 22. Among the subjects which will be discussed in the reports of the various committees will be the return of the railroads to their owners after the war and a consideration of the relative merits of government and private ownership; the proposed mileage freight rates for southern and western territory; the withdrawal of exceptions to various classifications; the application of the average agreement to warehouses and public elevators; the recodification of demurrage rules; demurrage charges accruing on inbound loaded cars at grain elevators due to the inability to get cars for outbound grain; the joint uniform baggage tariff; the settlement of freight claims and standard forms for the presentation of freight claims; the long and short haul—Poindexter Bill S-313; and the proposed uniform freight classification.

RAILWAY EQUIPMENT EXPORTED from the port of New York during the month of September, 1918, included steam locomotives valued at \$1,261,055, and steel rails at \$892,944.—*Bulletin of the National City Bank of N. Y.*

LATIN-AMERICAN TRADE.—Trade of the United States with Latin America has increased 136 per cent since the year ending June 30, 1914, immediately preceding the outbreak of the European war. Exports and imports in the fiscal year ended June 30, 1918, exceeded by far those of any earlier year. According to figures made public by the National City Bank of New York, 1918 trade aggregated \$1,770,000,000, against \$750,000,000 in the fiscal year just before the war.

Commission and Court News

Interstate Commerce Commission

The commission has approved a note to the regulations for the transportation of dangerous articles providing that during the war or until further order of the commission, fiber cartons may be substituted for interior metal cans. These fiber cartons must be of not less than 0.05 in. material and must be securely closed.

Court News

Refrigeration of Cars

In an action by a shipper against a carrier for damage caused by insufficient refrigeration the South Carolina Supreme Court holds that the rule of the Interstate Commerce Commission that carriers shall be relieved for failure to keep cars under refrigeration before the first re-icing station is reached, if the shippers delay the cars at loading stations more than 24 hours, casts the burden on the shipper in such case to prove that damage from insufficient refrigeration was caused by negligence of the carrier after reaching the re-icing station. Judgment for the plaintiff was reversed, the evidence not being sufficient to

Equipment and Supplies

Standard Locomotives Ordered

The distribution of the order for 600 locomotives for 1919 delivery, published in the October 25 issue of the *Railway Age* on page 757, has been changed as follows: American Locomotive Company, 50 six-wheel switchers, 150 eight-wheel switchers, 150 light Mikados, 50 heavy Mikados, 20 light Santa Fe, five heavy Santa Fe and 75 2-8-2 Mallets, and the Lima Locomotive Corporation, 100 light Mikados.

Locomotive and Car Deliveries

A total of 50 locomotives were shipped to the railroads under federal control during the week ended November 2, of which 40 were shipped by the American Locomotive Company; six by the Lima Locomotive Works, and four by the Baldwin Locomotive Works. These locomotives included 35 of the U. S. R. A. standard types.

The three principal locomotive builders during the month of October, shipped 265 locomotives to railroads under federal control, in addition to 343 locomotives completed or shipped for miscellaneous domestic service or for use abroad, a total of 608. The 269 locomotives included 158 of the U. S. R. A. standard types. The detailed statement issued by the Railroad Administration follows:

	For period October 1 to 5			For week October 6 to 12			For week October 13 to 19			For week October 20 to 26			For period October 27 to 31		
	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type
American	T.O.C.	15	USRA Mik.	G.T.-N.E.	10	USRA Mik.	N.Y.C.&S.E.	10	USRA Mik.	C.&A.	3	USRA Mik.	Rutland	2	USRA Mik.
	P.M.&Y.	10	USRA Mik.	L.&N.	13	USRA Mik.	L.&N.	6	USRA Mik.	Eric	7	USRA Sw'h	H.V.	1	Mallet
	T.O.C.	1	USRA Sw'h	Ch.It.	5	USRA Sw'h	C.O.	5	Mallet	T.&P.	11	USRA Mik.	Eric	1	Mallet
	P.Term.	2	Switcher	C.O.	4	Mallet	Eric	5	USRA Sw'h	W.&L.E.	6	USRA Mik.	Sou.	11	Mallet Mik.
	W.of A.	1	USRA Sw'h	Eric	2	USRA Sw'h	W.Pac.	5	Mikado	H.V.	3	Mallet	Eric	5	Mallet Mik.
	Pa.L.W.	1	Santa Fe	L.V.	5	USRA Mik.	Ch.It.	5	USRA Sw'h	Eric	4	USRA Mik.	N.Y.C.	2	Mallet Sw'h
	Virgin.	1	Mallet				C.A.	7	USRA Mik.	Ch.It.	4	USRA Sw'h	P.L.W.	1	Santa Fe
	L.&N.	2	USRA Mik.				W.&L.E.	4	USRA Mik.	Rutland	4	USRA Mik.	C.&N.W.	1	Mikado
	A.&W.P.	1	USRA Sw'h							P.L.W.	1	Santa Fe	W.&L.E.	2	USRA Sw'h
	Eric	1	USRA Sw'h										A.C.L.	2	USRA Sw'h
	C.O.	1	Mallet												
		35			39			47			43			28	
Baldwin	Sou.	1	Mallet	P.&R.	1	Consolid.	P.&R.	2	Consolid.	Penna.	1	Mikado	P.&R.	1	Mallet
	Ill.Cent.	1	Mikado	St.L.-S.F.	1	Santa Fe	P.R.R.	1	Mikado	C.C.&St.L.	3	USRA Mik.	C.C.&St.L.	2	USRA Mik.
	L.E.&W.	2	USRA Mik.	A.T.&S.F.	1	Mikado	C.C.&St.L.	2	USRA Mik.	U.Pac.	1	Mikado			
	A.T.&S.F.	1	Mikado	G.N.	1	Switcher	A.T.&S.F.	1	Mikado	St.L.-S.F.	1	Santa Fe			
	U.P.	1	Mikado	C.B.&Q.	1	Mikado									
	G.N.	1	Mikado	C.C.C.&St.L.	1	USRA Mik.									
	P.R.R.	1	Mikado												
	C.C.C.&St.L.	3	USRA Mik.												
	A.C.L.	1	Mikado												
		12			6			6			6			3	
Lima	Ill.Cent.	8	Mikado	Ill.Cent.	9	Mikado	Ill.Cent.	9	Mikado	Ill.Cent.	9	Mikado	Ill.Cent.	5	Mikado
		55			54			62			58			36	
							Grand total		265						

In addition to the above the American Locomotive Company shipped 29 and the Baldwin Locomotive Works shipped 1 miscellaneous domestic and

miscellaneous domestic locomotives and completed 14 foreign locomotives, completed 299 foreign locomotives.

support the jury's finding that the carrier was negligent.—Brown v. Southern (S. Car.), 96 S. E., 298. Decided July 6, 1918.

Court Sustains General Order 18

Judge Trieber, in the United States District Court for the Eastern District of Missouri, has recently handed down a decision involving General Orders 18 and 18-A, issued by Director General McAdoo, which require that all suits against carriers while under federal control must be brought in the county or district where the plaintiff resided at the time of the accrual of the cause of action or in the county or district where the cause of action arose. Suit was brought in St. Louis by a woman whose husband resided in Pittsburgh and was employed by the Pennsylvania Railroad. Defendant pleaded General Order 18 and 18-A; and the plaintiff demurred to the plea. The court held that the federal control act authorized the President and the director general, acting for him to issue the orders; that the act is constitutional; that the general orders in question were promulgated because of public necessity in time of war; and are sustained.

A total of 785 freight cars and six passenger cars were constructed in the railroad shops during the month of September.

Locomotives

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a second-hand, 60- to 80-ton, 6-wheel switching engine, with a wheelbase not over 11 ft. 6 in.

Signaling

PERE MARQUETTE.—An order has been given to the Union Switch & Signal Company for automatic block signals for 67 miles of road between Fowlerville, Mich., and Elmdale, and for 23 miles between Grand Rapids, Mich., and Waverly. This work will require 150 high and 5 dwarf signals and 115 switch indicators. Keystone insulation will be used at rail joints and ends of sections.

Supply Trade News

Leonard C. McChesney, advertising manager for the Thomas A. Edison industries for 16 years, died of heart disease November 10, at his home in Orange, N. J.

The Washington (D. C.) offices of the Austin Company have been moved to 1406 G street, North West. **C. F. Chard**, formerly of the Philadelphia office of this company, will be in charge of this office.

Major E. Tyden, vice-president of the International Seal & Lock Company, has been promoted to lieutenant-colonel in the Division of Ordnance. Colonel Tyden is located at Rock Island, Ill., as production manager of the Rock Island arsenal.

The **Hall-Scott Motor Company** will build an addition to its machine shop at Berkeley, Cal., which will be of concrete construction and will cost about \$40,000. Upon the completion of this building the company will have a total area of 31,250 sq. ft. for shop use.

In order to have a name more descriptive of the products it manufactures, the **Cleveland Galvanizing Works Company**, the general offices and plant of which are at Cleveland, Ohio, will be known in the future as the **Chain Products Company**. The company, under its old name, has been in business since 1886.

Marshall E. Keig, secretary and treasurer of Harry Vissering & Co., Chicago, who was given leave of absence in August to enter the Signal Corps of the Army as a private, has been commissioned a second lieutenant in charge of purchases in the west for the Signal Corps, with headquarters at Chicago.

The **Walter A. Zelnicker Supply Company** announces the appointment of R. H. Wilson as assistant to the president, with office at St. Louis. Mr. Wilson has been with the company for years, latterly as Houston representative. He is succeeded there by E. O. Griffin, formerly storekeeper and assistant general manager of the International & Great Northern; and more recently, assistant to the president of the St. Louis Southwestern in charge of purchases.

In Charge of Foreign Trade Service

Allen Walker, New York manager for the United States Chamber of Commerce since the organization of that body in 1913, has joined the Guaranty Trust Company of New York, and will have charge of its foreign trade service.

Prior to joining the United States Chamber of Commerce, Mr. Walker studied commercial organization in Europe, and extensive travels and studies have familiarized him with market conditions in other parts of the world. Since the United States entered the war, he has been responsible for the organization of many commercial and industrial groups which have been brought into contact with various Governmental departments through war service committees. He has had charge of the administration of the agreement between the United States and Argentina which the International High Commission established for the settlement of commercial disputes by arbitration and has acted as arbiter in many cases of disagreement, due to transportation and embargo difficulties arising out of the war, between domestic and foreign business houses.

The foreign trade service of the Guaranty Trust Company of New York is the agency through which a variety of services are performed for the American exporter and importer. It supplies information regarding business opportunities in foreign countries and the commercial conditions peculiar to each. Classified indexes of foreign and domestic manufacturers and dealers are maintained for the purpose of bringing buyers and sellers together. By reason of his wide experience and his knowledge of what American industries want

in the way of foreign service, Mr. Walker is regarded as especially fitted to assist our manufacturers and exporters in that development of international trade which is now recognized as one of the most important features of our reconstruction program.

L. J. Kennedy, who for many years has been associated with the Consolidated Railway Electric Lighting & Equipment Company, died in Chicago on October 30. Mr. Kennedy was born in Watertown, N. Y., in 1880, but at an early age moved to Chicago and received his education in the public schools of that city. In 1900, he returned to the east and entered the employ of the Consolidated Railway Electric Lighting & Equipment Company as a machinist in the factory at Shelton, Conn. He was later employed as an inspector, taking care of car lighting equipment on various roads running into Chicago. Mr. Kennedy applied the first electric lighting equipment to the Golden State Limited and also to the Twentieth Century Limited. Later he had charge of the maintenance and operation of the lighting on those trains. After holding this position for some time, he was placed in charge of the manufacture and sales of the Consolidated company at Chicago, and later, when the Consolidated company discontinued its manufacturing in Chicago, Mr. Kennedy remained in charge of the sales only. In 1913, he left the employ of the Consolidated company to engage in boat building on the North Side of Chicago. Later he went to New Mexico on account of the health of his family and accompanied Pershing's Expedition into Mexico. In 1916, he returned to the employ of the Consolidated as sales engineer, but left the company again in 1917 to once more engage in the boat building business in which he was very successful in completing some large contracts for pontoons for the army.

Trade Publications

LOCOMOTIVE LUBRICATORS.—The Detroit Lubricator Company, Detroit, Mich., has published a 62-page catalogue covering the Detroit Bullseye locomotive lubricators and other locomotive specialties manufactured by this company.

COAL GATES.—Catalogue No. 37 of the Beaumont Manufacturing Company, Philadelphia, Pa., illustrates and describes the Beaumont standard types of gates for controlling the flow of coal, ashes, coke, etc., from bins and pockets. The purpose of the catalogue is to present the results of the company's experience in designing and installing gates for varied purposes, and the types illustrated in the catalogue have been adopted as standard.

CAR HEATING.—A 12-page folder, entitled Vapor System with No. 1112 Vapor Valve, published by the Gold Car Heating & Lighting Company, New York, presents the advantages of a new vapor valve, No. 1112, for use with Gold's vapor system, which is designed for application on the inside of the car. The construction and operation of the valve are fully described, as well as the method of applying it, which is made clear with a number of sketches.

RAILROAD MACHINERY CATALOGUES WANTED.—A representative of the Federated Swiss Railroads recently called at the Zurich consulate general and asked that catalogues be obtained for him from American manufacturers of mechanical iron rail saws, boring machines for iron railroad rails and wooden railroad ties, mechanical spike pullers, apparatus for carrying and laying iron rails, machines for drawing together rails at joints in tracks, railroad gang cars, propelled by hand and with motor attachment. He informed this office that heretofore all machinery and tools for the Swiss railroads have been obtained from America through agents in Germany who can no longer supply these needs. For this reason he wishes to place his orders in America or with agents that American manufacturers might appoint in Switzerland. The representative of the Swiss railroads surmises that new improvements have been made in the past few years by American manufacturers of this class of machinery, and he is particularly interested in hearing about these.

Railway Financial News

BOSTON & MAINE.—The reorganization plan provides that the company takes over through consolidation its seven principal leased lines. The stockholders of the leased lines will get share for share one share of the preferred stock of the reorganized Boston & Maine. This stock will pay the same dividend as that guaranteed by the existing leases except that the dividends will be reduced by 20 per cent for five years in order to provide a fund for improvements and paying debts. Dividends on the new preferred take precedence over the existing preferred stock.

The federal government, it was also announced, will loan to the reorganized company \$19,879,060 to pay the overdue indebtedness of the parent road and its subsidiaries. In exchange for this sum the Boston & Maine will issue \$17,606,060 5 per cent bonds and \$2,273,000 6 per cent bonds, all of which will be secured by a mortgage to cover the existing bonds and notes of the Boston & Maine and its leased lines. At the conclusion of the reorganization the Boston & Maine will have \$38,817,300 first preferred, \$3,149,800 ordinary preferred and \$39,505,100 common, a total for the stock of \$81,472,800. The funded debt will total \$103,167,890.

Earnings for five years over and above the amount necessary to pay dividends on the first preferred and 4 per cent on the present preferred will be paid into a sinking or trust fund to secure repayment of the government advances. In the meantime the Boston & Maine has an option to sell at not less than par \$12,000,000 6 per cent first preferred, the proceeds to be used to pay off \$12,000,000 bonds. If this is done no further payments will be made into the trust fund and earnings thereafter may be paid out in dividends. The earnings released by the temporary reduction in dividends on the preferred stock are to be invested in permanent improvements or applied to the reduction of debt.

There is no provision in the reorganization plan for taking over the Hampden Railroad. If judgment is recovered against the Boston & Maine the necessary sum will be loaned by the federal government.

See editorial on Boston & Maine reorganization plan in *Railway Age*, September 20, 1918, page 537.

CHICAGO & EASTERN ILLINOIS.—The annual meeting of the stockholders has been postponed until December 10.

INTERBOROUGH RAPID TRANSIT.—All of the \$33,400,000 3-year 7 per cent convertible notes of this company, which were offered for subscription at 98½ a few weeks ago, have been sold.

NORFOLK & WESTERN.—President L. E. Johnson in a letter sent to stockholders states that the company's compensation for the federal use of its property, while not yet finally determined, will approximate \$20,700,000. President Johnson says that this will provide for interest charges and other requirements, and the usual dividends, with a surplus which may be used for additions and betterments. President Johnson adds that the standard clauses of the company's contract with the government, as approved by Director General McAdoo, have also been approved by the directors of the company. His letter continues: "In addition to the standard clauses, the contract when executed will also embody special terms applicable to your company. Consideration of these may necessitate further adjournment of the meeting of stockholders. In its final form, the contract will come before the adjourned meeting for ratification."

The approximate amount of the federal compensation mentioned by President Johnson, after allowing for non-operating income and fixed charges similar to those of 1917 and deducting \$2,000,000 for estimated war taxes, would cover the preferred dividends and leave a balance equal to about 12 per cent upon the \$120,445,400 common stock outstanding. This calculation is not contained in President Johnson's letter and is entirely unofficial.

Railway Officers

Railroad Administration

Federal and General Managers

J. P. Beckwith, general manager of the Florida East Coast, with office at St. Augustine, Fla., has been appointed federal manager.

W. D. Duke, general manager of the Richmond, Fredericksburg & Potomac, with office at Richmond, Va., has been appointed federal manager.

The Coal Belt Electric railroad has been placed under federal control and assigned to the jurisdiction of **A. Robertson**, federal manager, St. Louis, Mo.

W. P. Kenney, federal manager of the Great Northern, with headquarters at St. Paul, Minn., has had his authority extended over the Minneapolis Western.

C. M. Kittle, federal manager of the Illinois Central, with headquarters at Chicago, has been appointed federal manager also of the Central Elevator & Warehouse Company, New Orleans.

Operating

C. W. Blount has been appointed trainmaster, and **F. H. Herron**, assistant trainmaster of the Ohio River & Western, both with headquarters at Zanesville, Ohio.

E. F. Rummell has been appointed trainmaster on the River division of the Chicago, Milwaukee & St. Paul, at Minneapolis, Minn., succeeding **O. N. Harstad**, promoted.

M. J. Ruland has been appointed trainmaster on the Salt Lake division of the Denver & Rio Grande, at Thistle, Utah, succeeding **J. R. Loftis**, promoted; effective November 4.

F. C. Dow, acting superintendent of the Coast Division, the Tacoma Eastern Railroad, and the Milwaukee Terminal Railroad, has been appointed superintendent, with office at Tacoma, Wash.

A. T. Mercier, assistant superintendent of the Shasta division of the Southern Pacific, has been appointed superintendent of the lines north of Ashland, Ore., with headquarters at Portland, Ore., succeeding **F. L. Burckhalter**, assigned to other duties on the Pacific system lines.

S. M. Estabrook has been appointed manager of dining cars, hotels and restaurants of the Southern Pacific (lines south of Ashland, Ore.), the Western Pacific, the Tidewater Southern and the Deep Creek railroad, with headquarters at San Francisco, Cal., succeeding **A. Pollok**, resigned.

G. H. Dougherty has been appointed general fire prevention inspector of the Kansas City Southern, the Texarkana & Ft. Smith, the Midland Valley, the Houston, East & West Texas, the Vicksburg, Shreveport & Pacific, the Kansas City, Mexico & Orient and the Joplin Union depot, with headquarters at Kansas City, Mo.

Arthur Williamson, road foreman of engines on the Western Maryland, with office at Hagerstown, Md., has been appointed superintendent of the Elkins division on the Western Maryland; the Cumberland Valley, and the Cumberland & Pennsylvania Railroad, with headquarters at Cumberland, Md., vice **J. F. Chisholm**, deceased.

The Memphis, Dallas & Gulf has been included in the jurisdiction of **J. W. Dean**, general superintendent of the Missouri Pacific, with headquarters at Little Rock, Ark., and of **T. M. Wallis**, assistant general superintendent at Nashville, Ark. **C. C. Henderson**, vice-president and general manager of the Memphis, Dallas & Gulf, has been appointed assistant general manager, with headquarters at Nashville.

M. McKernan, superintendent of safety of the Missouri Pacific, with headquarters at St. Louis, Mo., has had his

jurisdiction extended over the St. Louis Southwestern, the Louisiana & Arkansas, the Memphis, Dallas & Gulf, the Arkansas Central, the Natchez & Southern, the Natchez & Louisiana Railroad Transfer and the Southern Illinois & Missouri Bridge. **E. Richards** has been appointed assistant superintendent of safety of the same lines, with office at St. Louis.

A. O. Veitch, assistant superintendent of the Chicago, Milwaukee & St. Paul, with office at Avery, Ohio, has been appointed assistant superintendent of the Rocky Mountain division, with office at Three Forks, Mont., vice **J. W. Ross**, deceased. **D. J. Hagerty** has been appointed assistant superintendent of the Missoula division, with office at Avery, vice Mr. Veitch, and **E. L. Cleveland**, traveling engineer, has been appointed trainmaster of the Trans-Missouri division, vice **J. P. Phelan**, promoted.

Financial, Legal and Accounting

D. C. Follas has been appointed federal auditor of the Toledo Terminal Railroad, with headquarters at Toledo, Ohio, succeeding **Bryan Thomas**, resigned.

F. B. McIlvaine has been appointed auditor of freight overcharge claims of the Michigan Central and the Chicago, Kalamazoo & Saginaw, with office at Detroit, Mich.

H. F. Green, real estate and tax commissioner of the Chicago & Alton, has been appointed real estate and tax agent of that road, the Chicago, Peoria & St. Louis, the Peoria & Pekin Union and the Peoria Railway Terminal, with headquarters at Chicago.

J. M. Coddington, formerly special accountant on the staff of **G. E. Hustis**, federal auditor of the Delaware, Lackawanna & Western, has been appointed assistant auditor of freight and ticket accounts, of the Lackawanna, with offices at Scranton, Pa., succeeding **A. W. Lishawa**, who resigned to become treasurer of the Wright-Martin Aircraft Corporation and Simplex Motor Company, New Brunswick, N. J.

Oscar Homer Bower, whose appointment as federal auditor of the Pyeatt group of lines, with headquarters at Dallas, Tex., was announced in these columns on October 25, was born at Carrollton, Ark., on December 12, 1882. He began railway work on August 3, 1898, with the Ft. Worth & Rio Grande as messenger at Comanche, Tex., and from November, 1899, to June, 1901, was freight and ticket agent successively at Proctor, Tex., and Blanket. He then filled various clerical positions, including that of chief clerk at Ft. Worth, Tex., until March, 1909, when he was made special accountant of the Ft. Worth & Denver at Ft. Worth. From April 1, 1910, to August, 1912, he was secretary and auditor of the Wichita Valley



O. H. Bower

at Wichita Falls, Tex., and from the latter date to August 31, 1913, was chief clerk to the general manager of the Missouri, Kansas & Texas at Dallas. He then became chief clerk to the auditor of that road at St. Louis, Mo., and was promoted to auditor of receipts, with headquarters at Dallas, Tex., on January 1, 1914, remaining in that position for nine months, when he became auditor. On October 1, last, he was appointed federal auditor of the roads under the jurisdiction of **J. S. Pyeatt**, federal manager, including the Ft. Worth & Denver City, the Ft. Worth & Rio Grande, the Ft. Worth Belt, the Gulf, Colorado & Santa Fe, the Houston & Texas Central, the International & Great Northern (from Spring to Ft. Worth and the Madisonville branch), the Missouri, Kansas & Texas of

Texas, the St. Louis, San Francisco & Texas, the Texas Midland, the Union Terminal of Dallas, the Wichita Valley & Northwestern and the Wichita Valley.

Engineering and Rolling Stock

Charles Emerson has been appointed master mechanic of the Fargo division of the Northern Pacific, with office at Dilworth, Minn., in place of **R. P. Blake**, transferred.

J. E. O'Brien, mechanical superintendent of the Missouri Pacific, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Memphis, Dallas & Gulf.

J. F. Kimbell, division foreman of the El Paso & Southwestern, at Carrizozo, N. M., has been appointed master mechanic of the Western division, with headquarters at Douglas, Ariz., in place of **F. P. Roesch**, resigned.

Charles P. Richardson, assistant engineer of track elevation of the Chicago, Rock Island & Pacific, has been appointed engineer of water service of the Rock Island lines, with headquarters at Chicago, succeeding **J. M. Brown**, who resigns to enter the service of the Rock Island corporation.

A. J. Wharf, chief engineer of the Peoria & Pekin Union, has been appointed assistant chief engineer of that road, the Chicago & Alton, the Chicago, Peoria & St. Louis and the Peoria Railway Terminal, with headquarters at Peoria, Ill. **W. F. Rech** has been appointed bridge engineer of those roads, with office at Chicago.

W. H. Brown, division engineer of the Pennsylvania Railroad, Western Lines, with headquarters at Zanesville, Ohio, has had his authority extended over the Ohio River & Western. **F. A. Collar** has been appointed assistant division engineer of the latter road; **A. R. Dean**, supervisor, and **R. J. Sponseller**, road foreman of engines, all with headquarters at Zanesville.

B. J. Farr, whose appointment as superintendent of the motive power and car department of the Grand Trunk Western Lines, with headquarters at Detroit, Mich., was announced in the *Railway Age* of November 1, was born at Ellenburg, N. Y., on September 8, 1876. He began railway work in 1893 as a machinist apprentice for the Central Vermont at St. Albans, Vt., and after completing an apprenticeship of five years he was made erecting shop foreman, being advanced to general foreman in 1900. In 1905, he went to the Delaware & Hudson as general foreman of the motive power and car department at Schenectady, N. Y., and the following year he became master mechanic for the United Fruit Company's lines at Port Limon, Costa Rica. From 1908 to 1914, he was employed in the engineering department of the Isthmian Canal Commission at Gatun and Cristobal. He then became connected with the Grand Trunk, as general foreman on the western lines, at Battle Creek, Mich., and in 1916 was promoted to master mechanic at that point, which position he held until his recent appointment as superintendent of the motive power and car department. He will also have jurisdiction over the Detroit & Toledo Shore Line.

Corporate

Executive, Financial, Legal and Accounting

W. F. Brunner, assistant to general manager of the Pittsburgh & Lake Erie, has been appointed assistant to president, with headquarters in Pittsburgh, Pa.

J. C. Nelms, Jr., general auditor of the Norfolk Southern, with office at Norfolk, Va., has been appointed secretary and auditor for the corporation, and **G. E. Christie** has been appointed assistant secretary and assistant treasurer.

George D. Dixon, vice-president of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., has been elected also vice-president of the Lehigh & Hudson River, succeeding **J. J. Beattie**, who has resigned as vice-president and director to resume his place as general solicitor of the road under the Railroad Administration. **John W. Sanford** has been appointed secretary and treasurer of the L. & H. R., with headquarters at Warwick, N. Y.

George H. Crosby, vice-president, secretary and treasurer of the Chicago, Rock Island & Pacific, has asked to be relieved of active duty after 47 years' service with that company and the board of directors has granted his request, effective November 1. **Carl Nyquist** has been elected secretary and treasurer, with headquarters at Chicago.

Robert Phipps Ormsby, who has been appointed secretary of the Canadian Northern Railway Company, with headquarters at Toronto, Ont., as has already been announced in these columns, was born on June 26, 1869, at Arklow, Ireland. He was educated in the grammar schools and at Cambridge University, England. He was in the service of the Canadian Pacific for a short time at Vancouver, B. C., and then went to the Great Northern, at St. Paul, Minn. In 1902 he entered the service of the Canadian Northern, as secretary to the chief solicitor, and since 1910 served as assistant secretary until his recent appointment as secretary of the same road, as above noted.

Will H. Lyford, vice-president and general counsel of the Chicago & Eastern Illinois, with headquarters at Chicago, whose election to the former office was announced in the *Railway Age* of October 25, was born at Waterville, Me., on September 15, 1858. He was admitted to the bar in October, 1884, but entered railway service in 1879 with the Chicago & Eastern Illinois, with which company he has remained ever since. From July, 1879, to February, 1880, he was assistant engineer, and from the latter date to January, 1882, was employed as stenographer for the general superintendent. He then became chief clerk to the general manager, and in April, 1883, was advanced to the position of claim agent. On October 10, 1884, he was appointed assistant general solicitor, and three years later was promoted to attorney in charge of the law department. Mr. Lyford became general solicitor on February 1, 1889, and on March 15, 1892, was appointed general counsel.



W. H. Lyford

Traffic

S. C. Griffin has been appointed traffic manager and freight claim agent of the Sugar Land Railway, with office at Sugar Land, Texas.

E. F. Flinn has been appointed general western freight agent of the Grand Trunk Railway System (lines in Canada), with office at Chicago, and **Hugh H. Hamill** has been appointed general agent (freight department), with office at Detroit, Mich.

W. B. Hinchman, assistant to the traffic manager of the Tonopah & Tidewater, the Death Valley and the Bullfrog Goldfield, with headquarters at Los Angeles, Cal., has been appointed assistant traffic manager of those roads, with office at Goldfield, Nev.

Engineering and Rolling Stock

W. E. Nicholson, assistant to chief engineer of the Norfolk Southern, at Norfolk, Va., has been appointed chief engineer for the corporation.

G. J. Wentz has been appointed master mechanic of the Montana, Wyoming & Southern, with office at Belfry, Mont., vice **H. R. French**, resigned.

J. M. Brown, engineer of water service of the Rock Island lines, has been appointed corporate engineer of maintenance and construction, with headquarters at Chicago.

Railway Officers in Military Service

C. D. Young, superintendent of motive power of the Pennsylvania Railroad, with office at Wilmington, Del., has been commissioned a lieutenant-colonel in the Transportation Corps, Engineers.

Captain W. M. Vandersluis, formerly signal engineer of the Illinois Central, at Chicago, now in the Motor Transport Service of the American Expeditionary Forces in France, was promoted to major early in October and has since been transferred to the transportation service in the capacity of signal engineer, reporting to the general manager of that service.

Obituary

J. D. Phillips, supervisor of signals of the Philadelphia & Reading, at Reading, Pa., died at his home in that city on October 27, of influenza.

Paul Elliott Walker, attorney of the Chicago, Rock Island & Pacific for Missouri and Kansas, died at his home in Topeka, Kan., on November 11, aged 42 years. He had been connected with the legal department of the Rock Island since November, 1902.

James L. Clark, division freight agent of the New York Central, at Chicago, died at his home in that city on November 4. He began railway work as a clerk for the Lake Shore & Michigan Southern in 1867. Subsequently he filled various minor positions with that road, the Hoosac Tunnel Line and the Lackawanna Line, until May, 1890, since which time he had been successively general agent, general western freight agent and division freight agent of the Lake Shore & Michigan Southern, and division freight agent of the New York Central since it absorbed the Lake Shore.

Albert A. Robinson, LL.D., formerly for 22 years connected with the Atchison, Topeka & Santa Fe, and subsequently for 13 years president of the Mexican Central, died at his home in Topeka, Kan., on November 7, at the age of 74. Mr. Robinson was born at South Reading, Vt., and was graduated from the University of Michigan in 1869. The University in June, 1900, conferred upon him the honorary degree of doctor of laws. He entered the railway service in 1869 as axman with the engineers' corps on the St. Joseph & Denver City. In 1871, he was appointed assistant engineer on the Atchison, Topeka & Santa Fe, in charge of location and construction, and two years later was made chief engineer. This office he held for 13 years, and also, in the meantime, was successively superintendent, assistant general superintendent, general superintendent and general manager. In 1886 he was chosen second vice-president, and for the five years ending with May 1, 1893, he was also general manager. He went to the Mexican Central in 1893, as president, in which position he remained until December 1, 1906.



Baldwin Official Photo. Copyright U. S. U. N. Y.

A Light Railway Engine Made from Parts of a Discarded Motor Car

The Organization of Our Railroads After the War

Clear Thinking Now About This Great Problem Is of the Utmost Importance If We Are to Avoid Mistakes

By E. P. Ripley

Former President, Atchison, Topeka & Santa Fe

I HAVE been much interested in reading the articles by John R. Hall, Frank W. Noxon and F. J. Lisman in the Investment Section of the *Railway Age*, and each of these gentlemen has treated the subject from his own angle—yet each arrives by his different route at these conclusions:

1. That the railroads will never go back to pre-war conditions;

2. That government ownership and operation is not only undesirable but dangerous;

3. That a combination or compromise policy, which shall preserve the private interest and thus foster efficiency while giving the government large authority and an interest in the profits, promises best for the country and for the transportation industry.

I imagine that this midway plan in its general outlines will commend itself to the average citizen. Of course, we have with us the state socialist who believes in the state's ability to manage all industry, but the great mass of our people know that our government never has transacted any business efficiently and economically at the same time, and that in the few cases where efficiency has been attained it has been in utter disregard of expense.

The troubles of our railroads have been due, of course, to a mistaken attitude on the part of Congress. Admission of this is found in the fact that as soon as the government obtained control it proceeded forthwith to do nearly everything it had previously prohibited and a good many things which may have been good but which the railroads would hardly have dared to suggest—this being true, it follows that a proper co-ordination of our railway system must be preceded

1. By obliteration of state lines as regards all transportation matters. Like all reforms this will be opposed by those who hold regulatory positions under the states;

2. By repeal of some of the national laws which are oppressive;

3. By enabling the nation to guarantee the credit and participate in the profits of the roads (rehabilitating those whose credit has been destroyed largely by its own acts) and receiving in return representation on the various boards of directors.

Since the majority of those who have given the subject any

attention are substantially agreed on these principles, it would seem not too early to consider a few of the details—and here we have wide divergence between Mr. Hall, who proposes one corporation, privately owned to be sure, but none the less an absolute monopoly, and Mr. Lisman who suggests a possible fifteen corporations dividing the country into groups and in his usual painstaking way points out methods by which his plan could in actual practice be carried out.

For myself, I must confess a feeling that the interest of the public requires competition—not such wild and unregulated competition as heretofore existed, but a healthy rivalry as to the accommodations and facilities offered the public, even though in an entirely different part of the country, so that the customs prevailing in New England, for example, may be compared with those of the Middle West or Pacific states. Competition of this kind alone would have its influence, but there would be direct competition in many cases which would have its effect also.

There is another reason which leads me to favor a number of regional roads rather than one vast corporation—viz., that no one man or body of men can successfully operate so large a system even with the best of assistants (this is not intended as a criticism on the director general whose first object is to win the war and who is directing his energies to that end, and who is doing to the public what it would not submit to for a moment under other conditions.) It is a common saying that 10,000 to 12,000 miles is the limit over which one man can project his personality or influence as manager. Personally, I should be inclined to increase this slightly, especially on lines of light traffic, but there certainly is a limit beyond which it is unsafe to go.

For these reasons Mr. Lisman's plan, or something like it, appeals to me; it is surrounded with difficulties, some of which he points out, but they do not seem to me insuperable, especially if the plan could have hearty backing by one or both of the great political parties or by a substantial majority in Congress, but it may as well be admitted that in the present disturbed conditions, the status after the war is likely to have scant consideration. Yet it is not too early to appoint a committee to consider the question and perhaps to draw an enabling act.



French Official Photograph. Copyright by Underwood & Underwood, N. Y.

Destroyed Bridge Across the Marne Near Chateau Thierry

Government Ownership and War Taxation*

Punitive Paternalism Either in the Regulation of Railroads or in the Imposition of War Taxes Is Unsound

By Otto H. Kahn

PATERNALISTIC CONTROL, *even* when entirely benevolent in intent, is generally harmful in effect. It is apt to be doubly so when, as sometimes occurs, it is punitive in intent. The history of our railroads in the last ten years is a case in point. In their early youth our railroads were allowed to grow up like spoiled, wilful, untamed children. They were given pretty nearly everything they asked for, and what they were not given freely they were apt to get somehow, anyhow. They fought amongst themselves and in doing so were liable to do harm to persons and objects in the neighborhood. They were overbearing and inconsiderate and did not show proper respect to their parent, i. e., the people. But the fond parent, seeing how strong and sturdy they were and on the whole, how hustling and effective in their work, and how, with all their faults of temper and demeanor, they made themselves so useful around the house that he could not really get along without them, only smiled complacently at their occasional mischief or looked the other way. Moreover, he was really too busy with other matters to give proper attention to their education and upbringing.

As the railroads grew towards man's estate and married and begot other railroads, they gradually sloughed off the roughness and objectionable ways of their early youth, and though they did not sprout wings, and though once in a while they still did shock the community, they were amazingly capable at their work and really rendered service of inestimable value.

But meanwhile, for various reasons and owing to sundry influences, the father had grown testy and rather sour on them. He cut their allowance, he restrained them in various ways, some wise, some less so, he changed his will in their disfavor, he showed marked preference to other children of his. And one fine day, partly because he was annoyed at the discovery of some wrongdoing in which, despite his repeated warnings, a few of the railroads had indulged (though the overwhelming majority were blameless) and partly at the prompting of plausible self-seekers or well-meaning specialists in the improvement of everybody and everything—one fine day he lost his temper and with it his sense of proportion. He struck blindly at the railroads, he appointed guardians (called commissions) to whom they would have to report daily, who would prescribe certain rigid rules of conduct for them, who would henceforth determine their allowance and supervise their method of spending it, etc.

And these commissions, naturally wishing to act in the spirit of the parent who had designated them, but actually being, as guardians are liable to be, more harsh and severe and unrelenting than he would have been or really meant to be, put the railroads on a starvation diet and otherwise so exercised their functions, with good intent, doubtless, in most cases, that after a while those railroads, formerly so vigorous and capable, became quite emaciated and several of them succumbed under the strain of the regime imposed upon them. And then, seeing their condition and having need, owing to special emergencies, of railroad services which required great physical strength and endurance, one fine morning the parent determined upon the drastic step of taking things into his own hands. And so forth. . . .

* An address before the National Industrial Conference Board, New York, October 10, 1918.

THE LEGISLATION OF 1909

To drop the style of story-telling: Individual enterprise has given us what is admittedly the most efficient railroad system in the world. It has done so whilst making our average capitalization per mile of road less, the scale of wages higher, the average rates lower, the service and conveniences offered to the shipper and the traveler greater than in any other of the principal countries.

It must be admitted that in the pioneer period of railroad development, and for some years thereafter, numerous things were done, and although generally known to be done, were tolerated by the government and the public, which should never have been permitted. But during the second administration and upon the courageous initiative of President Roosevelt these evils and abuses were resolutely tackled and a definite and effective stop put to most of them. Means were provided by salutary legislation, fortified by decisions of the Supreme Court, for adequate supervision and regulation of railroads.

The railroads promptly fell in line with the countrywide summons for a more exacting standard of business ethics. The spirit and practices of railroad administration became standardized, so to speak, at a moral level certainly not inferior to that of any other calling. It is true, certain regrettable abuses and incidents of misconduct still came to light in subsequent years, but these were sporadic instances, by no means characteristic of railroading methods and practices in general, condemned by the great body of those responsible for the conduct of our railroads, no less than by the public at large, and entirely capable of being dealt with by the existing law, possibly amended in nonessential features, and by the force of public opinion.

Unfortunately, the law enacted under President Roosevelt's administration was not allowed to stand for a sufficient length of time to test its effects. The enactment of new railroad legislation in 1909, largely shaped by congressmen and senators of very radical tendencies and hostile to the railroads, and acquiesced in by President Taft with ill-advised and opportunist complacency, established, for the first time in America, paternalistic control over the railroads. It was an unscientific and ill-advised statute, gravely defective in important respects and bearing evidence of having been shaped in heat, hurry and anger. Mr. Taft himself, it seems, has since recognized its faultiness, for he has repeatedly and publicly protested against the over-regulation, the starvation and the oppression of the railroads which were the inevitable and easy-to-be-foreseen consequences of its enactment.

The states, to extent that they had not already anticipated it, were not slow to follow the precedent set by the federal government. The resulting structure of federal and state laws under which the railroads were compelled to carry on their business, was little short of a legislative monstrosity.

LEGISLATION AND COMMISSION HAVE BROKEN DOWN

You all know the result. The spirit of enterprise in railroading was killed. Subjected to an obsolete and incongruous national policy, hampered, confined, harassed by multifarious, minute, narrow, and sometimes flatly contradictory regulations and restrictions, state and federal, starved as to rates in the face of steadily mounting costs of labor and materials—that great industry began to fall away. Initiative

on the part of those in charge became chilled, the free flow of investment capital was halted, creative ability was stopped, growth was stifled, credit was crippled.

The theory of governmental regulation and supervision was entirely right. No fair-minded man would quarrel with that. The railroads had exercised great, and in certain respects undoubtedly excessive power for a long time, and all power tends to breed abuses and requires limitations and restraints. But the practical application of that theory was wholly at fault and in defiance of both economic law and common sense. It was bound to lead to a crisis. It is not the railroads that have broken down, it is our railroad legislation and commissions which have broken down. And now the government, in the emergency of war, probably wisely and, in view of the prevailing circumstances, necessarily, has assumed the operation of the railroads.

The director general of railroads, rightly and courageously, proceeded to do immediately that which the railroads for years had again and again asked in vain to be permitted to do—only more so. Freight rates were raised 25 per cent, passenger rates in varying degrees up to 50 per cent. Many wasteful and needless practices heretofore compulsorily imposed were done away with. Passenger train service, for the abolition of some of which the railroads had petitioned unsuccessfully for years, was cut to the extent of an aggregate train mileage of over 47,000,000. The system of pooling for which since years many of the railroads had in vain endeavored to obtain legal sanction was promptly adopted, with the natural result of greater simplicity and directness of service and of considerable savings.

The whole theory under which intelligent, effective and systematic co-operation between the different railways had been made impossible formerly, was thrown into the scrap heap. Incidentally, certain services and conveniences were abolished, of which the railroad managements would never have sought to deprive the public, and the very suggestion of the abrogation of which would have led to indignant and quickly effective protest had it been attempted in the days of private control.

Let this remark might be misunderstood, let me say that I have no word of criticism against Mr. McAdoo's administration of the railroads, as far as I have been able to observe it. I think, on the contrary, that he is entitled to great praise and that he has handled the formidable and complex task confided to him with a high degree of ability, fine courage, indefatigable energy, and with the evident determination to keep the running of the railroads clear of politics and to make them above all things effective instruments in our war effort.

GOVERNMENT OWNERSHIP

For a concise statement of the results accomplished elsewhere under government ownership I would recommend you to obtain from the public printer, and to read, a short pamphlet entitled "Historical Sketch of Government Ownership of Railroads in Foreign Countries," presented to the joint committee of Congress on interstate commerce by the great English authority, W. M. Acworth. It will well repay you the half hour spent in its perusal. You will learn from it that, prior to the war, about fifty per cent of the railways in Europe were state railways; that in practically every case of the substitution of government for private operation (with the exception, subject to certain reservations, of Germany) the service deteriorated, the discipline and consequently the punctuality and safety of train service diminished, politics came to be a factor in the administration and the cost of operations increased vastly. (The net revenue, for example, of The Western Railway of France in the worst year of private ownership was \$13,750,000, in the fourth year of government operation it fell to \$5,350,000.) He quotes the eminent French economist, Leroy-Beaulieu, as follows:

"One may readily see how dangerous to the liberty of citizens the extension of the industrial regime of the state would be, where the number of functionaries would be indefinitely multiplied. . . . From all points of view the experience of state railways in France is unfavorable as was foreseen by all those who had reflected upon the bad results given by the other industrial undertakings of the state. . . . The state, above all, under an elective government, cannot be a good commercial manager. . . . The experience which we have recently gained has provoked a very lively movement, not only against acquisition of the railways by the state, but against all extension of state industry. I hope . . . that not only we, but our neighbors also may profit by the lesson of these facts."

Mr. Acworth mentions as a characteristic indication that after years of sad experience with governmentally owned and operated railways, the Italian government, just before the war, started on the new departure (or rather returned to the old system) of granting a concession to a private enterprise which was to take over a portion of the existing state railway, build an extension with the aid of state subsidies, and then work on its own account both sections as one undertaking under private management.

I may add, as a fact within my own knowledge, that shortly before the outbreak of the war the Belgian government was studying the question of returning its state railways to private enterprise and management.

Mr. Acworth relates a resolution unanimously passed by the French senate a few years after the state had taken over certain lines, beginning: "The deplorable situation of the state system, the insecurity and irregularity of its workings." He gives figures demonstrating the invariably greater efficiency, economy and superiority of service of private management as compared to state management in countries where these two systems are in operation side by side. He treats of the effect of the conflicting interests, sectional and otherwise, which necessarily come into play under government control when the question arises where new lines are to be built and what extensions to be made of existing lines.

He asks: "Can it be expected that they (these questions) will be decided rightly by a minister responsible to a democratic legislature, each member of which, naturally and rightly, makes the best case he can for his own constituents, while he is quite ignorant, even if not careless, of the interests, not only of his neighbor's constituency, but of the public at large?" And he replied: "The answer is written large in railway history. . . . The facts show that parliamentary interference has meant running the railways not for the benefit of the people at large, but to satisfy local and sectional or even personal interests." He maintains that in a country governed on the Prussian principles railroad operation and planning may be conducted by the government with a fair degree of success, as an executive function, but in democratic countries, he points out that in normal times "it is the legislative branch of the government which not only decides policy but dictates always in main outline, often down to the detail of a particular appointment or a special rate, how the policy shall be carried out."

For corroboration of this latter statement we need only turn to the array of statutes in our own states, which not only fix certain railroad rates by legislative enactment, but deal with such details as the repair of equipment, the minimum movement of freight cars, the kind of headlights to be used on locomotives, the safety appliances to be installed, etc.—and all this in the face of the fact that these states have public service commissions whose function it is to supervise and regulate the railroads.

The reason why the system of state railways in Germany was largely free from most, though by no means all, of the unfavorable features and results produced by government ownership and operation elsewhere, is inherent in the habits and conditions created in that country by generations of autocratic and bureaucratic government. But Mr. Acworth points out very acutely that while German manufacturers, merchants, financiers, physicians, scientists, etc., "have taught the world a good deal in the twenty years preceding the war, German railway men have taught the world

nothing." And he asks: "Why is this?" His answer is: "Because they were state officials, and, as such, bureaucrats and routiniers, and without incentive to invent and progress themselves or to encourage or welcome or even accept inventions and progress.

"It is the private railways of England and France, and particularly of America, which have led the world in improvements and new ideas, whilst it would be difficult to mention a single reform or invention for which the world is indebted to the state railways of Germany."

The question of the disposition to be made of the railroads after the war is one of the most important and far-reaching of the post-bellum questions which will confront us. It will be one of the great test questions, the answer to which will determine whether we are bound.

COMPETITIVE SERVICE

And, it seems to me, one of the duties of business men is to inform themselves accurately and carefully on this subject, so as to be ready to take their due and legitimate part in shaping public opinion, and indeed to start on that task now, before public opinion, one-sidedly informed and fed of set purpose with adroitly colored statements of half truths, crystallizes into definite judgment.

My concern is not for the stock and bondholders. They will, I have no doubt, be properly and fairly taken care of in case the government were definitely to acquire the railroads. Indeed, it may well be, that from the standpoint of their selfish interests, a reasonable guarantee or other fixed compensation by the government would be preferable to the financial risks and uncertainties under private railroad operation in the new and untried era which we shall enter after the war. I know, indeed, that not a few large holders of railroad securities take this view and therefore have this preference.

Nor do I speak as one who believes that the railroad situation can be restored just as it was before the war. The function, responsibility and obligation of the railroads as a whole are primarily to serve the interests and economic requirements of the nation. The disjointed operation of the railroads, each one considering merely its own system (and being under the law practically prevented from doing otherwise) will, I am sure, not be permitted again.

The relinquishment of certain features of our existing legislation, the addition of others, a more clearly defined and purposeful relationship of the nation to the railroads, involving amongst other things possibly some financial interest of the government in the results of railroad operations are certain to come from our experiences under government operation and from a fresh study of the subject in case the railroads, as I hope, are returned to private management.

Personally I believe that in its underlying principle the system gradually evolved in America, but never as yet given a fair chance for adequate translation into practical execution, is an almost ideal one. It preserves for the country, in the conduct of its railroads, the inestimable advantage of private initiative, efficiency, resourcefulness and financial responsibility, while at the same time, through governmental regulation and supervision, it emphasizes the semi-public character and duties of railroads, protects the community's rights and just claims and guards against those evils and excesses of unrestrained individualism which experience has indicated.

It is, I am profoundly convinced, a far better system than government ownership of railroads, which, wherever tested, has proved its inferiority except, to an extent, in the Germany on which the Prussian Junker planted his heel and of which he made a scourge and a horrible example to the world; and the very reasons which have made state railways measurably successful in that Germany are the reasons which would make government ownership and operation in America a menace to our free institutions, a detriment to our racial characteristics and a grave economic disservice.

PUNITIVE TAXATION

I have spoken of the treatment of our railroads in the past 10 years as "punitive paternalism." In some respects this same term may be applied to our existing and proposed war taxation.

Of course, the burden of meeting the cost of the war must be laid according to capacity to bear it. It would be crass selfishness to wish it laid otherwise and fatuous folly to endeavor to have it laid otherwise.

We all agree that the principal single sources of war revenue must necessarily be business and accumulated capital, but these sources should not be used excessively and to the exclusion of others. The structure of taxation should be harmonious and symmetrical. No part of it should be so planned as to produce an unscientific and dangerous strain.

The science of taxation consists in raising the largest obtainable amount of needed revenue in the most equitable manner, with the least economic disturbance and, as far as possible, with the effect of promoting thrift.

The House bill proposes to raise from income, excess or war profit and inheritance taxes \$5,686,000,000 out of an estimated total of \$8,182,000,000. In other words, almost 70 per cent of our stupendous total taxation is to come from these few sources. It seems to me that the effect and meaning of this is to penalize capital, to fine business success, as well as thrift and self-denial practiced in the past, thereby tending to discourage saving.

The House bill fails, on the other hand, to impose certain taxes the effect of which is to promote saving. Intentionally or not, yet effectively, it penalizes certain callings and sections of the country and favors others.

Let me say at the outset that my criticism does not refer to the principle of an 80 per cent war profits tax. Indeed, I have from the very beginning advocated a high tax on war profits. To permit individuals and corporations to enrich themselves out of the dreadful calamity of war is repugnant to one's sense of justice and gravely detrimental to the war morale of the people. Strictly from the economic point of view, the 80 per cent war profits tax is not entirely free from objection. Whether England did wisely on the whole in fixing the tax at quite so high a rate is a debatable point, and is being questioned by some economists of high standing in that country, not from the point of view of tenderness for the beneficiaries from war profits, but from that of national advantage.

Moreover, conditions in America and England are not quite identical, and I believe it to be a justifiable statement that British industry is better able to stand so high a tax than American industry, for reasons inherent in the respective business situations and methods.

However, everything considered, circumstances being what they are, I believe the enactment of the proposed 80 per cent war profits tax to be expedient, provided that, like in England, the standard of comparison with prewar profits is fairly fixed and due and fair allowance made, in determining taxable profits, for such bona fide items of depreciation and other write-offs as a reasonably conservative business man would ordinarily take into account before arriving at net profits.

Among the principles of correct and effective taxation which are axiomatic are these:

1. No tax should be so burdensome as to extinguish or seriously jeopardize the source from which it derives its productivity. In other words, do not be so eager to secure every possible golden egg that you kill the goose which lays them.
2. In war time, when the practice of thrift is of more vital importance than ever to the nation, one of the most valuable by-products which taxation should aim to secure is to compel reduction in individual expenditures.
3. Taxation should be as widely diffused as possible, at however small a rate the minimum contribution may be fixed, if only to give the greatest possible number of citizens an

interest to watch governmental expenditure, and an incentive to curb governmental extravagance.

It may safely be asserted that our war taxation runs counter to every one of these tested principles.

THE EXPERIENCE OF ENGLAND

The characteristic difference between the House bill and the revenue measures of Great Britain (I am not referring to those of France and Germany, because they are incomparably less drastic than ours or Great Britain's) is, first, that we do not resort to consumption taxes, and only to a limited degree to general stamp taxes, and, secondly, that our income tax on small and moderate incomes is far smaller, on large incomes somewhat smaller, and on the largest incomes a great deal heavier.

The House rate of taxation on incomes up to, say, \$5,000, averages only one-fifth of what it is in England; the House rate of taxation on maximum incomes is approximately 50 per cent higher than it is in England. Moreover, married men with incomes of less than \$2,000 are entirely exempted from taxation in this country. In England all incomes from \$650 on are subject to taxation.

I believe, on the whole, our system of gradation is juster than the English system, but I think we are going to an extreme at both ends. And it must be borne in mind that our actual taxation of high incomes is not even measured by the rates fixed in the House bill, because to them must be added state and municipal taxes. There must further be added what to all intents and purposes is, though a voluntary act, yet in effect for all right-minded citizens tantamount to taxation, namely, a man's habitual expenditures for charity and his contributions to the Red Cross and other war relief works.

The sentimental and thereby the actual effect of extreme income taxation is not confined to the relatively small number of people in possession of very large incomes directly affected by it. The apprehension caused by the contemplation of an excessively high rate of taxation is contagious and apt to react unfavorably on constructive activity.

It is highly important that taxation should not reach a point at which business would be crippled, cash resources unduly curtailed and the incentive to maximum effort and enterprise destroyed. And it should not be forgotten that both theoretically and actually the spending of money by the government cannot and does not have the same effect on the prosperity of the country as productive use of his funds by the individual.

If all the European nations have stopped during the war at a certain maximum limit of individual income and inheritance taxation, even after four years of war, the reason is surely not that they love rich men more than we do or that they are less democratic than we are. The reason is that these nations, including the financially wisest and most experienced, recognize the unwisdom and economic ill effect under existing conditions of going beyond that limit.

The same observations hold good in the case of our proposed inheritance taxation (maximum proposed here 40 per cent, as against 20 per cent maximum in England, and much less in all other countries). And again, there are to be added to federal taxation the rates of state legacy and inheritance taxation.

Inheritance taxation, moreover, has that inevitable element of unfairness that it leaves entirely untouched the wastrel who never laid by a cent in his life, and penalizes him who practiced industry, self-denial and thrift. And it cannot be too often said that the encouragement of thrift and enterprise is of the utmost desirability under the circumstances in which the world finds itself, because it is only by the intensified creation of wealth through savings and production that the world can be re-established on an even keel after the ravages and the waste of the war.

Furthermore, business men of necessity have only a lim-

ited amount of their capital in liquid or quickly realizable form, and through the absorption by the inheritance tax of a large proportion of such assets many a business may find itself with insufficient current capital to continue operations after the death of a partner. This effect is not only unfair in itself, but is made doubly so as being a discrimination in favor of corporations as against private business men and business houses, inasmuch as corporations are, of course, not amenable to inheritance taxation.

While in the case of the rich we discourage saving by the very hugeness of our taxation, or make it impossible, we fail to use the instrument of taxation to promote saving in the case of those with moderate incomes. And the enormous preponderance of saving which could and should be effected does not lie within the possibilities of the relatively small number of people with large means, but of the huge number of people with moderate incomes.

Moreover, while the rich, in consequence of taxation, limitation of profits, etc., have become less able to spend freely since our entrance into the war, workmen and farmers, through increased wages, steadier employment and higher prices of crops, respectively, have become able to spend more freely.

Workingmen are in receipt of wages never approached in pre-war times, many of them making incomes a good deal higher than the average professional man, while the profits of business, generally speaking, are rather on a declining scale and certain branches of business have been brought virtually or even completely to a standstill.

Of our total national income, conservatively estimated at, say, \$40,000,000,000 for the last year before our entrance into the war, i. e., the year 1916, it is safe to say that not more than \$2,000,000,000 went to those with incomes of, say, \$15,000 and above, while \$38,000,000,000 went to those with lower incomes.

A carefully compiled statement issued by the Bankers Trust Company of New York estimates the total individual incomes of the nation for the fiscal year ending June 30, 1919, at about \$53,000,000,000, and calculates that families with incomes of \$15,000 or less receive \$48,250,000 of that total; or, applying the calculation to families with incomes of \$5,000 or less, it is found that they receive \$46,000,000,000 of that total.

CONSUMPTION TAXES

While the House bill imposes luxury and semi-luxury taxes, it fails—as I have mentioned before—to resort to consumption taxes of a general kind—a deliberate but, in my opinion, unwarrantable omission.

My advocacy of consumption and similar taxes, such as stamp taxes of many kinds, is not actuated by any desire to relieve those with large incomes from the maximum of contribution which may wisely and fairly be imposed on them. I advocate consumption and general stamp taxes—such as every other belligerent country without exception has found it well to impose—because of the well attested fact that while productive of very large revenues in the aggregate they are easily borne, causing no strain or dislocation, and automatically collected; and because of the further fact that they tend to induce economy, than which nothing is more important at this time, and which, as far as I can observe, is not being practiced by the rank and file of our people to a degree comparable to what it is in England and France.

The tendency of the House bill is to rely mostly on heavy taxation—in some respects unprecedentedly heavy—of a relatively limited selection of items. I am—as I have already said—in favor of the highest possible war profits tax and of at least as high a rate of income and inheritance taxation during the war as exist in any other country. But apart from these and a few other items which can naturally support very heavy taxation, such, for instance, as cigars and

tobacco, I believe that the maximum of revenue and the minimum of economic disadvantage and dislocation can be secured not by the very heavy taxation of a relatively limited selection, but by comparatively light taxation distributed over a vast number of items. I believe such taxes would be productive enough to make good the impending revenue losses from prohibition.

I think, for instance, the imposition of a tax of 1 per cent on every single purchase exceeding, say, two dollars (the tax to be borne by the purchaser, not by the seller, would be productive of a large amount of revenue and be harmful to none. A similar tax was imposed in the course of the Civil War and appears to have functioned so well and met with such ready acceptance that it was not repealed until several years after the close of that war.

There is apparently small limit to the zeal of many politicians and others when it is a question of taxing business and business men, especially those guilty of success. We are, I believe, justified in inquiring to what extent there is a relation between this tendency and political considerations which ought to be remote from the treatment of economic subjects such as taxation.

Let us take, as an instance, the case of the farmer. I do not pretend to judge whether in these war times the farmers of the country are bearing an equitable share of taxation in proportion to other callings or not. I certainly recognize that they are entitled to be dealt with liberally, even generously, for I know the rigors of the farmers' lives, the ups and downs of their industry's productivity, and fully appreciate that their work lies at the very basis of national existence. Everything that can fairly make for the contentment, well being and prosperity of the farmer is to be wholeheartedly welcomed and promoted.

Yet we cannot avoid noticing that the average value of farm lands in this country is estimated to have increased between 1900 and 1918 more than 200 per cent, that the value of farm products has been vastly enhanced, but that according to the latest published details of income tax returns, the farmer contributes but a very small percentage to the total income tax collected. Of 22 selected occupations the farmers' class contributes the least in the aggregate, although it is numerically the largest class in the country.

Let it be clearly understood that I have not the remotest thought of suggesting "tax dodging" on the part of the farmers. I know well how fully they are doing their part towards winning the war and am entirely certain that they are just as ready to carry patriotically their due share of the financial cost of achieving victory as the splendid young fellows taken from the farms, many of whom I met in Europe, have been ready to bear their full share of the cost in life and limb of achieving victory.

The point of my question is not the action and attitude of the farmer. But here is a great industry exempt from the excess profit and war profit tax and apparently not effectively reached by the income tax, which is entirely natural, because in this case the income tax can neither be retained at the source nor are the large body of the farmers, many of whom do not keep, and cannot be expected to keep, books, in a position to determine their taxable income.

Is it conceivable that the politicians who are so rigorous in their watchfulness that no business profit shall escape the tax-gatherer, would not devise means to lay an effective tax if the same situation existed in a business industry?

The point of my question is, taking the case of the farmers as an instance, whether in framing our system and method of taxation, the steady aim has been to ascertain impartially what is equitable and wisely productive of revenue and to act accordingly, or whether considerations of the anticipated effect of taxation measures upon the fortunes of individual legislators or of their party, have been permitted unduly to sway their deliberations and conclusions.

Turning aside from this interrogation mark, I will only add, in returning to our general scheme of taxation, that there are numerous taxes of a tried and tested and socially just kind—some of them applied in this country during the Civil War and the Spanish War—which would raise a very large amount of revenue and yet would be little felt by the individual. Some of them have been suggested to our legislators, but have not found favor in their eyes. Their non-imposition, taken together with the entire character of our taxation program, the burden of which falls to an enormously preponderant extent upon the mainly industrial states and the business classes, not only proportionately, which, of course, is just, but discriminatingly, which is not just, seems hardly explainable except on the theory that the intention of those who were primarily in charge of framing that program was punitive and corrective and that they were influenced—though I am willing to believe unconsciously—by sectional and vocational partiality.

The fact that the revenue bill was passed in the House by a unanimous vote does not mean, of course, that it met with unanimous approval on the part of Congressmen. The debate shows this. The bill, as reported after months of labor, either had to be approved practically as it stood or rejected and returned to the committee. It is not possible for a body of 400 men to deal in a detailed manner with a subject so complex as a taxation measure of the magnitude of the present one.

The bill could not be made over or materially amended in the House. In view of the urgency of the emergency and the vital need to raise the sum asked for by the Treasury, no patriotic course was open to the House but to accept the bill and pass it up to the Senate.

I know it is not popular to say things in criticism of war burdens of a financial nature. One's motives are liable to be misunderstood or misinterpreted and he is very apt to have it scornfully pointed out to him how small relatively is the sacrifice asked of him compared with the sacrifice of position, prospects and life itself, so willingly and proudly offered by the young manhood of the land.

It is a natural and effective rejoinder, but it is not a sound or logical one. Heaven knows my heart goes out to our splendid boys, and my admiration for their conduct and achievements and my reverence for the spirit which animates them knows no bounds. But I am acquainted with hundreds of business men who bemoan their gray hair and their responsibilities which prevent them from having the privilege of fighting our foe arms in hand.

And I know no American business man worthy of the name who would not willingly give his life and all his possessions if the country's safety and honor required that sacrifice.

A NEW RAILWAY IN SANTO DOMINGO.—A line for a railroad from the mines to La Piedra on the Ozama River has been located and staked out. La Piedra is considered a good place for establishing a terminal. It is planned to have the railroad yards at this point and to build a roundhouse, shops and stores, as all the material and machinery for the mines will be handled there. The country through which the proposed railroad is to run will permit of easy construction, and as there is but one important river to cross, a 100-ft. steel bridge with reinforced concrete abutment is contemplated.—*Commerce Reports*.

SPANISH RAILWAY RATES.—The federation of employees of the Madrid, Saragossa & Alicante Railway of Spain has addressed a petition to the government in which it recognizes that with present excessive costs the company cannot pay its employees the wages demanded by increased costs of living, and that it is imperative that the company should be authorized to raise its rates in the same way as rates have been raised in every other country.

Problems of the National Banks in War Time*

In War Times Bank Credits Are Often Adjusted to Conditions
Instead of Creating Them and Thus Are an Effect, Not a Cause

By W. P. G. Harding

Governor of the Federal Reserve Board

THE NATIONAL BANKS of the United States have in other times and in other wars proved their loyalty and efficiency. In fact they were born in the midst of the convulsions of a country torn by civil war and their creation is due to the desperate needs of the nation in those dreadful days.

Through the establishment of the national banking system not only was a market afforded for United States bonds, but facilities were provided for the issuance of a national currency capable of circulating without discount in all sections of the country. So rapidly did the national banking system grow that in 1865, shortly after the close of the Civil War, there were 1,517 national banks, having aggregate assets of \$1,359,867,074, included in which were United States bonds to secure circulation of \$272,634,200 and about \$75,000,000 government bonds held as investments.

In 1898, when we were at war with Spain, consciousness of our banking strength undoubtedly had much to do with the ease with which \$200,000,000 of 3 per cent bonds were sold to the public at a substantial premium; but the national banks co-ordinated under the Federal reserve system are now engaged in the most stupendous work they have ever undertaken, and in according to the national banks their meed of praise, I do not wish to slur nor underestimate the importance of the work which has been done by the state banks, savings banks and trust companies as well. There is no question, however, that through the operation of the Federal Reserve system the vast fiscal undertakings of the government have been successfully carried out thus far without any undue disturbance to our financial structure and without a money panic or crisis of any kind.

For three years the burden of supporting the Federal Reserve system was borne almost entirely by the national banks—all through those times when many of the banks could not perceive that any substantial benefit would be likely to enure from membership, and when stock in the Federal Reserve banks was looked upon as a dead investment. Even a year ago, five months after the United States had entered the war, there was only 86 non-national banks which were members of the Federal Reserve system. It is gratifying to note, however, that henceforth the responsibilities and privileges of membership will be shared by the state institutions which are now coming over in constantly increasing numbers and that today about 750 state banks and trust companies are members, with total resources of nearly six and three-quarters billions of dollars.

The problems of the American banker have always been more complex and difficult than those of banks in other countries and their work is more varied and exacting. This is due, in part, to our wide expanse of territory, and to the amount of pioneering which has to be done incident to the building up and development of a new country. It is due also to the fact that the spirit of American institutions demands independence of action and that the tendency in this country has been toward a large number of independent banking units, most of them of small and moderate capital, rather than toward a compact group of highly capitalized banks conducting their operations throughout the country

through the medium of branches. The need of some means of co-ordinating this large number of independent banks, or reserving a portion of their resources for the common defense of the financial front, the necessity for providing a more elastic currency which could expand and contract in accordance with business requirements, and of establishing a broad discount market, are some of the causes which led to the establishment of the Federal Reserve system. It is not my intention, however, to attempt to discuss your routine work or your every day problems, but I wish instead to touch upon some of those questions which confront you, and those militant duties which are imposed upon you, in your work of holding the financial trenches in the great battle now raging for liberty and civilization.

The Federal Reserve Board, from the time when it became evident that this country would be forced into the war, has spared no pains to fortify the position of the Federal Reserve banks, in order to enable them to meet all legitimate demands which may be made upon them and to render the greatest amount of assistance to the member banks in the performance of their war time duties to the government. Upon the recommendation of the Federal Reserve Board, Congress amended the Federal Reserve Act in several important particulars on June 21, 1917. The effect of these amendments has been to bring into the system a large number of state banks, besides enabling the Federal Reserve banks more effectively to control the country's gold which had been widely diffused, having been used for purposes of circulation and held in vaults of member and non-member banks. As you know, all the lawful reserves of member banks are now kept on deposit with the Federal Reserve banks, and as Federal Reserve notes may be issued without limit against deposits of gold or gold certificates, the gold holdings of the Federal Reserve banks have been augmented to an amount exceeding \$2,000,000,000, and the discounting power of the Reserve banks has thereby been greatly increased. Both the member and non-member banks have been urged repeatedly to transfer their gold as it accumulates to the Federal Reserve banks, and the appeal has not been in vain, for the response has been very general and gratifying. In the vaults of the Reserve banks gold is available either as a basis of new note issues or as a means of extending their loaning facilities, while in circulation or distributed among the 25,000 or more commercial banks, it is of no more value than any other form of currency. There still remains in circulation and in bank vaults, however, about \$900,000,000 in gold certificates and coin, most of which can be deposited and should be deposited, their place to be taken as far as necessary by Federal Reserve notes. In mobilizing the gold of the country into the vaults of the Federal Reserve banks, it is not the intention to increase the volume of loans beyond the amount actually required, but these are war times, and any inability on the part of Federal Reserve banks to respond to legitimate demands made upon them would be disastrous. It is clear that in proportion as the gold holdings of the Federal Reserve banks are increased, the ability of such banks to extend accommodation to other banks or to issue notes is enlarged. As reserve holdings are curtailed, the lending power of the banks is correspondingly reduced.

*An address before the National Bank section of the American Bankers' Association at Chicago, September 25, 1918.

The national banks of the country can render good service at this time by informing the people in their respective communities of the absolute falsity of the statements which have been made occasionally and which appear to be the result of a deliberate propaganda, that it is the intention of the government to confiscate bank deposits. Such a statement is absurd upon its face, but is well calculated to alarm the ignorant, and, although it has been denied and denounced in the strongest terms by the Secretary of the Treasury and other high authorities, it is evident, from the proportion of the money paid out every week in payrolls which does not return to the banks, that large amounts in the aggregate are being hoarded or carried upon their persons by workmen who are now receiving unusually high wages. Banks should give especial attention to the problem of bringing into sight any money hoarded in their communities, and should urge its investment in war savings stamps or Liberty Bonds, as well as the establishment of bank accounts. There is good reason to believe that the present is an opportune time, in industrial communities especially, for organizing systematic campaigns for bringing concealed money into the vaults of the banks, or for effecting its exchange for government obligations.

One of the most important functions of any bank is the granting of credits. This is a power which should be exercised with prudence and discretion in any circumstances, but under present conditions there are many new and perplexing features to be considered. As the paramount business of this country at present is war, and as the government is the largest purchaser of all essential commodities, it is clear that the banks of the country should do their part, not only in aiding the government to obtain the funds and credits needed, but that they should so readjust their own lending operations as to contribute most effectively toward supplying the government with necessary articles and commodities. Therefore the question of credit conservation has been a vital one for months past. War expenditures are essentially different from any which are ordinarily made in times of peace. Instead of contributing toward a permanent addition to the national wealth, the large payments which the government is making for the maintenance and equipment of our military and naval establishments involve waste and destruction—inevitable concomitants of war. This process necessarily tends to inflation, which, together with concentrated demand and the need for quick deliveries, brings about rapid advances in the price of necessities. Infinities such as are dealt with in higher mathematics have no place in the arithmetic of war financing, even though the figures run into the billions. The supply of credit, of goods, and of man power is limited, and as far as possible these resources should be conserved and set aside for the use of the government, whose abnormal demands—inevitable and necessary in the present circumstances—must be counteracted by greater economy on the part of our civilian population, whose efforts should be directed toward decreasing the normal waste incident to our business pursuits and to our everyday life.

Credit extended for non-essential purposes involves the use of labor, of transportation, of material, and of reserves which ought to be kept free for purposes of the government. Unrestricted credit means unnecessary competition with the government, and tends to impede and delay its operation, and needlessly advances prices.

At a time when the supreme business of the country is war, it is idle to talk of business as usual, for our accustomed business and personal habits cannot in many cases be continued without interfering with the government's work and the consequent infliction of serious injury upon the nation. Uncle Sam, at this time, is a world banker—he is extending credits in large amounts to foreign countries associated with him in the war, and his power to continue to

play the part of "Uncle" in the financial sense depends upon the extent of his resources in men, goods and gold, and the avoidance of unnecessary credit. Needless recourse to the facilities of the Federal Reserve banks weakens proportionately his gold reserve, and this gold reserve is the financial backbone of civilization. Any waste of the raw materials and manufactured products of the country adds to our financial burdens by increasing the amount which we must import from other countries, and such waste at the same time reduces the volume of goods which should be available for export purposes—the best means of paying for imported commodities.

The far-sighted banker does not content himself by considering merely present problems, but he turns his eyes to the future and endeavors to lift the veil in order that he may see the shadow of coming events and make his plans accordingly. Many thoughtful bankers feel, therefore, that the preservation of our economic strength is of the greatest importance in making provision for that period of readjustment which will follow inevitably the re-establishment of peace. By refraining from buying luxuries and by restricting the use of necessities to the actual requirements of health and reasonable comfort, a reserve purchasing power can be created which will be of the greatest value in bridging over our industries during the period of reconstruction which will follow the war, when "swords will be beaten into plow shares" and Mars will give place to Mercury and Ceres.

An intelligent and prudent use of credit will be an important factor in strengthening the national resources during the period of the war, in aiding its successful prosecution, besides maintaining our economic strength for the time when our armies will return to the employments of peace. It is important, however, that a wise discretion should be exercised and that there should be a careful discrimination between essential, less essential, and non-essential credits.

It is difficult to suggest any fixed and definite rule to govern in distinguishing between these various classes of credits. A loan might be desired for what appears at first glance to be a non-essential purpose, and yet failure to obtain the credit might create a condition which might indirectly have a distinctly harmful effect upon the ability of productive enterprises in the community to obtain credit. It is important, therefore, that bank officers should inform themselves as to the ultimate use to which the proceeds of a proposed loan will be diverted. Present conditions fully justify the banks in taking such steps as may be necessary to restrain speculation, but at the same time, a general refusal to make loans on good security would seriously impair the liquidity of investments and would force liquidation which might disturb very seriously the whole financial situation. It is important to avoid sharp and radical readjustments of credit and wherever possible lines should be reduced without undue hardship to the borrower or without causing a shock which would render the granting of necessary credits more difficult.

The problem of non-essential credits is, however, not entirely one for the consideration of the banks. The question will be determined for them in many instances by the Capital Issues Committee and by other governmental bodies such as the War Industries Board, which has large powers in the determination of the character and quantity of production and of priorities in the delivery of materials and goods.

In normal times great enterprises and large developments are the result of credits previously arranged by bankers, but the military necessities of today have changed the order so that in many cases developments are predetermined, and bank credits are adjusted to conditions instead of creating them, thus becoming an effect instead of a cause. Your problems, gentlemen, are by no means confined to placing proper restrictions upon non-essential or less essential credits, but they include means of sustaining through adequate

credits, the vast number of enterprises and industries whose operations are essential or contributory to the conduct of the war and to the health and necessary comfort of the public. In addition to direct advances to the government, you are being called upon to furnish funds for use of the mercantile community and for the payrolls of mining and manufacturing and transportation companies, and for the production and movement of crops and livestock. In these operations you will find your membership in the Federal Reserve System of the greatest value, for not only can you rediscount freely with your Federal Reserve Banks the notes which represent your loans in most of these transactions, but you can effect through these banks such exchange transfers as you may desire and can call upon them to send you any currency that you may need. Shipments from Reserve Banks or branches can reach most of you within twenty-four hours, and in order to facilitate your transactions and to encourage a freer movement of domestic exchange, serious consideration is now being given to having the Federal Reserve Banks absorb all costs incident to transfers of currency for member banks, both from and to Federal Reserve Banks. You have also recourse to the War Finance Corporation, which is authorized to make advances to banks, bankers, or trust companies, and to savings banks, upon terms and conditions set forth in Sections 7 and 8 of the War Finance Corporation Act.

Your attention is directed to the great importance of increasing our supplies of foodstuffs, of cotton and wool, of coal, and of all manufactured articles of an essential character, and it is hoped that you will extend your credit lines with this object in view as far as may be consistent with the principles of sound banking and business prudence. While it is desirable that you should remain free to exercise your own discretion as regards the security of loans and the details of your business, it is necessary, nevertheless, that we should all work together in carrying out a general policy. The exigencies of the times require that banking policy must be determined in Washington to a greater extent than would normally be the case, but every confidence is felt that the splendid patriotism which has been manifested in the past by national bankers in the hour of the nation's peril, will continue to be exhibited today when our country is engaged in the greatest war of all history, and that through your cordial and effective co-operation complete victory will crown our military undertakings, to be followed by a lasting and American peace.

Railway Age

INVESTMENTS SECTION

WILLIAM E. HOOPER,

Financial Editor.

The economic events of the last three months can only be seen in their proper significance by placing them against the background of the successful Fourth Liberty Loan Campaign and the prospects of an early peace. Preliminary estimates of the number of people who subscribed to the Fourth Liberty Loan puts the number at 21,000,000. It must be remembered that the great majority of the individuals subscribing did so on some kind of an installment plan. This means that during the period of installment payments on subscriptions to loans, which period, in some cases, extends as far as fifty weeks, there will be a saving on the part of one out of every five persons in this country. Every form of industry will, to a greater or less extent, feel the effects of this economizing. The best that any other country, ally, enemy or neutral, has done, in its sale of internal loans, has been to get subscribers from one out of every nine. The fact that the United States could show one out of every five as subscribers, of course, emphasizes once again the much higher standard of living and wealth in this country than in any other, but it also is of great importance in considering the trend of investment conditions, the prospects for prosperity in any trade or industry, and, furthermore, is an indication of a state of mind which may be of even more importance than the actual dollars which are withheld from expenditure on personal wants to be loaned as a credit to the national government.

Industry has passed beyond the stage in this country where it is manufacturing the tools to manufacture war necessities.

War Stocks and Peace Stocks

It is now, and has been for some months, using the plants, which in the first six to nine months of the war it built under such great pressure, to manufacture the products actually needed in the government's conduct of the war. Munitions play a smaller part in the grand total of these requirements than might be at first expected. As a matter of fact, as things stand today, it is probable that orders for munitions could be immediately stopped and comparatively few of the manufacturing concerns of the country would be vitally affected. On the other hand, the volume of business which the manufacturing plants of the country are doing for the government, exclusive of making munitions, is stupendous. To fit themselves to do this business, a great number of companies had to make extensive additions to their plants at a time when labor and material were higher than ever before. Only a part of the huge capital investment required has been financed even by short term notes or bonds, and is today being temporarily carried through bank loans. Except for such machinery as is used in making shells, explosives and arms and artillery, that which is now at work for the government can be almost without alteration used in manufacturing for the general public; that is, for the ordinary consumer demands. The great capital investment necessitated by the war does not, therefore, need amortizing before peace. Rather the problem is as to providing work to keep the plant which has now been created busy under peace conditions.



Photo from Central News Photo Service

Swinging a Big Shell from Ammunition Car to the Gun

The law of supply and demand has been, in this country, very largely superseded by price fixing by law. This fundamentally changes the point of view from which the financial status of any particular company, engaged in industry, must be studied. Vulnerability to competition or immunity therefrom has

Eliminating Competition

been the determining factor in the failure or success of innumerable business enterprises. Eliminate the element of price competition and a quite new aspect is given to statements of earnings and profits. The number of different articles and products of industries with a fixed price made by the United States government is much larger than the average man realizes. This list ranges from shoes to wheat, from coal to butter. The fixing of the price which the government will pay for articles is not a new experiment, but what is being done now is for the government to fix the price which the private consumer shall pay in his private transaction with the retailer. This is still an experiment; not only is it impossible to say that it has been a success or a failure, but the very definition of success or failure has not as yet been clearly decided upon. The government might view the experiment as successful if it temporarily produced the results which the government desired, although the man vitally interested in a particular industry might view the results as a disastrous failure, if, in the long run, sources of natural wealth were left undeveloped, which otherwise would have been developed, or the standard of product, turned out in the industry, was permanently lowered. It is essential that an investor in a particular industry define clearly to himself what he means by successful price fixing and even if the particular industry in which he is interested is not today subject to price regulation by the government, the possibilities of such a policy being adopted must be borne in mind, and the possible results studied.

There is a certain element of humor in the fact that during the very time when the government is taking all sorts of

International Harvester

measures to nullify the working of the law of supply and demand and to eliminate competition, the International Harvester case should have been settled by an agreement on the part of the company to abandon its appeal to the Supreme Court from the decree of the United States District Court pronouncing the company an unlawful combination in restraint of trade and ordering its dissolution. There would seem to be a rather curious twist in the mental processes of the politician economist who has, for the last twenty years, been rather vainly attempting to keep competition alive by artificial means and who now is voting for laws aimed at the elimination of competition and voting to turn over the railroads of the country to a single federal administration in order that the wastes of competition may be eliminated. If the change in argument were less an absolute reversal of itself, it might be called inconsistency, but some way inconsistency hardly seems a comprehensive enough term to apply to it. However, the International Harvester case is of importance in itself in addition to being a reminder of a previous state of the politically economic mind. In making the announcement that it will carry out a dissolution plan, the Harvester company said that it was for business reasons that it had come to an agreement with the Department of Justice. The company will divest itself of the manufacture of certain machinery lines and have only one representative in any city and town, etc., and if, at the end of 18 months, these measures have not, in the opinion of the government, "proved adequate to restore competitive conditions" in agricultural implements, the government shall have the right to seek further relief. Is it not barely possible that the ideas of the Department of

Justice as to what constitutes a restoration of competitive conditions, have been so modified as to suggest to the Harvester company's officers that they could carry out an "acceptable" dissolution without plunging the agricultural implement industry into the throes of a cut-throat war of competition?

Whereas the taking over in some form or other of the railroads of the country by the Government seemed inevitable not only to the government but to most of the railroad executives, including those who feared the evils of government ownership most wholeheartedly, the taking over of the telegraph and telephone lines of the country was by no means so obviously necessary. The reasons most often given for government control and operation of railroads were that in this way only could wasteful competition be eliminated and the full use of all facilities be obtained. The real underlying reasons, however, why the government had to step in were the financial ones, which were so grave that had not the government taken charge and raised rates to an extent never even proposed by private owners, bankruptcy of railroad companies would have taken place on a great scale, but neither financial needs nor the elimination of competition could be urged as making government operation of the telephone and telegraph systems of the country inevitable. There was almost no waste due to competition in the telephone system and very little in the telegraph system. On the other hand, the contract which the government made with the telephone and telegraph companies was not a hard driven bargain such as that made with the railroads, but was a "mutually satisfactory agreement" between the postmaster general and President Theodore N. Vail of the American Telephone & Telegraph Company and President Newcomb Carlton of the Western Union. Interest charges, taxes and the existing rate of dividends is to be continued by the government, and apparently there is no disposition on the part of the postmaster general to radically change the existing order of things or to superimpose an organization of his own upon the present remarkably efficient organization of the American Telephone & Telegraph Company and Western Union Telegraph Company. The taking over, therefore, of these means of communications neither had the excuse which the taking over of the railroads had, nor had it the radical or unjust features which attached to the taking over of the railroads.

Wheat was one of the first of the commodities for which the government fixed a price. The price was intended to be high

Loans to Move the Crops

enough to encourage as large a production of wheat as possible. Since, however, land can be planted with grains other than wheat or with some other farm products, the fixing of prices for other commodities, such as sugar, for instance, and the making of a price for other commodities by open market competition, had its effect on the acreage planted to wheat. In general, the crop conditions this fall are excellent and the wheat crop will be one of the largest in the history of the country. Having protected the consuming public against an overcharge on the part of farmers or speculators for wheat, it was but right that the government should protect the farmer against competition for money from the government itself when it became necessary to finance the moving of the crops. Even in ordinary years, the withdrawal of money from the large banking centers to pay for harvesting and moving the crops is a considerable strain. Under conditions as they now are, with one Liberty Loan following

another so closely, it was essential that no chances should be taken in this all-important matter of getting in and selling this year's crops. On August 5 the managing director of the War Finance Corporation announced that the corporation would advance loans to banks to cover advances made in assisting the movement of crops. At first the rate of interest on these loans was fixed at six per cent, but later was reduced to five per cent. Loans were made up to 75 per cent of the face value of notes given in the prices of getting the crops moved and were limited to four months. The advances are made on written application through the federal reserve banks acting as the corporation's fiscal agents. Paternalism has advanced quite a long way when the government fixes the price at which the farmer may sell his wheat and arranges to finance for the local bankers, farmers and merchants the movement of this crop, and dictates to the consumer what part of his diet may be made up of wheat.

Before the signing of the armistice, the United States had loaned more than \$7,220,000,000 to our Allies. This does

<p>Loans to Our Allies</p>	<p>not mean that we shipped gold to Europe, but rather that the government of the United States arranged for credits in this country approximately as follows: Great Britain, \$3,745,000,000; France, \$2,065,000,000; Italy, \$860,000,000; Russia, \$325,000,000; Belgium, \$171,000,000; Greece, \$15,800,000; Cuba, \$15,000,000; Serbia, \$12,000,000; Roumania, \$6,700,000, and Liberia, \$5,000,000. The goods purchased with these credits have been in large measure already manufactured, so that if the Fourth Liberty Loan had been sufficient to carry the needs of our government through the period of peace negotiations and demobilization, the transactions with the Allies would have been completely financed. This country could then have continued the loan to the Allies indefinitely, receiving, of course, interest on this huge sum which would have gone a considerable way toward paying the interest on the outstanding Liberty Loan bonds. What will probably happen, however, is that at least one, if not two, more Liberty Loans will be necessary to see the country back on a peace basis. An alternative to this would be a calling for repayment of the loans to the Allies. As a matter of fact, this country is in a much better position to raise additional loans than are the Allies. In the long run, it will be of great economic advantage to the United States if she can complete war financing within this country and remain a creditor nation to the Allies to the extent of more than \$7,000,000,000.</p>
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The National City Company of New York has compiled statistics and facts in regard to the internal war loans of the belligerent countries. By this is meant the borrowings by the different governments from its own people. The compilation was made before the Fourth Liberty Loan campaign was undertaken, so that the figures for the United States do not include the nearly \$7,000,000,000 bonds which were sold in this campaign. One of the most interesting comparisons made possible by this compilation is that between the borrowings of Great Britain and Germany. Great Britain's totals, including four war loans, the sale of national war bonds, which sale is continuous, and of war savings certificates, was approximately \$13,500,000,000. Germany had had eight war loans, with a total of \$20,800,000,000. All of Germany's war loans were issued at a price below par, most of them at 98, although two, both of them 4½ per cent bonds, were issued at 95. The bonds in general pay 5 per cent interest,

although in a number of instances "treasury certificates" were offered at the same time bearing 4½ per cent interest. Great Britain's first war loan was a 3½ per cent bond issued at 95, the second was a 4½ per cent bond issued at 100, the third was a 4 per cent bond issued at 100, and the fourth, a 5 per cent bond, was issued at 95. The first national war bonds were 4 per cent, issued at 100, and the remainder were 5 per cent bonds issued at 100. France, with her coal mines in the hands of the enemy and some of the most important manufacturing centers as well as a great area of her agricultural lands in the hands of the Germans, raised nearly \$7,000,000,000 in three war loans, the first two being 5 per cent bonds, the first issued at 88 and the second at 88.75, and the third, a 4 per cent bond, issued at 68.60. While it is true that financing the war by means of bond issues is to some extent placing the burden of this financing on future generations, it must be remembered that both the principal and interest of these bonds are payable to future generations. Thus, during the next 20 to 30 years, taxes in this country, Great Britain or in France will possibly have to be sufficient to pay both interest and principal on the greater part of these internal loans, but the very people who are being taxed are the people who will receive the interest and the principal of the bonds that they hold, so that in a very real sense they will be taking out of one pocket through taxes what they put into the other pocket through interest and principal on their bonds.

Germany as a Competitor or as a Crippled Dependent

SOME YEARS AGO an executive officer of the Prussian State Railways, in conversation with a member of the *Railway Age* staff, commented on the marvelous system of train despatching on American railroads. What impressed him so greatly was the amount of freedom of action left to the individual despatcher and the amount of initiative and good judgment required to make a successful train despatcher. In Germany, he explained, train despatching was purely and simply a matter of following rules; a rule had been worked out for every conceivable situation, and it was the train despatcher's duty to find the rule that applied to any particular situation and then to follow that rule. He was asked what would happen if a situation should arise which was unique and which was covered by no rule. He replied, perfectly seriously, "Oh! we have a rule to cover that also. It is the duty of the despatcher to stop all trains and to apply to headquarters if a situation arises which is not covered by any of the ordinary rules." This is a characteristic of the German people. Highly organized as their industrial system is, it is peculiarly liable to complete stoppage if the unforeseen happens.

Much discussion has taken place both in this country and in England in regard to competition with Germany after the war. In nearly all of this discussion it has been assumed that the marvelous industrial machinery of the country would continue to function even after the Allies had dictated terms of peace which would include reparation and the giving up of Alsace and Lorraine. Now suddenly, however, the Allies are faced with the possibility that not only has the German war machine broken down, but that the country is like a cheese which a starving mouse has nibbled his way into and eaten everything of but the thinnest of rinds. It would now appear that Germany is bankrupt not only morally but materially and financially. There is the possibility that Germany's sixty million people will become a pauper burden which will have to be carried through the coming winter at least on the charity and humanity of the Allies.

A great number of enemy alien companies engaged in

mining, manufacturing and other commercial work in this country have been sold by the Alien Property Custodian and in addition there have been established quite a number of concerns engaged in the manufacture of goods such as dyes for which the world, or at least America, was almost wholly dependent on Germany prior to 1914. If Germany is to become a dependent on the world's charity instead of a competitor, this fact will have an important bearing on the immediate future of American industry and finance. As a competitor Germany might hope to enter almost at once into foreign trade, meeting the United States or England without being at too great a disadvantage. If Germany goes to pieces as she now appears to be on the verge of doing, effective competition will be almost out of the question.

In the long run, competition might be a barrier to the most effective development of American foreign trade. At present, however, the prospect of having to help feed Germany this winter is more appalling than would be the prospect of having to meet the old Germany in the competitive markets of the world. Revolution, which would amount to anarchy, might well mean just this. Chaos in Germany will prevent the immediate exacting of labor, materials or money sufficient to restore Belgium and the invaded portions of France; nor would it carry with it, immediately at least, any prospects of Germany as a market for American manufactures and raw materials. What raw materials and foodstuffs we would have to send to Germany would be sent as a charity for which the United States might never expect to be reimbursed. In a purely economic sense, this would be of enormous loss to the world. After all, what we want within this country as well as between this country and any other is a healthy rivalry which shall stimulate production. Unfortunately, the economic question is not the only one involved here. Morally, Germany is unfit to be recognized as a competitor. Justice may condemn Germany to suffer for years to come even without the Allies acting as interpreters and enforcers of this justice. If such be the case, Germany may be an economic burden on the rest of the world which will press heavily not only on the resources of the rest of Europe but of the United States as well.

The Labor Situation

WHEN THE DRAFT AGE was raised to include all men between 18 and 45, the prospects were that there would be a very severe labor shortage in this country. While the government has been regulating the price at which the products of labor could be sold, it did little to regulate the price of labor. As a matter of fact, wage scales were raised in nearly every industry which the government touched. One of the first things the Railroad Administration did was to drastically increase wages to railroad employees, and it was announced when the government took over the telephone and telegraph lines that wages of telegraphers would also be increased. Unskilled labor was the greatest beneficiary of changed conditions; but by wandering from one job to another unskilled labor, while keeping up the price of "a day's pay," did not as individuals benefit by any means to the full extent of the wage scale increase, and the country as a whole lost incalculably large sums through temporary idleness and through the necessity of breaking new men in continuously. One thing the government tried to do was to eliminate wasteful competition in the market for unskilled labor, and a United States central labor recruiting agency was established. In August, it was estimated that there was a shortage of 1,000,000 unskilled laborers, and a new list of non-essential work was promulgated which covered a very broad field; for instance, the manufacture of automobile accessories, teaming other than the delivery of products for war work, cleaners and dyers, and mercantile stores were all declared to be non-

essential industries. Those engaged in non-essential industries subject to the draft were required to either make application at the United States labor agency for work in essential industries or themselves to transfer their services to essential industries or to be subject to the draft.

The result was that non-essential industries had to take in utterly inefficient labor at an even higher scale than was formerly being paid to efficient labor, and essential industries had to face continuing demands for increased wages, and there was a large movement of women into both essential and non-essential industries.

Labor in this country and abroad is making demands both for increased wages and bettered working conditions and for power in the actual management of industry, the like of which has never been known before.

This labor situation has a very direct bearing on the investment value of securities of railroads, public utilities and industrial companies. Now, however, there comes in the new element of the return to industrial occupations of the men who have been called to the colors as soldiers. Will this squeeze out from industry the inefficient and, to a large extent, the women who are just beginning to be able to compete as unskilled laborers with the men in shop work, in street railway work and in many other industries? In so far as the United States is concerned, the men in the army will return to this country physically and mentally of a different class than when they volunteered or were drafted. The improvement in physical condition will be great, but the change of attitude of mind will be even greater.

A man who has gone through the discipline fitting him to serve in France can never look at his work in quite the same way as he did before this experience, whether he be a young farmer, a man who has worked at a trade, a helper in a country store, a miner or a day laborer. He will have acquired through the military training a new outlook on life, and a new standard by which to measure values.

On the other hand, the man whose horizon was limited by the farm and the village movies, by the factory and the corner saloon, will in innumerable cases rebel at the thought of returning to these circumscribed conditions. After the Civil War, there was the great undeveloped west into which the mustered out soldier could venture forth and from which he could carve his own fortune without the old bonds of New England industrial or agricultural conditions.

The returning soldier will have to fall back into the old order of industrial and agricultural conditions or he will have to compel changes in this old order. Herein lies both the danger and the opportunity of American industry. Industrial companies will have a better class of labor material to deal with, but labor will demand a greater share both in the profits and in the determination of conditions in the industry.

Those industrial concerns which still treat labor as a commodity to be bought at the cheapest possible price and to be treated accordingly are likely to find themselves saddled with the inefficient who are crowded out by the return of the soldiers. Those concerns which have already adopted a policy which presupposes that the laborer is a human being with ambitions and aspirations like other human beings and have held forth an incentive for their employees to work intelligently to increase profits should be able to have a choice of the man whose outlook has been so greatly broadened by their experiences with the colors. An industrial company which can so arrange its business as to have the work that can be done more or less mechanically, done by machines, and the work which requires greater intelligence and individual skill, done by men who have been physically and mentally trained in the army, and pay these latter wages which will be commensurate with the new ideals of living, and will share profits or otherwise stimulate and reward ambition and good work will be the ones to profit greatly by the change in labor conditions.

New Offerings of Securities

NOTWITHSTANDING the fact that new issues of corporation securities had to be "not incompatible with the national interest" and had to be passed upon by the capital issues committee of the United States government there was a considerable volume of securities offered to the public in July, August, and the first week of September. Of the principal offerings during this period ten were public utilities issues, seven were bonds or notes of manufacturing companies, five were municipal issues, one was a short term note issue of an eastern trunk line railroad, and the others were securities of shipbuilding, fisheries, etc., companies.

The yield on investment in these securities ranges all the way from 4.35 per cent on the State of Maryland income tax exempt $4\frac{1}{2}$ per cent bonds, maturing serially from 1921 to 1933, to 8 per cent on the Hydraulic Pressed Steel Company first mortgage and collateral trust 3-year 7 per cent gold notes due 1921. In general the municipal issues were offered at prices which would yield the investor from $4\frac{1}{2}$ to $4\frac{3}{4}$ per cent interest; the public utilities at prices to yield the investor from $7\frac{1}{2}$ to $7\frac{3}{4}$ per cent interest and the manufacturing companies from $7\frac{1}{2}$ per cent to 8 per cent interest.

The municipal issues are exempt from the federal income tax and supertaxes and are generally tax free in the state of issue. The following are typical of the municipal bonds offered for sale during the last three months: State of Maryland $4\frac{1}{2}$ per cent serial bonds dated August 15, 1918, and maturing serially from 1921 to 1933 inclusive of total offer-

ing 2,500,000. These bonds were offered by the Mercantile Trust & Deposit Company of Baltimore and the First National Bank of New York at the prices for the different maturities which gave the investor an interest yield of 4.35 per cent. State of Louisiana Port Commission serial 5 per cent gold bonds dated July 1, 1918, and due serially from July 1, 1929, to 1958, total issue \$2,500,000. The bonds are tax exempt in Louisiana when registered and of course are exempt from federal income taxes. They were offered to the public by Halsey, Stuart & Co. of Chicago and William R. Compton Company, New York, at prices ranging from 101.26 for bonds maturing in 1929 to 102.64 for bonds maturing in 1958, the interest yield to the investor being 4.85 per cent. The City and County of Denver (Colorado) $4\frac{1}{2}$ per cent water bonds dated November 1, 1918, due November 1, 1948, total issue \$10,800,000. The bonds were offered to the public by Harris, Forbes & Co. and E. H. Rollins & Sons of New York and by the International Trust Company and Boettcher, Porter & Co. of Denver at 95 $\frac{1}{4}$, yielding the investor 4.80 per cent interest on his money. The bonds were issued to purchase the plant and distributing system of the Denver Union Water Company, the price agreed upon being \$13,970,000. The net earnings of the Water Company for the year ended November 1, 1917, were \$1,004,554. The bonds are general obligation of city and county of Denver. The Lake Worth Drainage District of Palm Beach County, Florida, 6 per cent bonds maturing serially from 1922 to 1944 are offered at prices yielding a much higher interest return than the other principal munici-

Bond	Coupon	Date	Offering Price	Yield	Bankers	Amount
Amalgamated Sugar Company First Mtg. Serial Conv.	7	Aug. 1, 18-19 to 23	99 $\frac{1}{2}$ to 96 $\frac{1}{2}$	7.50 to 8	Continental and Commercial Trust and Savings Bank (Chicago)	\$3,750,000
American Cotton Oil Company	7	Sept. 3, 18-19	99 $\frac{1}{2}$	7 $\frac{3}{4}$	First National Bank of New York	5,000,000
Bethlehem Steel Corporation Secured Serial	7	July 15, 18; July 15, 19, 22 (\$7,500,000 annually)	99 $\frac{1}{2}$ to 97	7 $\frac{1}{2}$, 7 $\frac{3}{8}$, 7 $\frac{3}{4}$	Bankers Trust Co. Guaranty Trust Co.	50,000,000
City Mail Steamship Corporation First Mtg. Short Term	7	July 1, 18-19 to 21	99.53 to 98.68	7 $\frac{1}{2}$	Blyth, Witter & Co. (Los Angeles)	1,750,000
Cities Service Company Series B Conv. Debentures	7	Jan. 1, 18-60	102 $\frac{1}{2}$	4.80	Henry L. Doherty & Co.	6,000,000
City and County of Denver, Colo. Water	4	Nov. 1, 18-48	95 $\frac{1}{4}$	4.85	Harris, Forbes & Co. E. H. Rollins & Sons	10,800,000
City of Memphis, Tenn. River Terminal	5	April 1, 18-33 to 48	100.60 to 102.40	4.85	A. B. Leach & Co., Inc.	500,000
Duquesne Light Company (Pittsburgh) Secured	6	July 1, 18-21	96	7 $\frac{1}{2}$	Harris, Forbes & Co. First National Bank	10,000,000
Edison Electric Illuminating Co. (Boston) Farm Loan Bonds	5	Aug. 1, 18-22 May 1, 18-38 (Optional after May 1, 23)	99 $\frac{1}{2}$ 101 $\frac{1}{2}$	7.10 4.65, 5	Lee, Higginson & Co.	3,000,000
Hydraulic Power Company of Niagara Falls Ref. and Imp. Mtg.	5	31	..	..	Bonbright & Company	500,000
Hydraulic Pressed Steel Company First Mtg. and Coll. Trust	7	July 1, 18-21	97 $\frac{1}{2}$	8	Spencer Trask & Co.	1,500,000
Interborough Rapid Transit Company Secured Conv.	7	Sept. 1, 18-21	98 $\frac{1}{2}$	7 $\frac{1}{2}$	A. B. Leach & Co., Inc.	3,500,000
Jacob Dold Packing Company Serial	7	Nov. 15, 18-19 to 23	100 to 99	7, 7 $\frac{1}{2}$, 7 $\frac{3}{4}$	J. P. Morgan & Co.	33,400,000
Kansas City Railways Company Coll. "Series A"	7	May 15, 18-21	98	7 $\frac{1}{2}$	National City Company	3,000,000
Lake Worth Drainage District of Palm Beach County, Florida, Serial	6	Jan. 1, 17-21 to 44	100	6	Halsey, Stuart & Co., Chicago	7,750,000
Lehigh Valley Railroad Company Coll. Trust	6	Aug. 31, 18-28	97 $\frac{1}{2}$	6.35	William R. Compton Company	1,028,000
Mark Manufacturing Company Secured, Assumed by the Steel and Tube Company of America	6	June 1, 17-20	97 $\frac{1}{2}$	7 $\frac{1}{2}$	Drexel & Co. First National Bank	15,000,000
Mengel Box Company Serial Debentures	7	Nov. 1, 18-20 to 23 (\$1,000,000 annually)	99 $\frac{1}{2}$ to 98 $\frac{1}{2}$	7.25 to 7.40	Cont. and Comm. Trust and Sav. Bank	6,000,000
Moline Plow Company Serial	7	Sept. 1, 18 (\$1,000,000 annually) 19, to 24	99 $\frac{1}{2}$ to 96 $\frac{1}{2}$	7 $\frac{1}{2}$, 7 $\frac{3}{8}$	Halsey, Stuart & Co.	4,000,000
Northern States Power Company Sinking Fund Conv.	7	Aug. 15, 18-23	96	8	National City Co. Guaranty Trust Co.	6,000,000
Pennsylvania Electric Company Secured	7	July 1, 18-23	97	7 $\frac{1}{2}$	Guaranty Trust Co. Montgomery & Co.	10,000,000
Potomac Electric Power Company Mtg.	6	July 1, 18-33	93	7.75	National City Co. Harris, Forbes & Co.	2,100,000
Standard Gas & Electric Company Coll. Trust	5	Sept. 3, 18-21	97 $\frac{1}{2}$	8	National City Co.	750,000
State of Louisiana Port Commission Serial Canal	5	July 1, 18-29 to 58	101.26 to 102.64	4.85	Halsey, Stuart & Co. William R. Compton Company	2,500,000
State of Maryland Serial	4 $\frac{1}{2}$	Aug. 15, 18-21 to 33	..	4.35	Montgomery & Co. Harris, Forbes & Co.	2,500,000
State of Oregon Highway	4	July 1, 18-Oct. 1, 23-43	92.58 to 97.69	4.50	A. B. Leach & Co., Inc. E. H. Rollins & Sons	..
Steel & Tube Company of America Secured Conv.	7	July 1, 18-21	97 $\frac{1}{2}$	7.80	Wm. A. Read & Co.	5,000,000
Stewart Manufacturing Company First Mtg. Serial	6	July 1, 18-20 to 24	98 $\frac{1}{2}$ —95 $\frac{1}{2}$	7	Central Trust Company of Illinois	500,000
West Penn Power Company First Mtg. Series "C"	6	March 1, 18-June 1, 1958	98	6 $\frac{3}{4}$	Halsey, Stuart & Co. A. B. Leach & Co.	2,223,000
Carbo-Hydrogen Co. of America Cum. Pref. Stock	7	..	97 $\frac{1}{2}$ with 25% com. bonus	..	Drexel, Fessenden & Co. Charles S. Ketchum & Co.	750,000

pal issues sold during this period. The bankers—Wm. R. Compton & Co., New York, and the Mercantile Trust Company and Kauffman-Smith-Emert of St. Louis—offered the bonds of all maturities at 100, yielding the investor 6 per cent. The total amount of the offering was \$1,028,000 and the bonds are secured by a tax lien on 130,000 acres of land "averaging in value at least \$35 per acre."

The characteristic of the municipal issues is their exemption from federal income taxes. This makes them an investment for individuals with incomes subject to super taxes which makes the yields at as high or higher net rate of interest—no taxes being deducted—as manufacturing company or other companies bonds on which the gross interest rate is much higher but from which the federal income tax has to be deducted. Although therefore they are a thoroughly safe investment in general—the high yield of the Florida Drainage District bonds indicates less absolute security of principal and interest—they are not as attractive for the salaried man with an income not subject to the higher super taxes as some of the industrials and public utilities.

Far and away the largest issue of a manufacturing company's bonds was that of the Bethlehem Steel Corporation 7 per cent secured serial gold notes. The total authorized issue was \$50,000,000 issued in five series A, B, C, D and E. The first four series are for \$7,500,000 each due A in one year, B in two, C in three, and D in four years. Series E is for \$20,000,000 due in 1923. The one-year notes were offered at 99½ yielding 7½ per cent interest, the two-year at 98¾ yielding 7¾ per cent interest, the three-year at 98¾ yielding 7¾ per cent interest, the four-year at 97½ yielding 7¾ per cent interest and the five-year at 97 yielding 7¾ per cent interest. The company pays the federal income tax up to and including the normal 2 per cent without deduction from the 7 per cent interest, but the holder of these notes must himself pay such super income taxes as he is liable for. The bonds are to be secured by the deposit of \$70,000,000 consolidated mortgage 30-year sinking fund 6 per cent series A bonds.

The War Finance Corporation took \$20,000,000 of these notes in order to permit the company to complete the production of government orders for "commercial steel products essential to the government's war programme." Holders of these notes have the privilege of converting them into consolidated mortgage 6 per cent bonds due August 1, 1948, at a price equivalent to a 6½ per cent income basis at the time of such conversion. Thus if an investor buys a four-year note at the offering price which was 97½ he would get an interest return on this note of 7¾ per cent and at any time before July 15, 1922, could exchange it for a bond on a basis of exchange which would give him a long term bond due in 1948 and yielding 6½ per cent income annually for that period.

The extent and rapidity of the growth in business of the Bethlehem Steel Corporation is so well known as to need comment only in the way of an analysis of the methods used to provide additional plant facilities and working capital. In 1913 the corporation booked orders amounting to \$39,936,000 and had at the end of the calendar year \$24,866,000 uncompleted orders. The manufacturing profits for that year were \$8,531,000. The tremendous jump in business came in the calendar year 1915. The amount of orders booked is not reported, but at the end of the year there was \$175,433,000 uncompleted orders and the manufacturing profits for that year were \$23,783,000. In the calendar year 1917 the orders booked are not reported, but at the end of the year there was \$453,809,000 uncompleted orders. Manufacturing profits amounted to \$51,003,000 about \$9,000,000 less than the profits in 1916.

Since the formation of the corporation in 1905 up to December 31, 1917, only \$17,742,000 had been paid out in cash as dividends out of a total of \$106,256,000 available for dividends after charging off ordinary and extraordinary

repairs and making provision for depreciation and depletion.

In 1917 the corporation readjusted its stock capitalization, issuing \$44,586,000 new class B common stock and \$29,724,000 new 8 per cent cumulative preferred stock. Two-thirds of the new common was issued as a stock dividend and \$15,000,000 of it sold at par for cash. The new preferred was sold for cash at par, so that during 1917 the company received approximately \$45,000,000 new money from the sale of stock and also sold during that year approximately \$50,000,000 two-year notes of the Bethlehem Steel Company—a subsidiary of the corporation. These notes were secured by \$25,000,000 treasury bonds of the company and \$37,600,000 short term notes of the British government maturing prior to February 15, 1919. In his letter to the bankers underwriting the new issue of notes President E. D. Grace of the Bethlehem Steel Corporation says that through the sale of these new notes and the liquidation of the \$37,600,000 British treasury bills due February 1, 1919, the corporation will be able to pay off the Bethlehem Steel Company notes due February 15, 1919, and complete its construction programme and have adequate working capital. There are now approximately \$650,000,000 orders on hand, and President Grace says that of this less than 12½ per cent are for guns, armor plate, projectiles, and similar war material.

The policy toward cash dividends has been thoroughly conservative and the raising of nearly half of the additional \$100,000,000 required in 1917-18 through the sale of stock also indicate a sound financial policy. The Bethlehem Steel Corporation and its subsidiaries have outstanding a comparatively small amount of funded debt. The steel company has \$12,760,000 first lien bonds due in 1942 and \$23,538,000 purchase money sinking fund 5 per cent bonds due in 1936. Other subsidiaries have outstanding comparatively small issues of bonds.

An investor considering the purchase of the new Bethlehem Steel Corporation notes should ask himself first whether he will probably want to convert his notes into a long term bond yielding 6½ per cent interest on his investment and if not whether the corporation will be likely to need to refund these \$50,000,000 notes as they fall due during the next five years.

If we assume that the corporation will have to sell new securities the price at which these can be sold will depend in good part on the continuance of the booking of orders—if not on as huge a scale as at present, at least on a scale which will keep the plant reasonably busy. There seems to be every prospect of shipbuilding continuing for two or three years at least on a large scale and the Bethlehem Corporation has facilities for building one million dead weight of shipping per year, which is about one-third of the present steel shipbuilding capacity of the United States.

These notes are rather an investment for a business man who is able to form a judgment of his own as to possible after war conditions in the steel trade than an investment for an individual not in close touch with general business conditions and entirely dependent on income from investments.

Although the war has brought immensely increased business to the meat packers, the security of these companies are in "war securities" in the generally accepted meaning of that term. The war, however, has necessitated a large increase in inventories and a consequent need of larger working capital. The Jacob Dold Packing Company sold to the National City Company recently \$3,000,000 7 per cent serial gold notes due \$500,000 annually, November 15, 1919, to November 15, 1922, inclusive, and \$1,000,000 due November 15, 1923. These notes were offered to the public by the bankers at par for the one-year notes, 99¾ for the two-year notes, 99¼ for the three-year notes, 99½ for the four-year notes and 99 for the five-year notes. This makes the interest yield 7 per cent on the one-year notes, 7½ per cent on the two-year notes, and 7¼ per cent on the

remainder of the notes. This company is one of the eight largest packing companies in the United States. In 1916, it handled 952,000 head of live stock, and in 1917, 793,000 head of live stock. The sales in 1916 amounted to \$29,593,000, and in 1917 to \$40,000,000. The earnings available for interest and taxes have averaged \$1,100,000 per year for the last 5½ years, while the interest charges on this issue of notes calls for \$210,000 annually, so that if the company's earnings averaged as high in the next five years as in the preceding five, it can pay both the interest and the principal of these notes as it falls due from earnings.

The company has no other debt outstanding in the hands of the public and the proceeds of these notes are to be used to pay off bank loans. On January 1, 1917, the company had \$2,725,000 bills payable which might be considered the normal amount, the company having averaged between two and three million dollars bills payable from 1911 to 1917. On January 1, 1918, bills payable amounted to \$6,940,000. There was \$1,040,000 cash on hand and \$2,373,000 accounts receivable. The merchandise and supplies on hand totaled \$6,212,000, comparing with \$3,821,000, January 1, 1917, and with merchandise and supplies varying from two to three million dollars in 1911 to 1917.

The Steel & Tube Company of America sold \$5,000,000 three-year 7 per cent secured convertible gold notes and these notes were offered to the public by Wm. A. Read & Co. at 97½, yielding the investor 7.80 per cent interest. The notes are secured by the deposit of \$5,000,000 7 per cent series A general mortgage sinking fund bonds due July 1, 1943, and are convertible at par into these bonds.

The Steel & Tube Company manufactures steel tubes and is a producer of pig iron, having plants at South Chicago, Indiana Harbor, Evanston, Ill., and Zanesville, Ohio. The company is not listed in Poors Manual of Industrials so that the investor is dependent upon such information as is given out by the bankers making the offer and such an investment must of necessity depend largely on faith in the business judgment of the bankers.

The Hydraulic Pressed Steel Company sold \$3,500,000 first mortgage collateral trust 7 per cent gold notes due 1921, and these notes were offered to the public by A. B. Leach & Co. at 97½, yielding the investor 8 per cent interest. This company's business consists of the manufacture of steel ingots, heavy pressed steel, steel roofing, automobile frames, etc. Of the entire output at present President J. H. Foster says that 70 per cent represents standard products which are being used for government purposes; the remaining 30 per cent is mainly shell forgings. In 1915 the manufacturing profits were \$719,000, 1916 \$1,210,000 and in 1917 \$1,702,000.

The proceeds of the sales of these notes will be used to pay off the \$1,800,000 7 per cent notes due October 15, 1918, and for plant extension and additional working capital. The company has outstanding \$947,000 7 per cent cumulative preferred stock on which it has paid dividends regularly and \$5,000,000 common stock on which it has paid 8 per cent annual dividends since 1908.

Exclusive of good will and patents total assets of the company on May 31, 1918, amounted to \$12,055,000 which included \$7,731,000 current assets with \$3,313,000 current liabilities. The company is obliged to set aside 25 per cent of its surplus after interest charges, taxes and preferred dividends, of which two-fifths may be invested in permanent improvements and the remaining three-fifths must be used to retire notes.

As will be seen, the company is in a strong position as regards working capital and is conservatively capitalized as regards earning power shown in each year since 1908. On the other hand the profits now being shown are from government work and the manufacture of munitions. With

the declaration of peace will come presumably a change in the character of the business which the company will do and with new conditions the earning power shown in 1916-17 may be an untrustworthy criterion of earning power in times of peace. These notes therefore are an investment which must be made with the knowledge that the investor is to some extent relying on his own judgment of conditions in the steel trade after the war or in the judgment of the bankers making the offering.

The Moline Plow Company is a long established business, having manufacturing plants at Moline, Ill., Stoughton, Wis., Freeport, Ill., and at various other places. The products of the company are plows, farm wagons, seeding machines, binders and tractors, and at one of the Freeport plants the company manufactures automobiles and commercial bodies. The company recently sold to a banking syndicate headed by the National City Company and the Guaranty Trust Company \$6,000,000 7 per cent serial gold notes due \$1,000,000 annually beginning September 1, 1919, to September 1, 1924. The bankers offered the bonds to the public at 99½ for notes due in one year, 98¾ due in two years, etc., to 96½ for notes due in six years. At these prices the investor receives 7½ per cent on one year notes, 7¾ on two and three-year notes and 7¾ on four, five, and six-year notes. In the fiscal year 1915 the company had gross sales of \$10,212,000 with \$669,000 net income available for interest and dividends. Both 1914 and 1915 were bad years for the company, and the regular 7 per cent cumulative dividend on the first preferred and 1½ per cent paid on the common and 1½ per cent paid on the second preferred left a deficit for the year. In 1916 and 1917 gross sales were not reported but net income from operation amounted in the fiscal year ended July 31, 1916, to \$1,101,000 and in the 1917 fiscal year to \$1,761,000. In 1917 the regular 7 per cent dividends were paid on the outstanding \$7,500,000 first cumulative preferred stock, 6 per cent on the \$1,500,000 non-cumulative 6 per cent preferred and 2 per cent on the \$10,000,000 common stock, leaving a surplus for the year of \$752,000. A vice-president, F. G. Allen, says that when the present financing is complete the net current assets will be more than three times the amount of the note issue. As of June 30, 1917, the company had \$6,680,000 bills payable whereas in the previous four years bills payable had averaged in the neighborhood of \$2,000,000. Inventories in 1917 amounted to \$11,297,000, comparing with \$8,023,000 in 1916 and \$5,982,000 in 1915.

These notes of the Moline Plow Company would appear to be good "peace investments." Agricultural implements are likely to have a wide market and a comparatively high price for some years after peace is declared and the Moline Plow Company should be in a position to manufacture tractors if the trend of development in more scientific agriculture warrants it on a large scale. The longer term notes are especially attractive at the price at which they are offered and while, of course, such notes should form only a part of any one's investment who is entirely dependent on income the high yield combined with the nature of the business done by the company makes this a good investment for a part of such funds or for a business man not dependent on income from investments.

The offering of \$33,400,000 Interborough Rapid Transit 7 per cent notes by J. P. Morgan & Co., and associates, was the largest offering of public utility securities during the period under review. These are three-year convertible notes due September, 1921, and the offering price was 98½ so that the interest yield to the investor was 7½ per cent. The notes are secured by the deposit of \$52,187,000 Interborough Rapid Transit, first and refunding mortgage 5 per cent bonds due 1966, and the notes are convertible into these bonds at 87½ at which price the bonds would yield over 5¾ per cent.

The proceeds of these bonds is to be used to complete the

Interborough Rapid Transit Company's capital expenditure on the new subways in New York, and will cover the entire amount with the exception of \$6,000,000 expenditures which are to be deferred until after the war. The Interborough Rapid Transit's relations with New York City in regard to street railway, subway, and elevated lines operations are somewhat complicated, but in brief the city raised the capital to build the old subways and leased them to the Interborough for 50 years with the option of renewal for 25 years; the Manhattan elevated is leased to the Interborough by a private company and the Interborough and the city each raised part of the capital to pay for the new subways and additions and extensions to the old subway and elevated. Provision is made whereby the profits over and above rentals and interest charges is to be shared by the city and the Interborough, and provision is also made that deficits and rentals or interest charges shall become cumulative and payable out of the earnings of future years. The city still has \$40,000,000 to provide to complete its part of the capital expenditures on the new subways.

President Theodore P. Shonts, in his letter to the bankers who underwrote the bonds, says that the company is entitled to take out of the revenues of the Interborough \$17,208,000 which includes corporate income other than Rapid Transit earnings and that the amount required for interest charges on all bonds and notes outstanding and for sinking funds is \$11,973,000.

The gross earnings of the Interborough in 1916 were \$35,892,000; in 1917, \$39,866,000, and in 1918, \$40,498,000. Expenses have increased rapidly, especially in 1918, so that there was \$11,757,000 available for interest charges in 1916; \$12,458,000 in 1917, and \$9,429,000 in 1918. The company is asking for an increased rate of fare, but the opposition which it is meeting is very strong.

There is a danger in the Interborough Rapid Transit situation as there is in other public utility companies' situations, that hostility, stupidity or cupidity on the part of local authorities will refuse to let the company readjust its rates in accordance with the increased cost of doing business. To offset this there are two factors peculiar to the Interborough situation. The fact that the city itself is a partner in the enterprise makes it most unlikely that any policy will be pursued which would permanently impair the company's credit. Furthermore, New York City has shown a tendency to grow even more rapidly than the extension of Rapid Transit facilities, and the period of transition which is now being

experienced because of the opening of the new subways is not likely to be a long one. New Yorkers seem to be willing to tolerate any degree of crowding on the Rapid Transit lines and as soon as the new parts of the subway are worked at or near their capacity there should be ample profits to pay both the city rentals and interest on the company's funded debt even without an increase in rate of fare, providing that the costs of operation are not greatly increased over what they are now. And the public will continue to submit to being crowded in non rush hours as well as in rush hours.

The fact that the notes are convertible into first mortgage bonds, due 1966, makes them an investment which, while yielding a high rate of interest at present, permits of taking advantage of changed investment conditions three years from now by converting notes into bonds—if the change should be in the nature of higher prices and lower interest yields—and of taking the payment in cash for the principal of the notes if the change should be in the nature of still lower prices for long term 5 per cent bonds.

The only offering of steam railroad bonds was the \$15,000,000 Lehigh Valley 6 per cent, 10-year collateral trust bonds which were offered by Drexel & Co., of Philadelphia, and the First National Bank of New York. The offering price was 97½ so that the interest yield to the investor was 6.35 per cent. The bonds are secured by the deposit of \$4,000,000 Lehigh-Buffalo Terminal first mortgage, 4½ per cent bonds, \$2,600,000 Consolidated Real Estate Company 4 per cent mortgage bonds, and \$17,400,000 Lehigh Valley general consolidated mortgage bonds due 2003, bearing interest at 5, 4½ and 4 per cent.

The Lehigh Valley is now, of course, under the United States Railroad Administration, and the government's rental is more than sufficient to pay interest charges and to continue the regular 10 per cent dividend which the company has paid for a number of years on its \$60,608,000 outstanding stock. The Lehigh Valley under progressive management has great potential earning power. If the roads are restored to their owners 21 months after peace, the Lehigh Valley will be in a strong position to compete successfully with the Erie and the New York Central on through business, and hold up its end in competition with the Delaware, Lackawanna & Western and the Central of New Jersey on through business and coal business. If the roads were to be taken over by the government, holders of these notes could hardly fail to receive full interest and payment of principal when the notes fall due in 1928.



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The American Locomotive Company

THE EQUITY which the stock of the American Locomotive Company has in the earnings of the fiscal year ended June 30, 1918, are very considerably larger than would appear from a casual reading of the company's income account. In the 1918 fiscal year the company earned \$80,588,000, comparing with \$82,214,000 in the previous fiscal year. Manufacturing maintenance and other expenses amounted to \$70,359,000 as compared with \$72,615,000 in 1917. Thus the manufacturing profit was \$630,000 greater in 1918 than in 1917, and totaled \$10,230,000, but included in manufacturing expense is \$981,000, which was the figure at which drawings and patterns were carried. The value of these was written down to \$1, and a corresponding charge made to manufacturing expense. Of the net profits in 1918 only \$894,000 was derived from manufacture of munitions, and the company is now engaged exclusively in the manufacture of locomotives and locomotive parts. Munitions were made at the Montreal and at the Richmond plants, but by October these plants had been almost completely restored for locomotive manufacturing. The cost of these changes to the Richmond and Montreal plants was charged against a previously created reserve from the earnings of years prior to 1918.

After paying interest charges the company had \$9,930,000 in 1918 available for taxes and dividends and \$9,407,000 in 1917. There has been set aside \$4,019,000 for United States and Canadian taxes out of 1918 earnings. This compares with \$2,205,000, the taxes in 1917. It would appear that this 1918 provision is fully sufficient to more than cover any taxes which are at all likely to be imposed. The company pays 7 per cent on its preferred stock and 5 per cent on the common, and had in 1918 a surplus of \$2,911,000 after dividend payments. The surplus in 1917 was \$3,952,000, from which there was \$2,000,000 reserve for additions and betterments, leaving a credit to profit and loss of \$1,952,000. Only \$1,000,000 was set aside for additions and betterments in 1918, leaving a credit to profit and loss of nearly the same as in 1917. Since the Montreal and Richmond works have been restored and the cost already

charged to reserves, it would seem that setting aside \$1,000,000 this year as against \$2,000,000 last year before such changes were made, is a generous provision for future needs.

The company has adopted a new policy in regard to parts and specialties. It has bought a steel castings plant at Chester, Pa., and has installed a brass foundry. The company also bought the plant of the Kline Motor Car Corporation at Richmond, and is to manufacture at this plant locomotive specialties, including such things as a power reverse gear, etc.

The high cost of materials and the difficulties of getting deliveries is placing a heavy burden on the working capital of a great variety of manufacturing companies, and the American Locomotive Company is no exception to this rule. The company has contracts from the United States Railroad Administration for 800 of the Administration's standard locomotives and these locomotives are now in the process of being built. Materials and supplies on hand are carried at \$11,637,000, and contract work in course of construction at \$13,649,000. This compares with \$7,306,000 materials and supplies, and \$11,170,000 contract work in course of construction in 1917, and with a total of \$11,000,000 for these two accounts in years of largest business prior to the war. At the end of the 1918 fiscal year the company had \$16,591,000 accounts and bills receivable and \$2,709,000 cash on hand. This compares with \$12,025,000 accounts and bills receivable and \$4,711,000 cash on hand at the beginning of the fiscal year. The accounts payable total \$6,459,000 at the end of the 1918 year, comparing with \$4,424,000 at the beginning of the year.

Apparently the cost of restoring the munition plants to fit them for locomotive building again was about \$1,100,000, this amount having been charged to the reserve for restoration of munition plants and other contingencies. At the beginning of the year there was also a reserve of \$3,723,000, and at the end of the year a reserve of \$1,591,000, so that since \$1,000,000 was added to this account from the year's income, there was apparently charged to it about \$3,131,000 for expenditures made in 1918. These additions and betterments include the cost of buying the steel castings plant.



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Chinese Laborers in France Filling Trucks with Earth Removed to Make a Cutting

Yukon Gold

THE CREDIT STRUCTURE of this country is founded on the amount of gold held in the vaults of the banks and of the United States treasury. There is comparatively little gold in circulation, but each yellow-backed treasury note represents actual metal in the United States treasury vaults, each federal reserve bank note represents a credit based on a certain percentage of the metal in the vaults of the banks and each bank credit (power to draw checks) likewise is based on a certain percentage of the actual metal being deposited in bankers' vaults. If, therefore, we increase the supply of gold in the hands of bankers in this country, we much more than proportionately increase the amount of money (credit) which the country as a whole has to pay to its workers for the production of raw materials and finished products and likewise we increase the volume of credit which we can extend to our allies for the purchase of food supplies and war supplies. On the other hand, no increase in the amount of gold can of itself increase the productive capacity of the workers of this country or add to the natural resources and raw materials which are to be worked up into finished products such as food and war supplies, clothing, etc.

Thus, viewing each of the countries of the world as a separate individual, it is of the utmost importance to any one individual country to have as large a share of the gold supply of the world in the vaults of that country as is possible. Carrying this a step further, it is of the greatest importance for any one country to produce as much gold as possible. To produce gold, we must expend labor, power generated by fuel or water power, and wear and tear on machinery. In other words, in the production of a given amount of gold, a certain amount of other raw materials, considering labor as a raw material, are consumed. About the same amount of these other materials is required now to produce an ounce of gold as was required prior to 1914, but by no means as much of these materials can be secured in the open market with the ounce of gold now as could be secured in 1914. Dollars and cents are based on a gold standard, meaning a certain weight of gold to the dollar. It takes more dollars and cents to secure the same labor and machinery now than it did in 1914.

A large number of gold mines which were profitable in

1914 are now being run at very much lower margins of profit. It is even claimed that gold mining on a large scale will be abandoned while present economic conditions continue.

The experience of the Yukon Gold Company is a good illustration of what has taken place. This company owns placer mines in Dawson, Alaska, in California and in Idaho, and in 1916 bought a lode mine at Jarbidge, Nevada. In 1916, the gold produced from these mines totaled \$4,384,000, and the working cost of producing this gold was \$2,291,000, leaving \$2,092,000 as profit from which to pay interest on investment in machinery, etc. In 1917, the production of gold amounted to \$3,911,000, and the working costs were \$2,227,000.

A gold mine is a wasting asset. Therefore, the owner must expect to receive each year not only the interest on the money invested, but also a part of his capital, or else the company must continue to acquire year by year new mines to represent and take the place of the depletion of the mines previously acquired. In 1916, there was \$1,050,000 distributed in dividends by the Yukon Gold Company, and the company spent \$1,893,000 for acquiring and developing new properties. In 1915, it had become obvious that to continue acquiring new mines it would be necessary to borrow additional capital and notes totaling \$5,000,000, due \$625,000 annually, were disposed of. In 1916, the first of these notes was due, but was extended for eight years. By 1917, it had become plain that under present conditions the company could not continue to pay dividends and pay off \$625,000 a year of notes. Even if no dividends had been paid and the regular charges had been made for depletion (\$807,000) and for depreciation (\$633,000), there would have been a deficit of \$67,000.

A better understanding of the distinction between money, credit, and value, between money wages and actual wages, and between inflation and expansion, can be had by a study of the effect of present conditions on the gold mining industry of the United States, especially if we carefully consider the various remedies which are being proposed to stimulate the production of gold.

In the first place, it is necessary to keep very clearly in mind the meaning of such terms as the "cost of money" and the "cost of gold production." By cost of money is generally meant the interest rate which a borrower is willing



British Official Photo: from General News Photo Service

Tanks Loaded on Flat Cars En Route to the Allies in Palestine

to pay for the use over a specified time of a certain amount of money, and by money is really meant credit. The cost of the production of gold, on the other hand, is, as previously pointed out, the dollars and cents way of stating the wastage of materials other than gold in the recovery from the earth of a certain weight of gold.

It has been proposed to decrease the weight of gold required to make a dollar. Were this done, however, the entire machinery of foreign trade and of payment of interest and principal on bonds would be thrown out of gear. At best it could help the miner of gold only for a very short period of time when the dollars' and cents' cost of the wastage of materials would readjust itself to the new weight of gold in the dollar, and the miner would be as bad off as before. In the meantime, unless all other countries having a gold standard were immediately to readjust their weights for their gold coins, the dollar in foreign trade would depreciate in value by just the proportionate decrease in gold contained. Another remedy which has been suggested is for the government to pay a bounty to gold miners. This is artificial stimulation of a particular industry at the expense of all other industries. Governments have paid bounties to particular industries to develop them and have been successful in so doing. The shipbuilding industries of foreign countries is a case in point, although ship subsidies in this country have been bitterly resisted; but there is a difference between a subsidy to develop a particular industry which it may be argued will in time take care of itself and artificially stimulate a particular industry which will have to continue indefinitely to subsist in part on this bounty.

It has been suggested that the taxes on the gold mining industry be reduced or eliminated, and curiously enough, some of the same economists who see the futility or fallacy in granting a government bounty to the gold miner advocate an exemption from taxes. There is no fundamental difference between a bounty and the remission of taxes; each is an artificial stimulation of one industry at the expense of all other industries.

After all, is the gold mining industry so vital to national needs? Conceive for a moment that all gold mining in the United States were stopped, but that gold mining in British and French possessions continued at the present rate: the labor and materials heretofore consumed in this country upon the production of gold would be utilized in the production of some other products—lumber, coal, cattle, or something else. If we could so simplify the problem as to see this additional production of useful materials as the exact amount which this country would have as a surplus exportable to other countries, it would be obvious that other

countries would have to send us in exchange either our share of the gold which they were producing or other commodities which we would have had under other circumstances to pay for in gold. After all, is the gold mining industry so important as the gold miners would have us believe?

American Hide & Leather Company

IF ONE WERE to examine only the income account for the fiscal year ended June 30, 1918, and the balance sheet as of that date, it would be hard to realize that the American Hide & Leather Company, since its incorporation in 1899, has been unable to pay dividends even on its seven per cent cumulative preferred stock until 1916, except for a short period in 1906 and 1907. This preferred stock, of which \$13,000,000 is outstanding, sold in the years from 1899 to 1916 at prices ranging from 12 to 60. In the 1918 fiscal year, the company earned \$2,386,000 net, after the payment of expenses, discount, and making allowance for taxes and interest on its bonds. This is equivalent to more than 18 per cent on the outstanding preferred. In 1916 the company made a payment of five per cent on the preferred, and has since been declaring dividends semiannually of two and a half per cent each. A total of 15½ per cent has been paid on the preferred stock since 1899, so that there is an accumulated dividend of about 117 per cent.

The American Hide & Leather Company manufactures about 75 per cent of the total annual output of the tanneries of the United States of upper leather for shoes. It was a combination of about 20 tanneries and leather factories situated in various parts of the country, principally, however, in Boston, Chicago and New York state. There were times in the past when the company was forced to borrow rather heavily from the banks to finance its current accounts.

The change that has come over the earning power and assets position of the company since 1915 is very striking. For the fiscal year ended June 30, 1915, gross sales amounted to \$19,092,000 and, after the payment of expenses and interest charges, there were \$960,000 available for dividends. This compared with \$107,000 available for dividends in 1914. The 1915 balance sheet showed hides, leather and other inventories of \$9,433,000, with \$659,000 cash on hand. There were \$1,500,000 current liabilities. The inventories were about the same in 1914, with only \$468,000 cash on hand and current liabilities of \$2,723,000. On June 30, 1918, there was \$11,889,000 of hides, leather and other inventories, after allowing \$700,000 for possible depreciation



in values, and there was \$1,078,000 cash on hand. Total current liabilities amounted to \$3,628,000. Total current assets, including cash and inventories, amounted to \$17,781,000, so that after subtracting the total current liabilities, there was \$14,158,000 net current assets with only \$3,156,000 bonds outstanding. In other words, the \$13,000,000 preferred stock, which is preferred as to assets as well as to earnings, had an equity in \$11,002,000 current assets after the satisfaction of the mortgage bonds from current assets, and, in addition, had a preferred equity in the entire plants and good-will of the company. There was \$85 net current assets, after allowing for outstanding bonds, per \$100 of preferred stock.

At present, the American Hide & Leather Company preferred is selling at about 87. This preferred is followed by \$11,500,000 common stock selling at about 20.

The board of directors of the American Hide & Leather Company is pursuing a rather conservative policy against the protest of a protective committee representing some of the preferred stockholders. Apparently, the directors' position is that, while earnings of 18 per cent of themselves would justify a larger payment toward accumulated dividends than five per cent per year, it is necessary first for the company to so strengthen its working capital as to be able to pretty surely weather any period of depression that might follow the declaration of peace. Thus, while there was only \$627,000 paid out in dividends in the 1918 fiscal year, \$1,400,000 of bills payable were liquidated and the total increase in net current assets was \$1,668,000.

The preferred stock of the American Hide & Leather Company at best is a speculative investment, but for a business man or railroad man with an assured income has a speculative investment with some rather attractive features.

W. H. McElwain Company

THE W. H. McELWAIN COMPANY is one of the largest New England shoe manufacturing and wholesale shoe houses and, while extraordinarily high profits in 1916 would surprise no one who has to buy shoes at retail, a falling off in profit, necessitating a reduction in common stock dividends from 12 per cent to 6 per cent in the year ended May 31, 1918, comes rather as a surprise. Especially is this so in view of the fact that the gross sales in the 1918 fiscal year were far and away the greatest in the history of the company and amounted to \$35,553,000. In 1916, the gross sales amounted to \$28,141,000. The net profits in 1918 amounted to \$1,143,000 as compared with \$2,068,000 in 1917.

The McElwain business was established in 1895. The company has outstanding \$4,550,000 first preferred six per cent cumulative stock, \$2,000,000 second preferred six per

cent cumulative stock, and \$2,500,000 common stock. The preferred stock is quite widely distributed, there being 2,307 preferred stockholders in 1918. The common stock, on the other hand, is largely held by directors, managers and officers of the company. The first preferred sold in 1916 as high as 102½ and in the 1917 calendar year ranged in price from 102 to 92½. In other words, it is selling at a price reflecting surety of dividends and a very large equity in assets. Six per cent on the first preferred calls for only \$273,000, and at no time since the incorporation of the present company in 1911 has there been failure to earn this amount several times over; 1915 was one of the worst years for the company, and even in this year there was \$649,000 net earnings.

On May 31, 1918, the company had \$255,000 cash, \$6,712,000 bills receivable, and \$7,608,000 merchandise at cost or less; a total of \$14,575,000 quick assets. Total debts amounted to \$7,421,000, leaving net quick assets to an amount equal to \$157 per share of first preferred stock. This is exclusive of the plant which is valued at \$3,460,000, and of securities in the treasury valued at \$426,000.

It would appear probable that the McElwain Company took government contracts for shoes at a price which allowed it considerably less profit per pair of shoes than it would have made under existing conditions in the manufacture of civilians' shoes. The management planned with care and foresight for 1917-18 and the policy which the company had pursued toward its employees and officers in past years gave it a better strategic position as regards labor than most other employers had.

In 1916-17 the company laid in a large supply of merchandise, it having at the end of the year a total of \$8,527,000 inventories, valued conservatively. This compares with about \$5,000,000 of merchandise carried on hand on an average in previous years. The inventories of May 31, 1918, totaled \$7,608,000. In the 1916-17 year, the company, employing about 7,500 persons, reduced its hours of labor in its New Hampshire factories from 55 to 52 a week and in 1917-18 further reduced them to 50 hours per week. President McElwain says that this reduction of five hours was without any noticeable reduction in output. During 1917-18 608 women replaced men as machine operators on the same basis of pay as the men, and 27 women occupied minor executive positions, and of these 14 came from colleges or professions and were given intensive training.

Besides the common stock interest which many of the officers of the company have, they are further interested in the company's earning power through a bonus system, under which a definite percentage of profits is distributed among executives, superintendents, and foremen in proportion to their salaries. In 1916-17, 187 men participated in this bonus and \$217,000 was distributed. In 1917-18, 197 men



Running Up Railways to Keep Up with German Retreat

participated, but, with the lower net earnings, only about \$52,000 was distributed as bonuses.

The relation of cash to working capital and working liabilities is rather low, and, although the credit of the company is such that it is unnecessary to carry very large bank balances, it is proposed to issue for cash \$500,000 par value additional common stock. The preferred stock is being retired at the rate of \$50,000 par value a year and the increase in common stock is conservative.

The first preferred stock yielding at the present prices an income of a little over six per cent would appear to be a conservative investment where the man was either not wholly dependent on income from investments or had a considerable part of the remainder of his investments in government, municipal, and first mortgage bonds.

Holly Sugar Corporation

THE CONTRAST between the attitude of mind of a man as a consumer of food products and the same man as an investor in corporation securities is strikingly brought out in the case of the Holly Sugar Corporation. This company was incorporated in 1916, taking over the property of an older corporation which had been for a number of years engaged in the manufacture of sugar from beets. The reorganization was quite conservative, and with the rise in the price of sugar which took place in 1916 and 1917, appeared to be going to work out particularly successfully. As a matter of fact, however, in the fiscal year ended March 31, 1918, the results were far from satisfactory. We have here, therefore, the contrast between what each one of us knows to have been the shortage of sugar and the difficulties of procuring it as a consumer and the comparatively high price which we had to pay for it, with the actual experience of a sugar manufacturing company which, under these same conditions and apparently through no fault of management, could not make a satisfactory financial showing.

In the year ended March 31, 1917, the net profit amounted to \$1,874,000, of which \$381,000 were paid out in dividends and \$312,000 appropriated for the retirement of preferred stock, leaving a balance to be carried to profit and loss of \$1,181,000. In the year ended March 31, 1918, net profit after allowing for reserves for excess profits tax amounted to \$1,197,000. There were \$297,000 paid out in dividends, representing seven per cent on the cumulative preferred stock and \$1,019,000 appropriated for redemption of preferred stock, leaving a small deficit to be carried to profit and loss account.

The company has outstanding now \$4,000,000 par value of seven per cent cumulative preferred stock and 58,000 shares of no par value of common stock. There are no bonds outstanding. In 1916, after the retirement of preferred stock and the payment of dividends on preferred stock, the surplus amounted to over \$20 per share on the common. Of course, there was a very much larger amount of preferred stock retired in 1918, and, while there was nothing left after the payment of preferred dividends and this appropriation for retirement of preferred stock, for dividends on the common, the common had a large equity in the earnings which were used to retire the \$1,019,000 preferred stock. The common stock, therefore, has a large potential earning power even in a year like 1918, but this does not greatly take away from the outstanding fact that, notwithstanding the shortage of sugar and the high price at which it was selling, a conservatively capitalized beet sugar manufacturing company showed a large falling off in profits.

The Food Administration fixed prices in 1917 for both cane and beet sugar, but it is claimed that the price for beet sugar was fixed so near to the price which the Administration fixed for beets that it left a very small margin of profit

to the beet sugar factory. Furthermore, the beet sugar factory prices were on a sliding scale, being highest at the point of production and lowest at the point of delivery to retailers farthest away from the point of production. In other words, the freight rate had to be absorbed in the sugar price set by the beet sugar producers. This scale of prices was adopted because cane sugar comes into the country pretty largely at the seaboard, and at the seaboard the beet sugar has to meet the competition of cane sugar without a railroad freight rate added to it.

The Holly Sugar Corporation's plants are situated at Sheridan, Wyo., Swink, Colo., Huntington Beach, Cal., and, during the 1918 fiscal year, the company bought a controlling interest in the Santa Ana Sugar Company and operated its plant at Santa Ana, Cal., and leased the plant of the Grand Junction Sugar Company at Grand Junction, Colo. It would appear, therefore, that the amount of manufacturing done must have been much larger in 1918 than in 1917, and yet the net profit from this larger business was less this year than in the previous year. Furthermore, notwithstanding the shortage of sugar, the acreage, planted to beets under contract, is estimated to be 25 per cent less in the fiscal year ending March 31, 1919, than it was in the 1918 fiscal year. This is because of the relatively greater profits to farmers offered under the price fixed for wheat by the Government than that fixed for sugar beets. Not only, therefore, does the sugar manufacturing company face a great curtailment of profits due to the small margin between the price fixed for its raw materials—sugar beets—and its finished product—sugar—but the price fixed for sugar beets is so low as to endanger the beet growing industry of the country.

The working capital situation of the Holly Sugar Corporation is fairly good. Total current liabilities amount to only \$132,000, of which \$29,000 is accounts payable and \$70,000 dividends payable May 1, 1918, on the preferred stock. Total current assets amounted to \$1,663,000, which included \$264,000 cash, \$837,000 inventories of refined sugar and stock in process of refining and supplies and \$316,000 notes and accounts receivable.

The beet sugar interests have appealed to Herbert Hoover, the National Food Administrator, and if a more liberal policy is pursued both toward the beet farmer and the refinery, the preferred stock of the Holly Sugar Corporation offers rather attractive speculative possibilities. The margin of safety which the company is earning for the preferred, even under such conditions as those that prevailed in the fiscal year ended March 31, 1918, is large. Even after the close of the war there ought to be a continuing demand for sugar which will assure a high price for some time, as compared with pre-war prices.

When normal conditions are restored in the ocean carrying trade, and sugar from Java can again compete in world markets, it may be that sugar prices will tend strongly downward; but even under such conditions the seven per cent preferred dividend on the Holly Corporation stock appears to be pretty well assured.

Pacific Development Corporation

ONE OF THE QUESTIONS most often asked in regard to building up a large export business for the United States after the war is that as to how payment for our goods is to be made by foreign countries. The answer is that it should be paid for in part by credit, and in part by trade; that is, by products of these foreign countries. That was the method adopted by England, and it was largely due to the fact that the majority of the other countries of the world owed England—had paid for goods received by credit—that England was able to so largely finance her allies

as well as herself in the first three years of the war. A few of the great companies and banks, like the Guaranty Trust and the National City, are making rapid progress in establishing the facilities for credit payments by other countries for United States goods, and some of the larger manufacturing companies are making efforts to at least fully inform themselves of the possibilities of building up an export business. Trading companies, however, are comparatively few; we have a certain number, some of them immensely successful, such as W. R. Grace & Co. and Gaston, Williams & Wigmore.

A new company was formed in January, 1917, combining various well-established businesses under a single general direction with the object of combining in a scientific way the various functions of American foreign trade. There were five principal companies taken into this holding company organization: The Pacific Commercial Company, the largest trading company in the Philippine Islands; Anderson, Meyer & Co., Ltd., doing a general export and import business in China, but principally selling engineering and machinery to that country; Hartmann Brothers, Inc., doing a general importing business of foreign merchandise into this country; the International Vegetable Oil Company, manufacturing cottonseed oil in this country and vegetable oil in the Orient; and the American Machine & Mfg. Co., manufacturing vegetable oil machinery. Since a good part of the products of the Philippine and quite a part of the Oriental territory, covered by Andersen, Meyer products, are copra and other oil-bearing seeds and nuts, it will be seen how nicely the various parts of the trading business have been combined under the new holding company. The inclusion of a company manufacturing vegetable oil producing machines is a rounding out of the business which would appear to hold out large possibilities of traffic. The increase in the consumption of vegetable oils in place of butter and animal products has been very rapid, and the scarcity and high price of milk and, therefore, butter must continue for some years after the war, since it takes about seven years to build up a dairying herd of cattle.

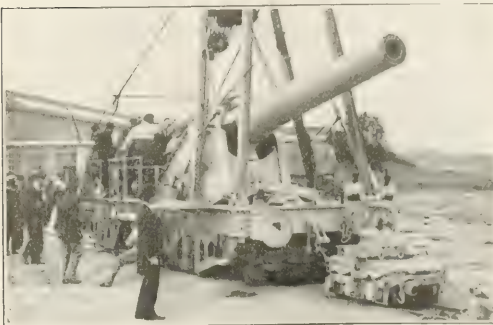
The Pacific Development Corporation thus answers to a large extent, in its organization for business, this question of how foreign countries are to pay for our exports. The Philippine company will take vegetable oils and credit in exchange for all kinds of merchandise from this country; the Chinese trading company will take vegetable oils, Oriental goods and credit in payment for machinery, manufactures and engineering service; the vegetable oil company will manufacture these products in part in its mills in the Orient and in part in its mills in the south of the

United States to take up the slack period when these southern states' mills are not manufacturing cottonseed oil; and the products other than vegetable oil, taken from the Orient and the Philippines in payment for American goods, will be sold in this country through the organization of Hartmann Brothers. The buying organization of the Philippine trading company and the Chinese trading company can be utilized as a means of locating and developing markets for the machine and manufacturing company.

The Pacific Development Corporation had outstanding at the end of 1917 \$4,139,000 par value of stock, divided in 82,773 shares of \$50 par value each. Since January 1, an additional \$1,506,000 par value of stock has been sold. The company is paying dividends at the rate of seven per cent per year. The net profits accruing to the Development Corporation for 1917 amounted to \$1,227,000. Dividends at the seven per cent rate were not begun until August, so that only \$112,000 was paid out in dividends. Not all of the profits which accrued to the parent company, however, were declared by the subsidiary companies in dividends so that the Development Corporation's income account shows a total income of \$335,000, with expenses and provisions for income and excess profits' taxes of \$119,000, leaving \$216,000 net from which \$112,000 dividends were paid and \$103,000 carried to the Pacific Development Corporation's surplus account.

It must be borne in mind when considering the Development Corporation's stock as an investment that the assets consist of stock of other companies. It has practically no physical assets of its own except these investments. An investment in Pacific Development Corporation's stock is an investment in the earning power of the combined subsidiaries without further security, but, under present conditions, this earning power is large. The development corporation carries the stocks of its subsidiary companies on its balance sheet at a valuation of \$4,497,000, and it will be recalled that net profits amounted in 1917 to \$1,227,000 or 27 per cent on this valuation. The Development corporation at the end of 1917 had \$220,000 cash on hand. It had notes payable serially from April, 1918, to December, 1918, totalling \$775,000. The sale of \$1,506,000 stock should and presumably has taken care of the payments due on these notes and additional capital required for a rapidly expanding business. The sales of the company so far this year are running 61 per cent in excess of the sales in 1917. As a semi-speculative investment for a business man or salaried man, not dependent on income from investments, the stock of the Pacific Development Corporation, looks quite attractive.

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With the Big Guns

EDITORIAL

Railway Age

EDITORIAL

The recent circular issued by the Division of Operation of the United States Railroad Administration concerning rules for the investigation of new devices or inventions has, we believe, been misinterpreted by many railroad men.

Testing and Developing New Devices

As we understand the circular, it contains rules and plan of procedure for persons wishing to interest the mechanical department of the Railroad Administration in their particular apparatus or devices. It does not necessarily mean that the individual railroads will be obliged to follow this circular before they proceed with any investigations or tests. In the *Railway Age* of September 6, page 431, the last paragraph in the item under Rules for Submission of New Devices states: "Nothing in the foregoing is intended to prohibit any railroad from testing and developing devices invented by its employees, or testing other devices which in the opinion of the officers of the road have sufficient merit to warrant it." While this paragraph was omitted from the circular put out by the director of the Division of Operation, it is understood on good authority that it applies to the case. It would be the height of folly and it would greatly hamper the development of improvements on the roads unless this freedom were permitted.

The state railroad commissioners at their annual convention last week made it perfectly clear where they are going to stand on the question which will probably become a vital issue shortly as to the future disposition of the railroads.

State Commissioners as Standpatters

They are going to occupy a position of strenuous opposition to any plan of government ownership or operation of the railroads which would interfere with their rights, powers, prerogatives, occupations, salaries or other emoluments, which means any plan which would be likely to find much support outside of the ranks of the state commissioners. They find no comfort at all in the present order of things, because while the director general has expressed a desire for their co-operation and a willingness to have the benefit of their knowledge of local conditions, he has let it be known that he prefers to act upon their recommendations where they do not run counter to his purposes rather than to allow them a very large field for the exercise of the authority conferred upon them by state laws by issuing orders. For similar reasons they are likely to be found opposed to any plan for the operation of the railroads which may be advanced as a compromise between government ownership and the former condition of competitive private management and dual state and interstate regulation. Any such plan which might be adopted for the purpose of removing the disadvantages of the former system could hardly be expected to eliminate the advantages resulting from competitive operation for the sake of securing the benefits which might result from unified operation, and at the same time permit the continuance of competition in regulation. Apparently the state commissioners, in their anxiety to safeguard the powers of local tribunals over the instrumentalities of national commerce, are again putting themselves in the standpoint attitude which they occupied before the Newlands committee. While they passed resolutions urging legislation to define the future status of the railroads, they offered no sug-

gestions except that any plan adopted should keep them on the job. We fear they are going to be hard to satisfy.

The Imperial Government Railways of Japan have been sending a more than ordinarily large number of representatives to this country during the past

Our Japanese Railway Friends

few years to study American railroad practices and methods. Doubtless this increased representation is due to the fact that war conditions prevented their making similar studies in Europe. What sort of men are these representatives, and how should we treat them? Inquiry shows that they are all men of exceptionally good education and training and that they are apparently in line for important official positions on the Japanese railway system. American railroad officers have been glad to furnish them with such technical information as they were desirous of obtaining, but it would appear that they could well afford to go a step further in the interests of our own country and its future relationship to Japan. It is understood that some of the representatives have gone back to their own country with a high appreciation for American railroad organizations and methods, but with an opinion of Americans in general which was not very flattering. This was doubtless because of their being so intently interested in their investigations that they did not have an opportunity of meeting on a social basis Americans of their own class, so far as education and social standards are concerned. It is extremely desirable that these men return to Japan with a better knowledge and appreciation of what real American life is like, and railroad officers with whom they come in contact should assist in every way that they can to give them a bigger and broader insight into our American life.

Considerable delay and much unnecessary expenditure are caused by the rough handling of freight cars at terminals.

Damage to Equipment at Terminals

Anywhere from \$100,000 to \$150,000 a week is expended in repairing cars damaged in yards. This not only overburdens the repair forces, but it causes material delay to shipments, because these damaged cars must be segregated and either their loads transferred or delayed until the repairs are made. The cause of this is largely due to the careless handling of the cars in the classification yards by the yardmen. The large amount of freight that is being handled undoubtedly drives the yard forces pretty hard and an attempt to speed up the switching operations has resulted in recklessness. Then again, the employment of new and inexperienced yardmen who have not been properly trained is another cause for this excessive damage. The matter is assuming such large proportions that something must be done to correct it. The old adage that "haste makes waste" applies particularly to this problem. There is need for concerted action by both the transportation and mechanical forces. The hand brakes must be kept in good operative condition, sufficient switchmen must be at hand in the yards properly to handle the cars switched, and the speed of switching must not be so great that the speed of the cars cannot be properly controlled by the hand brakes.

Railroad Commissioners on Safety

THE REPORT OF THE COMMITTEE on safety, briefly uttered last week in our report of the Washington convention of the National Association of Railroad Commissioners, is an interesting document of four pages; but the interest is all in the diagnosis. The description of the difficulties is mostly very good; but the methods of cure are as costly as ever. And it is because of the cost, in brains, education and money, that well-known remedies for dangerous appliances and dangerous practices are not more generally adopted. It would probably make for progress if this aspect of the situation were more frankly faced by all concerned.

The first subject dealt with is the enforcement of the laws requiring safe couplings, air brakes and other freight-car (and engine) appliances. The Interstate Commerce Commission has for many years been prosecuting the railroads in the courts for violating these laws, and over a million dollars has been collected in penalties. Now, the director general has instituted a change. He sees no sense in going into the criminal courts to transfer money from the government's railroad pocket to one of its other pockets, and so he proposes to enforce compliance with these laws by imposing punishment on persons who commit "wilful and inexcusable violations" of them. Mr. McChord's committee cannot find that as yet Mr. McAdoo has accomplished any marked improvement in practice, and seems to doubt whether fear of punishment will prove an "entirely successful" deterrent. Whether the "persons" to be punished include officers and inspectors who overlook or wink at unsafe practices, as well as the trainmen who are directly responsible for them; whether the Administration has officers possessing the necessary grit to punish brotherhood enginemen and brakemen when they carelessly smash couplers and draft gear; and whether "inexcusable" violations of law are to be punished (as they should be) when not classed by the courts as "wilful" are points on which this report throws no light.

The enormous increase in the number of trainmen and telegraphers working a longer day than is prescribed by the law, are prominent points in the report. It is not very strange to find no remedy proposed, for the problem is a perplexing one.

When jobs are plenty, as at present, many employees who otherwise are satisfactory workmen will throw up their jobs and go to another road if censured. This, of course, breaks down all discipline, and the superintendent who seeks to accomplish increased safety in train operation finds himself completely baffled. This is one of the cold truths to be found in this report (expressed, however, in restrained language). Another picture, pretty true to life, is the following:

"Under private management, many railroad companies could be seen to induce them to adopt safety devices and improve operating practices; every practicable safeguard of merit was used by them in the operation of their roads. The managements of many other railroads, however, were extremely backward in these matters; sometimes, it is true, because of lack of means, but often because of extreme conservatism, and again because of being willing to let well enough alone. Practically all the recommendations that have been made for improved safety conditions have had in view merely the compulsory adoption by all railroads of the improved practices and safeguards used by the most progressive and advanced railroads."

The report goes on to recommend the block system, calling attention to the unanswerable arguments in its favor which have been presented many times in the past, and emphasizing the finding in the case of the recent terrible collision near Nashville, Tenn., that *all necessary appliances and facilities for blocking trains were already available* and might have been used. The automatic train-stop is favorably mentioned, but is rightly placed after, not before, the plea for the general introduction of the block system. The connivance on the part of officers, at "habitual violation of rules for the ostensible purpose of avoiding delay to trains" is properly characterized as a great evil.

The general effect of this report should be to impress on the public—what already forces itself on the minds of railroad officers every day—that many of the problems of the operating department can be solved only by very slow processes. If steel rails are so scarce that the roadmaster cannot make reasonable renewals and cannot warrant the safety of his track for high speed the only remedy is low speed. The application of this remedy would stir up all sorts of remonstrances, criticisms and wailings; but there is no other way out, except by the sacrifice of safety. The problem of incompetent, inefficient or unruly help, in its last analysis, means that when a competent telegraph or telephone operator cannot be found, an office may have to be closed. When competent trainmen are not to be had, the question of sending out men who are only partially competent must not be settled with the eyes shut; *the trains must not be started out*. These are radical suggestions, and Mr. McChord and his fellow committee-men did not go so far as to put them on paper; but if we remain content with partial remedies we can expect only partial results. With how much earnestness do we desire complete safety?

The Problem of Reconstruction

THE SUDDEN CESSATION of hostilities and the prospects of an early peace will develop a number of serious problems which must be dealt with with great tact if this country is to come through the reconstruction period successfully. That it must do this is important for many reasons, not the least of which is that we must demonstrate the effectiveness of the fundamental principles underlying our democracy and be an example to those countries that are about to form republican governments. That the importance of these reconstruction problems is generally recognized is indicated by the many conferences and meetings which are shortly to be held to consider them. For instance, a War Emergency and Reconstruction Conference will be held under the direction of the Chamber of Commerce of the United States of America at Atlantic City on December 4, 5 and 6; the reconstruction committee of the National Civic Federation will meet in New York on December 2; a conference of labor men will be held in Albany early in January to formulate a reconstruction program.

For three years the industries of this country have been working to the limit of their capacity, and gradually, as the shortage of labor and material have become more pronounced, non-essential industries have been curtailed and efforts have been concentrated on manufacturing and shipping abroad munitions and other equipment for the carrying on of the war. This great energy must now be suddenly diverted into other channels and we must readjust ourselves to normal conditions. Not a few are prophesying a period of industrial unrest and internal dissension. This must be avoided. The United States entered the war with the very highest of ideals and it has made great sacrifices because of these ideals, and with a view to insuring a square deal to those peoples who have been oppressed and have suffered under autocratic forms of government. Can we uphold these ideals at the peace table if at the same time there is industrial dissension throughout the United States?

The interests of labor and capital are interdependent and the only real solution of the problem is for each side to look at it in a broad way and to make an earnest attempt to recognize the viewpoint of the opposite side. The whole situation is based on certain economic principles, and if capital refuses to give a square deal to labor, or if labor insists upon unreasonably high wages which will make it necessary to close down our industries and go through a

period of industrial paralysis, both sides will suffer greatly and needlessly. If the two interests can get together in a big way they will both profit by it, although each side may seem to lose temporarily because of compromises which will have to be made. On the other hand, the country will be assured a period of prosperity, and an un-Christian conflict, which is contrary to the very principles for which our boys laid down their lives on the other side and for which the entire nation has made sacrifices, will be avoided. There will be no place in the larger program for the employer who asserts that he will be glad when hard times come in order that labor may be taught a good lesson, or for the equally narrow and bigoted labor leader who cannot find terms strong enough with which to abuse the employer and question his motives. The unreasonable elements on both sides of the question form an exceedingly small proportion of the total population and sooner or later an enlightened public will surely relegate them to the scrap heap.

Don't Stifle the Morale

UP-TO-DATE METHODS and standard practices are important to the success of any enterprise; the right form of organization and well-defined channels of authority are even more important, but the really vital factor in the success of any organization is the development of a high morale, thus encouraging each individual to put forth his very best effort. Railway red tape in many instances has tended to stunt the healthy growth of such a spirit. Will government control, with its bureaucratic methods, superimposed upon this still further stifle and possibly largely destroy that morale which is so necessary if the railroads are to serve the public acceptably.

Possibly no one factor has been so important in encouraging railroad officers to improve their various departments as the formation of the different railway associations or organizations. Practically every department of the railroad is represented by one of these organizations and here the officers or foremen met in convention at regular intervals to consider important problems, exchange experiences and develop the best practices and standards.

There is a possibility of the Railroad Administration ordering the various associations to amalgamate. It must be admitted that certain changes can be made with excellent results, but care should be taken to preserve the individuality of these organizations and to encourage a hearty and general participation in their direction on the part of all of the members. For instance, it would be a serious mistake to form one large unwieldy organization which would be divided into a number of sections and in which the work would be done largely by committees without holding meetings of the membership generally and at regular intervals.

The forty or fifty important railway associations now in existence have developed normally and gradually to meet the changing conditions in the railroad field. At the beginning of the war they were all in a healthy condition and there is no reason why they should not continue in this condition. They fell short of doing their best work for two reasons. First, the higher executive officers in many cases had little, if any, appreciation of the work of the minor organizations and in many cases have not taken steps to see that their roads were represented at the conventions and that their representatives participated not only in the discussions at the convention, but in the preparation of the reports to the extent that they should. On the other hand, of course, many of the more progressive roads insisted that their men attend the conventions and backed them up in making investigations and securing data for reports or individual papers. More and more, how-

ever, men were being sent to the meetings with instructions to report in writing as to the recommendations that they feel should be made on the basis of facts that are developed at the conventions, and there has been a pronounced improvement in this direction.

The second reason why the work of these organizations is not as effective as it should be is that in many cases the work of the association ends with the education and inspiration that it gives to its individual members, or which is conveyed to the railroads in general through the railway press. Its recommendations are placed on record, but cannot be enforced. The *Railway Age** (See Footnote) has consistently recommended, and notably in an editorial in its issue of May 4, 1917, page 926, that there should be a closer co-operation between the different organizations, so that in the mechanical department, for instance, the various minor organizations can pass their recommendations up to a major mechanical department association, which will finally pass upon them and authorize them either as recommended practices or standards, whichever may be most desirable.

It would be comparatively easy, without even changing the names of the present organizations or their present plans of meetings to tie them up in such a way that they could report to the American Railway Association and could work under its general direction. The American Railway Association would undoubtedly prefer to have several major organizations under its immediate direction rather than the larger number of minor associations. The general mechanical department organization, for instance, could act as a clearing house for all of the mechanical department organizations, approving of their recommendations and forwarding them to the higher organization. A flexible organization of this kind would preserve the identity of the various organizations and encourage them and would tend to uplift rather than to destroy the morale throughout the railroad field. It may not be out of place at this time to repeat the suggestions that were made by the *Railway Age* in an editorial in its issue of May 24, 1918, page 1263, and which are as follows:

"It would seem that the adoption of some such plan as the following would be sufficient at present: First, make the various technical associations divisions of the American Railway Association, but let them continue to meet separately and have such discussions and adopt such recommendations as to privilege in their respective fields as they consider wise; second, give the American Railway Association authority to co-ordinate the work of the various associations so that harmony in their recommendations will be brought about where they touch upon the same general subject; as, for example, on the relation of wheel loads and strength of track, and refer back to the subsidiary organizations for further consideration recommendations of which it does not approve; and, third, vest in the American Railway Association the authority and duty of making to the director general recommendations regarding the practice which it may be deemed desirable to have enforced upon all railways."

The important thing is to guard against loss of interest and restrictions of action which will necessarily follow the amalgamation of the organizations and which will far outweigh the disadvantages which now exist, and which can be largely overcome by a co-ordination of activities such as suggested above.

*Among the more important editorial comments published during the past six months in the columns of the *Railway Age* were on the following:

Closer Cooperation to Mechanical Department Association, May 4, 1917, page 906.

Amalgamation of Railway Associations, May 11, 1917, page 914.

Further Amalgamation of Railway Associations, Editorial, May 11, 1918, page 131.

Proposed Amalgamation of Railway Association, August 2, 1918, page 199.

United States Standard Refrigerator Car

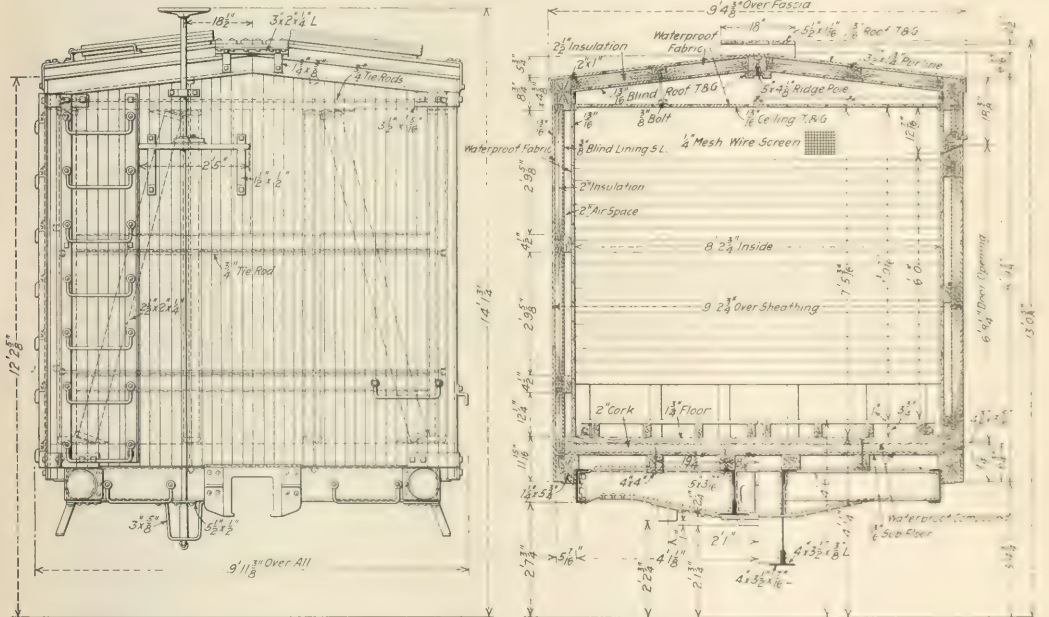
All-steel Underframe, Basket Type Ice Bunkers, Solid Insulated Bulkheads; 30-tons Capacity

IN CONNECTION with the Mechanical Department's Circular No. 7 covering repairs to refrigerator cars, the United States Railroad Administration has issued specification No. 1,386 covering a 30-ton steel underframe refrigerator car body, which has ice compartments at each end with stationary insulated bulkheads and ice receptacles of the basket type. These cars are made to conform as nearly as possible to other standard type cars. Many of the parts of the air brake rigging, the body center plate, body side bearing, side bearing and truck clearances, draft gear details, limiting dimensions for couplers and several other minor details are the same as those used in the other standard cars constructed for the Railroad Administration. The lumber

gears may be used. The cars have the following general dimensions:

Length outside between end frames	39 ft. 11 in.
Length inside between bulkheads	37 ft. 11 in.
Width inside	8 ft. 5 in.
Height inside, floor to ceiling	7 ft. 5 in.
Height inside from floor grates to ceiling	7 ft. 1 in.
Length over striking plate	42 ft. 1 in.
Width over eaves	9 ft. 5 in.
Width over-all (sill buldges)	9 ft. 10 in.
Height from rail to top of car at end	11 ft. 2 in.
Height from rail to top of brake tank	13 ft. 6 in.
Height from rail to top of running board	13 ft. 5 in.
Height from center to center of trucks	33 ft. 1 in.
Height from rail to center of coupler	2 ft. 10 in.
Height from rail to bottom of center sill	2 ft. 4 in.

The framing of the car is made up of 7¼-in. by 5¾-in. side sills, mortised to fit the angle on the side sill member

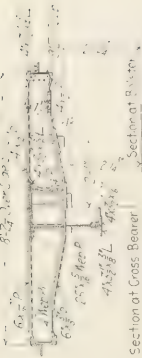


End Elevation and Section of U. S. R. A. Standard Refrigerator Car (Drawing No. 1386)

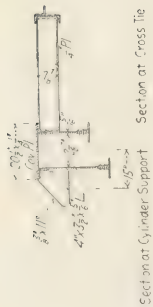
sections are in accordance with the Master Car Builders' standard practices and the same as used on the standard box cars.

The cars are to be equipped with the Westinghouse KC 10-12 type air brakes, of either Westinghouse or New York Air Brake Company's manufacture, with 25-50 double pressure spring type retaining valve of the Westinghouse Air Brake Company's design. Braking power to be about 60 per cent of the light weight of the car, based on 50 lb. cylinder pressure. The piston travel is to be between 5 in. and 7 in. Friction type draft gear is specified, having a minimum capacity of 150,000 lb. and a maximum travel of 2¾ in. The clearance between the coupler horn and striking plate to be 3 in. As in all other freight cars the Chicago, Murray, Sessions type K, Westinghouse or Miner draft

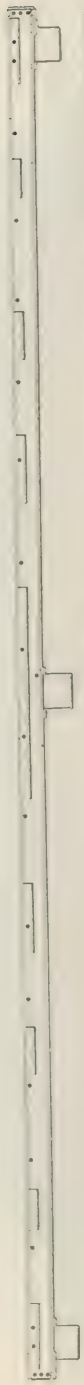
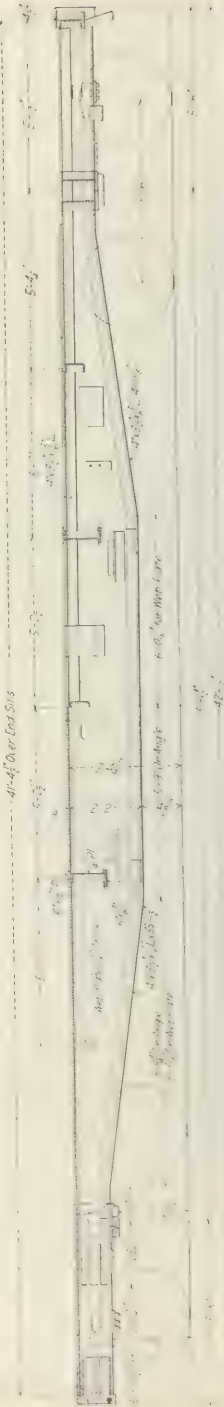
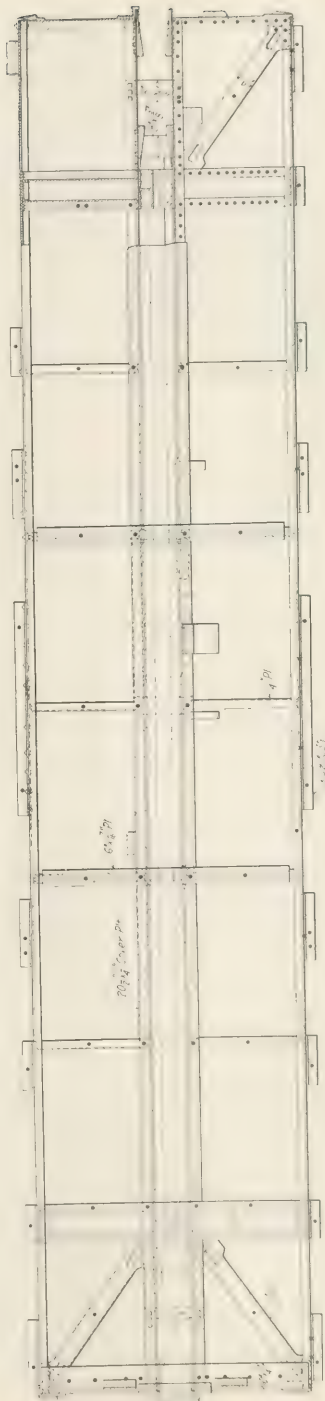
gear of the underframe. There are 12 intermediate 5-in. by 2-in. side posts and 12 diagonal braces of the same material. There are two belt rails 4½ in. by 2 in., located 2 ft. ¼ in. and 4 ft. 10 in. above the bottom of the side sill, respectively. The side plate is 8¾ in. by ¾ in. There are two intermediate 4-in. by 4-in. end posts and two belt rails 4½ in. by 4 in. The corner posts are 6½ in. by 7 in. The roof framing consists of a ridge pole 5 in. by 4½ in. and two purlins 3½ in. by 1¾ in., with 1¾-in. carlines having ¾-in. tie rods located at every other carline. The end plates are 6½ in. by 8 in., gained out to receive the insulation. The door posts are oak members 13/16 in. by ¾ in. The roof has 13/16-in. roof boards which are covered with a No. 22 gage outside metal roof. The inside and outside sheathing of both the sides and ends is 13/16 in. thick. The



Section at Cross Beam



Section at Cylinder Support

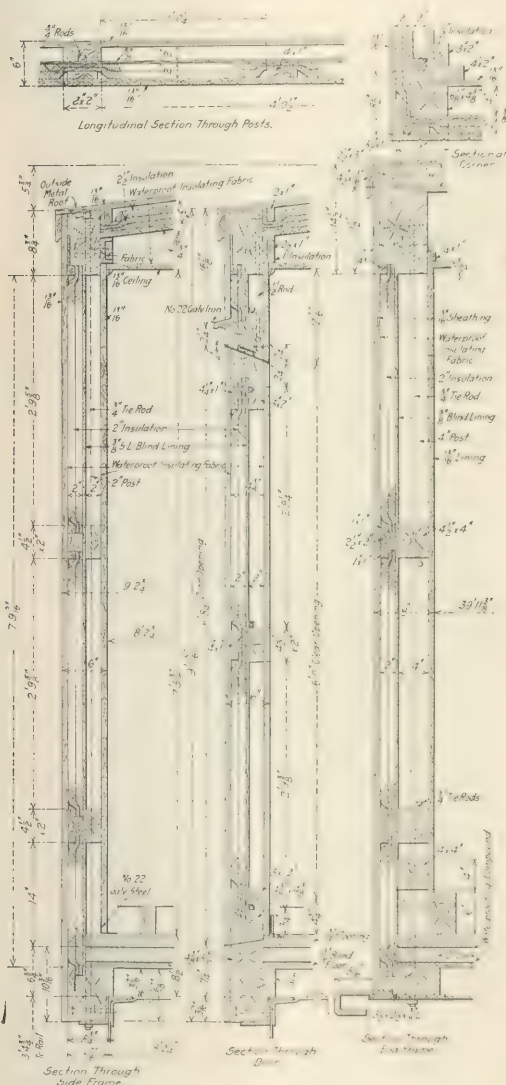


Underframe for U. S. R. A. Standard Refrigerator Car (Drawing No. 1388)

inside of the cars is provided with a floor rack of 1-in. by 4-in. boards fastened to four 3 $\frac{3}{4}$ -in. by 2-in. stringers. The floor racks are hinged at the sides.

UNDERFRAME

The underframe center sill is of the fishbelly type, being made up of two 5/16-in. web plates located 12 $\frac{7}{8}$ in. apart,



Standard Refrigerator Car Sections Showing Insulation
(Drawing No. 1387)

25 in. deep at the center and having at the top 4-in. by 3 $\frac{1}{2}$ -in. by 5/16-in. angles and at the bottom 4-in. by 3 $\frac{1}{2}$ -in. by 3/8-in. angles on the outside and 4-in. by 3 $\frac{1}{2}$ -in. by 7/16-in. angles on the inside of the plate. There is a 20 $\frac{1}{2}$ -in. by 1/4-in. cover plate extending the full length of the car between the end sills. The side sills are 9-in., 17.5-lb. chan-

nels with 4-in. by 3 $\frac{1}{2}$ -in. by 3/8-in. angles riveted to them to support the wooden side sills of the car body. The end sills are channels of the same section as the side sills. The crossbearers are made of 1/4-in. pressings with 6-in. by 7/16-in. top cover plates and 6-in. by 3/8-in. bottom cover plates. The body bolsters are built up of 1/4-in. pressings with a 6-in. by 7/16-in. top cover plate and a 6-in. by 3/8-in. bottom cover plate. The diagonal braces at the corner of the car are made of 5/16-in. plate pressed to channel section.

INSULATION

The specifications call for two courses of 1-in. insulation in the sides and ends and three courses with a combined thickness of 2 $\frac{1}{2}$ in. in the roof. The floor insulation is of pure cork board 2 in. thick. An option of hairfelt, Keystone hairfelt, flaxlinum and linofelt is provided for the insulation. The side walls of the car consist of an inside sheathing 13/16 in. thick to which is applied on the outside a layer of waterproof insulating fabric. This sheathing is fastened to two belt rails 4 $\frac{1}{2}$ in. by 2 in., a 2-in. air space thus being provided. To the outside of these belt rails is nailed a 3/8-in. shiplap blind lining, on which is applied waterproof insulating fabric, the 2 in. of insulation, another layer of waterproof insulating fabric and the 13/16-in. outside tongued and grooved sheathing. The ends are substantially the same, with the exception of the thickness of the belt rails and air space, which is 4 in. The section through the door is precisely the same as that through the sides. No break is made in the insulation around the corner posts. The waterproof insulating fabric is of No. 350 drill, which is a cotton cloth weighing approximately 3 $\frac{1}{2}$ lb. per 100 sq. ft. and thoroughly saturated with an odorless waterproofing compound, preferably of an asphaltic base of approximately the same consistency of waterproof compound used on insulating paper. It extends continuously from side sill to side plate and from door post to door post around the end of the car.

The flooring is made up of a 13/16-in. blind floor at the bottom, a layer of waterproofing compound on top of this, then a layer of 2-in. cork insulation, another layer of waterproofing compound and a 1 $\frac{3}{4}$ -in. tongued and grooved floor with the joints white leaded. The quantity of waterproofing compound used in each of the two layers is 30 gal., and the specifications for this material require that it must be perfectly waterproof, having a melting point of not less than 175 deg. F.; it must be pliable at zero, highly adhesive when hot, not sticky when cold, and absolutely odorless.

The roof is made up of a 13/16-in. ceiling on which is laid a layer of waterproof insulating fabric. A blind roof 13/16 in. thick supports three layers of insulation, having a total thickness of 2 $\frac{1}{2}$ in., on which is laid a layer of the waterproof insulating fabric. A slight air space is left between this and the roof boards which are 13/16 in. thick. An outside metal roof is to be applied on top of this. A layer of 1/2-in. insulation 4 in. wide is mortised into the side plate at the outside for the full length of the car in order to provide insulation at points where the carline tie rods pass through the side plate. On the outside a 1-in. layer of insulation is applied in the air space between the ceiling and the blind roof, being folded over and held in place by a 2 $\frac{1}{2}$ -in. by 1-in. nailing strip.

ICE COMPARTMENTS

An ice compartment is located at each end of the car. They have stationary insulated bulkheads and an ice receptacle of the basket type. The distance from the outside end of the car to the inside face of the bulkhead is 4 ft. 1/4 in., the distance between the bulkheads being 33 ft. 2 $\frac{3}{4}$ in. The bulkhead is made up of two layers of tongued and grooved 13/16-in. boards, with a layer of 1 in. insulation between them, and it is supported by four intermediate 3-in. by

3¾-in. oak posts. The opening at the top of the bulkhead is 14 in., having a No. 20 wire ¼-in. mesh galvanized screen. The opening below the bulkhead is 12 in. The ice basket is a screen made of No. 7 wire with 1¼-in. by 1¼-in. mesh, which is galvanized after weaving. There is a space of 2 in. between the basket and the walls of the ice compartment. The inside dimensions of the ice basket are 2 ft. 9 in. deep by 7 ft. 10 in. wide and 6 ft. 3¾ in. high. A 4-in. air space is provided between the wall of the ice box and the end of the car. As in the sides, the end consists of ¾-in. shiplap sheathing with two 1-in. layers of insulation and a 13/16-in. outside sheathing. The ice is supported on 3-in. by 1½-in. oak grates which are carried on six 5-in. by 3-in. wooden members. The sides and the ends of the ice box are covered with No. 24 galvanized iron for the full height of the box. The drip pan is made of No. 12 galvanized steel with the sides and the ends flanged upward.

The ice hatch has an opening 22¼ in. by 2 ft. 4¼ in. The hatch frame is 1¾ in. thick, supported at the ends by suitable cripples and filling blocks on the inside to substantial blocking extending across the full width of the car and at the outside by a filler block between it and the side plate. In addition to this there is a malleable iron frame 5/16 in. thick and of Z-section, which extends around the upper portion of the hatch. The inside of the hatch passage is covered with a flashing of No. 22 galvanized iron. The hatch plug is made up of two layers of 3/16-in. boards with two 1-in. layers of insulation between them. It is attached loosely to the hatch cover in such a manner that it may freely fit the hatch without binding, but yet so that it can be raised with the cover.

None of these cars have been ordered by the Railroad Administration up to the present time.

Mines Can No Longer Cry Car Shortage

IN THE SIX MONTHS ending September 30, the coal mines in Illinois, Indiana and western Kentucky loaded 1,209,223 cars as compared with 1,087,359 in the same period in 1917, according to B. J. Rowe, supervisor of coal traffic for the Railroad Administration in that district. This constitutes an increase of 121,864 cars loaded, or 10 per cent. The mines in this territory are in the unusual position of having produced and shipped more coal during the summer months of 1918 than will probably be produced during the coming winter. The Illinois mines alone shipped 45,000,000 tons of coal in the six months ended September 30, whereas the most liberal estimates do not place the production in the half year just begun at more than 40,000,000. It is not believed that the signing of the armistice and the closing of war industries will reduce the consumption of coal in the districts more than 5 per cent.

Despite this excellent record the press has repeatedly given publicity to complaints on the part of mine operators that their production was being impeded by a shortage of equipment. It is probable, however, that the uniform rules for the rating of coal mines, other than anthracite, which were put into effect by the Car Service Section of the Railroad Administration on September 12, will put a quietus on the fault finding of the mines. According to these regulations the daily capacity of each mine is determined by taking the total coal tonnage shipped during the preceding month, dividing it by the number of hours worked and multiplying the quotient by the number of hours in the recognized work day of the individual mine. The result is termed "the daily rating" of the mine and is the basis on which cars shall be distributed to it during periods of car shortage.

Under former conditions each road had its own method of determining rating and the statistics on the basis of which the ratings were computed were supplied by the mine operators and usually unverified by the carriers. As would naturally be expected, the ratings under that plan were generally liberal. This was particularly true of mines served jointly by two or more railroads. These often had ratings 100 per cent or more in excess of their capacity. As a result, they often received more cars than they could load, thereby tying up equipment which might have been used elsewhere. A joint mine in Illinois with an actual capacity of 200 cars, ordered 399 cars in one day this summer. It received 280 cars from the railroads serving it, but loaded only 196, leaving 84 cars unused. On July 18, 38 joint mines in Illinois received 851 more cars than they were able to use and 379 cars were left over on August 9 at 22 joint mines in the same state.

These instances are typical of the results which obtained before the uniform rules governing the rating of mines and the distribution of coal cars were put into effect. Under these regulations the orders for equipment have been substantially reduced. Previous to October 10, the effective date of the new rules, orders by mines in Illinois and Indiana averaged about 12,000 cars a day, whereas at present they rarely exceed 9,500 cars. The old ratings likewise gave the mines on the Illinois Central approximately 3,200 cars per day although the greatest number of cars ever loaded in the history of the road was 2,105. According to the new ratings these mines are credited with 2,100 cars per day.

It is interesting to note the effect of the new ratings on car supply statistics. On Friday, November 15, the number of cars available for coal loading on all railroads in Illinois was equal to 148 per cent of the total orders for equipment. One road which was always short of cars under the old method of computation, had a supply of equipment equivalent to 255 per cent of the orders received for that day.

These figures are especially significant, as Friday and Saturday formerly showed car shortages more often than the other days of the week. The coal car records for Monday, Tuesday, Wednesday and Thursday of the week ended November 16 were even better, as compared with the orders received, than those for the Friday just noted. On November 11, the supply of coal cars on Illinois railroads equaled 162 per cent of the orders received from the mines. On Tuesday, November 12, the percentage was 179, on Wednesday, 161, and on Thursday, 153.

It is not to be inferred that these favorable percentages are due entirely to the new method of rating coal mines. As a matter of fact, on account of the enormous production this summer, there has been a gradual reduction in the output of the mines this fall. Another factor which has tended to increase the car supply has been the close supervision of car distribution by regional directors. A noteworthy result of their control of the supply of equipment has been the prompt return of empty coal cars to the owning roads. Under former conditions, coal carrying lines often suffered severely from the shortage of equipment because connecting lines failed to route their cars back.

The greatest strength of the new rules governing ratings is the requirement that the records kept by the mine operator be included in a sworn statement. Another important stipulation is that copies of orders for cars by a mine that is joint with any other carrier shall be filed with a designated representative of each road. Such combined requisitions must not exceed the gross daily rating of the mine. These clauses and others included in the new rules have been effective in radically reducing the inflated ratings which were formerly the rule.

The Coming Industrial Expansion of the World

New Railroad Construction One of the Economic Factors That Will Play a Dominant Part

A SKETCH OF THE IMPORTANT extensive railroad projects the world over, combined with an expression of belief that after the war conditions will permit of the speedy carrying out or continuance of these projects, is the interesting feature of a report recently issued by the Guaranty Trust Company of New York. The report, which is copyrighted by that company, follows:

With peace an accomplished fact, we are face to face with its problems and with those involved in the readjustments of finance and business from a war to a peace basis. And the most important question confronting our industrial and financial leaders is: What will be the major trend of economic developments?

The best approach to an answer to this question seems to be an interpretation of relevant developments already in process before the war intervened. The provision of essential transportation agencies in the industrial and geographical frontiers of the world indicates that a combination of economic forces was laying the foundations before the war for a period of unusual world-wide industrial expansion. It appears likely that after the brief period of readjustment the world war will be found to have accelerated this movement materially.

Reasons for Expansion

These pre-war preparations for industrial expansion were the logical outgrowth of conditions in the leading industrial nations. The United States, Japan, and Germany exemplified perhaps most completely the industrial development which characterized the latter years of the nineteenth century; and because of their relative industrial progress these countries, naturally, were looking increasingly for opportunities to expand, either through colonization or the enlargement of foreign trade and investments. And as a further consequence, toward the end of this period, it became necessary also for the surplus capital of other countries, which had contributed to this industrial growth, to seek opportunities in new areas.

This combination of events is a repetition of a familiar experience. Once intensive industrial development is under way it often carries a nation past the point of best distribution of productive factors, with a consequent disturbance of the equilibrium of industrial forces. Not until the point of best adjustment is past are the industrial leaders brought to a realization of the need for readjustment. But always the remedy for relatively over-intensive development lies, not in contraction, but in expansion. Additional supplies of raw materials must be obtained and new markets for finished goods developed.

Transportation the Basis of Expansion

For such expansion, means of transportation, of course, are indispensable, because any degree of territorial division of labor, and effective occupational division as well, are conditioned upon transportation. For this reason, outstanding progress in material civilization has been associated hitherto with one or another of the conspicuous discoveries in the field of transportation, or else with the utilization of the existing agencies in new fields. The invention of the compass broadened immensely the field of marine navigation; but perhaps its most significant single result came centuries later when, in seeking the coveted sea route to Asia, America

was discovered. Down to the last few centuries, concentrations of population and civilization remained close to water, and only with the application of steam to land transportation was a cheap means of communication found which made possible the really marvelous industrial development of the last three-quarters of a century.

Pre-War Plans for Development of Frontiers

Because of the unusual pressure in recent years for outlets for surplus capital, many plans were formulated for the development of transportation in various parts of the world. Isolated as they may appear when viewed singly, they are more rightly understood when regarded as so many expressions of a wide-spread desire to share in the industrial progress which comes with the development of new countries—the precursors of another of the world's recurrent periods of notable industrial expansion.

Among the undertakings of special significance in this connection, first place should be given to the Panama Canal—opened in the first month of the war—because it, more than any other single undertaking in recent years, is destined to affect the trade and industry of the entire world. Closely associated with this enterprise is the construction of the Alaskan Railway, now being completed and making available our only important supply of coal on the Pacific Coast.

The Canadian railway building program included the completion of the second and third trans-continental lines whose western extensions were to open up considerable virgin territory in the Canadian West and Northwest.

Australia, with an area equal to that of the continental United States, and with practically all its population of less than 5,000,000 concentrated along the coast, proposed the construction of two intersecting trans-continental railroads.

In Africa, the rail sections of the Cape-to-Cairo rail-water route were under construction, as were railroads reaching from the east and the west coasts into the heart of the continent. Among the many projected roads was a northern trans-continental between Algiers and Cairo through the one-time granary of the Roman world.

Railroads traversing Persia and Afghanistan were planned which would give direct rail communication between Europe and India, and the Bagdad road was to be extended toward the Persian Gulf.

China, after having remained in an isolated position without adequate means of communication between the extended parts of the country, was adopting the modern means of land communication. A beginning was made in the construction of a number of relatively short lines and a net-work of trunk lines was planned, of which the more important were those to connect Chengtu, the capital of the largest and possibly the richest of the interior Chinese provinces, with the coast; a road across Mongolia to the Trans-Siberian, and another westward through the heart of China eventually to connect with the railroads in Russian Turkestan.

The construction of the Trans-Siberian line, although mainly for political purposes, had opened the way for the development of the resources of that region. In 1913, the Russian Minister of the Interior formulated a program for the building of 50,000 miles in the following decade, which was unique in its scope and co-ordination of its various

projects. The proposed lines in Siberia included the completion of the Amur River link of the Trans-Siberian, a trunk line across Southern and Western Siberia paralleling the Trans-Siberian, and numerous feeders for each of these trunk lines.

Brazil has one of the largest undeveloped areas of any of the countries of the world. Like the Australian commonwealth, practically the whole of its scant population is concentrated near the shores, and for the most part railroad construction has been intended to serve these isolated communities. Only in recent years have any efforts been made to connect these various settlements by rail lines. Extensive railroad construction schemes were under way in Brazil which pointed, not only to the linking up of these isolated settlements, but to the development of the great interior of the country and to furthering the diversification of industries so characteristic of Brazil in recent years. The Bolivian government was planning the extension of the Bolivian railways to the northeast and the east of the Andes to open up the great expanse of territory in that region. Some of these lines were to be connected with the projected lines of Argentina to the south and with proposed trans-continental lines reaching from the eastern coast of Brazil to Bolivia. In fact, a number of railroad projects under way pointed to the opening up of the great interior of the whole South American continent.

It can scarcely be thought that the coincidence in time of these various undertakings for the development of the frontier regions was wholly, or even mainly, fortuitous. The timing of Germany's aggression in the interest of her contemplated short cut to industrial and political pre-eminence among the nations may well have been due to a realization that the peaceful industrial progress promised by this combination of effort in the widely scattered lands, and in which the neighboring peoples would share, was about to make forever impossible the Kaiser's domination of the world.

Railroad Building During the War

Actual construction of railroads has been suspended in some cases, and in others retarded, but in not a few instances it has been hastened by the war. Doubtless Brazil has experienced a more nearly complete suspension of railroad building than any of the other countries mentioned, but preparation is being made for prompt resumption of construction, with the return of more normal conditions.

The Chinese building program also has been affected unfavorably by the war. Nevertheless, important additions have been made, aggregating approximately 800 miles during the war. On the lines complete in 1917, two are of especial significance. One of these, a 140-mile section of the Canton-Hankow line, is a link in the route which will soon unite South China and Peking. The other is a 60-mile feeder of the Trans-Siberian Railway in Manchuria. Early in this year a line was extended from South Manchuria into Mongolia, the first railroad to penetrate this territory. Financial arrangements have recently been made for the early construction of a line across Southern Manchuria and for another connecting the Peking-Hankow and Tientsin-Pukow lines.

Construction in Siberia has proceeded rapidly. The completion in 1915 of the Amur River division of the Trans-Siberian in the East, together with the extension in 1913 of the Ekaterinburg-Tiumen line to Omsk in the West, has given virtually a double track from European Russia to Vladivostock. Several of the new lines projected in 1913 are now in operation. Of these, the most extensive is the Altai Railway, 510 miles in length and connecting the Trans-Siberian with the rich agricultural section to the south of its intersection with the Ob River. Farther west the Kulundin Railway, extending 200 miles south from the Siberian trunk line, was completed in 1916. Another feeder

for the trunk line, connecting it with the coal and iron fields in the upper Tom River Valley, is in operation, 147 miles having been completed. Five short lines connecting the Trans-Siberian with the Amur River have also been constructed.

The notable achievement in Africa has been the continuation of the southern rail link in the Cape-to-Cairo route. Within recent weeks this line was completed to Bukama on the navigable Congo, 2,600 miles from Capetown. A projected 550-mile road between the Congo and Lake Albert would complete this trans-continental route. The railway in German East Africa, was extended to Lake Tanganyika on the eve of the war, and there is now, with the road's western connections, a rail-water line across the center of the continent. The railroad from Lobito Bay has been extended eastward to Katanga, a rich mineral region of the Belgian Congo, and, with the road already reaching the Indian Ocean at Beira, gives a second east and west trans-continental line. A permanent standard gage railroad was laid by the British Expeditionary Forces from Egypt into Palestine. Military considerations have prevented publicity concerning other construction in the Near East but there are evidences that considerable mileage has been built.

Despite the magnitude of the Australian contribution to the Allied military and naval forces, the east and west trans-continental railway, begun in 1912, was completed in 1917. In all, more than 3,500 miles of track have been built in the Commonwealth in the years 1915-17. One-third of the mileage necessary to complete the north and south trans-continental is now in operation.

In Canada, the work of providing two trans-continental railroads has been completed; feeders are being added, and a line from La Pas to Hudson Bay is under construction. From 1912 to 1916 more than 10,000 miles of track were put in operation, nearly 7,000 of which were added in the first two years of the war.

Post-War Outlook

The total of new railway mileage constructed during the war is doubtless less than would have been built had peace continued. Moreover, the need for new transportation lines will be more urgent now than before the war. Demand for foodstuffs and raw materials of manufacture will give extraordinary stimulus to the settlement and exploitation of the frontier regions. Meanwhile, the steel producing capacity of the world has been increased, and this, together with the new shipbuilding facilities, will make possible both the speedy prosecution of the railway building programs and the provision of merchant ships. The increased productive equipment and improvements in industrial processes incident to the war will tend to lighten the task of readjusting industry to a peace basis.

The mingling on the battlefields of men from distant lands is making for mutual understanding, and the hard conditions of life to which the soldiers are exposed in the trenches are fitting many thousands of them for the peculiar tasks of pioneering. One effect of the war will be a tendency to break down the racial barriers that have impeded the movement of people between countries, and also, in some instances, the economic barriers.

It is fortunate that in recent years the achievements of sanitary engineering in the Panama Canal Zone, Havana, British Guiana and elsewhere have proved that practically the whole of the tropical countries can be made healthful for the white race. And besides, both in South America and in Africa, altitude largely neutralizes latitude, giving climatic conditions comparable to those in the Temperate Zone. The development of the internal combustion engine and its application to agricultural machinery also will undoubtedly facilitate the development of these regions.

It would appear, then, that economic forces of world-wide scope were laying the bases at the outbreak of the war for industrial expansion and that in a general way the main arteries of communication have been constructed, or are in process of construction, to open up the world's undeveloped areas. During the further extension of these arteries it is not to be expected that a large immediate expansion of the world's business will result. It takes some time after transportation lines are laid before regions are developed to such an extent as to be felt appreciably in the world's business.

But the war has increased the industrial capacity of the belligerent nations and quickened the spirit of adventure in

man, as well as his resourcefulness and inventiveness. In other words, it has created conditions which will induce men to get out into new regions. Therefore, we may expect a rather earlier development of the hinterlands of the world than would normally have come.

Our financial and industrial leaders are now confronted with the problems incident to the readjustment of industry to a peace basis. The difficulties of the present task will be lightened and the strength of our industrial fabric increased if our leaders keep in mind the long-term development of world enterprise, which promises a period of almost unparalleled opportunities for the expansion of business.

Conservation of Fuel on the Railroads

Prominent Railway and Fuel Men Present Interesting Papers
Before the New York Railroad Club

AT THE NOVEMBER MEETING of the New York Railroad Club, fuel economy was discussed by Eugene McAuliffe, manager of the Fuel Conservation Section of the Railroad Administration; E. J. Pearson, federal manager of the New York, New Haven & Hartford; B. R. Pollock, federal manager of the Boston & Maine; D. R. MacBain, superintendent of motive power of the New York Central Lines West, and Robert Collett and H. C. Woodbridge, of the Fuel Conservation Section. Abstracts of these papers follow:

Railway Fuel and Fuel Conservation

By Eugene McAuliffe

For two years our people have enjoyed the stimulus of a great patriotism which alone made it possible to change a peace loving people into a great militant nation; a nation whose railways, already inadequate to meet the ever-growing demands of a great people, were suddenly confronted with the problem of moving and countermoving a great army, and of gathering from forest, furnace and mill the material necessary, not alone to house, equip and train these millions of men, thousands of whom came from the railroad ranks, but to construct docks and warehouses in our own country and abroad, together with the material necessary to the furtherance of the greatest shipbuilding program ever conceived. In addition to this great work, regiments of American railroad engineers have built and equipped in France hundreds of miles of railroad, from material all originating in the United States.

From this brilliant page in the history of American railroad achievement I will only refer to the movement of 3,810,693 officers and enlisted men from January 1 to October 31, inclusive, of this year, superimposed on the greatest increase in civilian travel ever experienced, and an increase in bituminous coal loaded for the five months ending October 31, as compared with the same period in 1917, of 596,282 cars.

The successful conclusion of this greatest of tasks made victory possible, and when you are asked to recall the fuel problems of last winter it is but for the purpose of again impressing on you that coal and oil are basic and fundamental commodities that not alone deserve, but command, our best thought. Neither will I attempt to touch on the recent overwhelming victory which fell to the Allied powers, except to say, that where in the past the necessities of war impelled us to great economies, the necessities of peace now call for even greater vision and effort on the part of those who are administering the Fuel Conservation Section, one of the greatest of the many arms of our government.

Somehow in the past the railway fuel job has never been measured up rightly on many railroads, and looking for the cause, I can only attribute it to the fact that in the days of the wood burner locomotive, the theory was current that as the locomotives burned the fuel the fuel problem rested with the department which handled the locomotives, and perforce all responsibility rested with the master mechanic and the engine crew. I cannot fancy into what proportions the fuel bill would grow if it were not guarded by the efforts of the mechanical department and the enginemen, but I have been impressed for years with the fact that the problem was one large enough to become the special charge of the general manager. In fact, the general character of the general manager's duties fit him alone to handle the fuel problem, including purchase, inspection, distribution, and economical consumption.

The intelligent purchase of the fuel in the quantities required by the railroads represents a work that can not be handled as ordinary material is purchased. Buying coal is like buying real estate; you must acquaint yourself with the field and each particular producing property. Of the money paid for coal under normal competitive conditions, perhaps 75 per cent goes for labor, and it is well to see just how the labor is performed. Any specifications furnished in advance represent at best post mortem results; any standard of real efficiency or stated maximum ash content is hard of enforcement because of the extreme difficulty of correctly sampling and determining results.

In the majority of cases proximity of location determines the field purchased from, and to get results the man who purchases coal should have personal knowledge of every opening from which he buys and must maintain, through competent field inspectors, a constant touch with each mine. I long ago learned that a competent, honest and broadminded railroad coal inspector was the best friend the producer could have, and while the educational period is often productive of some sorrows and disappointments, the operators and mine employees soon learn to appreciate the help he gives. The wisdom of such an organization was well proved last winter in the Middle West. But limited decline in the grade of coal as compared with the pre-war period was suffered by roads following this plan of organization; while in other districts where coal is largely bought through conference and by correspondence, the decline began early.

Economy in consumption involves the combined and harmonious effort of every branch of the operating department. In pressing economy in the use of fuel on operating men I have never felt any pangs of conscience for the reason that, unlike mistaken economy in maintenance of rolling stock

and the permanent way, no disastrous result can possibly follow. When the engine crews save fuel a collateral result frequently exceeding the value of the fuel saved is shown in decreased wage, overtime, maintenance, and loss and damage charges. To save fuel the locomotive must be handled and fired skillfully, and the established rating must be maintained, because it is the rating that largely determines the earning capacity of the machine, which is, after all, but a moving factory for the creation of transportation. Prompt movement, with avoidance of delays at terminals and enroute, means decreased wage and overtime bills, and congested yards contribute heavily to freight claim losses.

If the men who are now attempting to improve train movement, including those engaged in the maintenance of the locomotives, cars, and air brakes; those who maintain the permanent way; those who look after the shop steam plants; the water service; the men who control the work of the terminals; the dispatchers who guide the trains over the division; if all of this splendid army of men could be induced to think in terms of fuel, no other comparison of results obtained would be necessary in so far as cost of service was concerned, because when you show a good fuel performance you can be assured that everything else in the operating line is receiving attention.

Many roads employ unorganized, secondary supervising forces, men whose duties are frequently undefined. The frequent changes made in the personnel and duties of this force bears evidence that in many cases it is not working satisfactorily. To get the unification of effort necessary to the conservation of fuel and to secure the many collateral betterments of operation I have mentioned, I would urge the consolidation of this force, including traveling engineers and assistants, instructors, firemen, smoke inspectors, and men in allied work, under one head, who in turn should report to the chief operating officer. The function of this staff organization should be the conservation of fuel in the broadest sense. To properly supervise engine crews, there should be one man of the qualifications of a thoroughly competent traveling engineer for each 50 to 75 locomotives, the lesser number applicable where the heavier types are used. In addition, a sufficient number of firemen instructors should be employed to give each new fireman a proper start in his arduous work, any spare time to be used in training fire cleaning forces at terminals, where much work can be done.

On many roads the plans I have outlined will require few additions to the supervision pay roll; on the whole I am suggesting no more than the making, out of a scattered and sometimes conflicting force, of a fully co-ordinated unit that will assist in welding the purchasing, mechanical, transportation and maintenance divisions of the operating department into a fine working whole that will keep down unit transportation costs and make for better service.

Address by D. R. MacBain

The thoroughness with which the matter of fuel economy is practiced is the chief requisite for success. Every person on the entire railroad must have interest in the work and contribute to the end of fuel economy. The thoroughness with which fuel economy is practiced must extend from the president down to the lowest man in the ranks. Locomotives should not be overloaded, nor should they be underloaded, but they should carry full tonnage, and those who send the locomotives out on their trips should have sufficient authority to regulate the tonnage and should know what the full tonnage is for the prevailing conditions.

There is nothing more important in good locomotive performance than correct front end conditions. The draft must be regulated to meet the average conditions of fuel and of firemen. The nozzle must not be too large and interfere

with the proper steaming of the engine. A poorly maintained and designed front end means wasted fuel. Standard arrangements should be effected. They should not be altered without the authority of responsible men in the mechanical department. Likewise the running gear of the locomotive must be properly maintained and particularly the driving box, the improper maintenance of which causes poor steam distribution with an accompanying waste of fuel. Both piston and valve packing should be carefully maintained.

A very important factor in the economical use of fuel on a locomotive is that of supervision and education. New firemen are not being trained as they should. Too often they are sent out indiscriminately with any train crew that happens along. The best enginemen should be picked out to train the new men and to stay with them until they are capable of performing the work properly. The new men should not only be taught the fundamental principles of firing, but should have the reasons for the methods carefully explained to them. It would be wise to maintain a permanent staff of instructors. The engineers need as much tutoring as the firemen. There haven't been enough traveling engineers properly to teach the enginemen. Ninety per cent of all men are always glad to get new ideas and learn, and the effectiveness and efficiency of the service depends upon the instruction to the engine crew. These supervisors or instructors should be relieved of all work except that which pertains to the education of the engine crew in handling the locomotive.

The Responsibility of General Officers for Fuel Economy

By E. J. Pearson

What may be termed a deficiency in railroad management is that of at times permitting matters not directly pressing to proceed along the lines of least resistance. The question of fuel economy has suffered too often on this account. While we hope the war is over, nevertheless there is a period ahead during which the very best effort of every railroad officer is necessary towards increasing the success of federal operation. Our problem today to a still greater extent in handling the railroads under our charge is, first, that of service, and second, efficient and economical operation which will result in the railroads paying their way. We have no magic way of securing funds except from revenues and from savings. Fuel is the most important item for attention.

The Railroad Administration has been liberal in granting sums for putting power in a generally better condition than formerly. This work has been directed by Mr. McManamy. His previous broad and extensive knowledge of the general condition of power on American railroads has enabled him to take hold of this problem in a surprising manner. He has given directions, established requirements and afforded assistance which has been an object lesson to many of us. His effective work is responsible largely for the much better condition of power as we approach this coming winter. I am sure it will enable us not only to meet the requirements of transportation, but to support the demand for fuel economy in a manner not heretofore possible.

The question that now confronts us is—What further can we do? The important step is that of securing interest and this is a matter that means commencing at the top. There are various means of accomplishing this. Ten years or more ago I recall an arrangement on one of the important roads by which the dispatcher's train sheet carried the fuel record of each train. As a result abnormal usage was immediately brought to the notice of those responsible. Performance on that road was much better than on its neighbors'. Competition between roads and between the enginemen on the

same road in the matter of fuel economy has produced good results.

At the present time incentive in the matter of good service and of efficient operation, which also means economy, is originating at the top. Such essentially is the policy of the director general and the men directly under him. Valuable information for our guidance is being furnished. Statistical information for all lines is in preparation. This will afford a basis of comparison which will be gratifying to those roads securing the most favorable results. It will encourage them to do still better and it will certainly be a prod to those which are less successful.

If you will carefully analyze the information, the suggestions and the requirements that have been given us by the fuel department you will find nothing therein which is other than in line with the details of requirements for good railroading. It is surprising that many of the points must be repeatedly brought up for attention. As to a large extent these are advisory, it becomes our duty to establish our working methods on such a basis that orders are not necessary because of arbitrary authority, but instead that they are accepted and complied with by all concerned because their merit is obviously apparent to those whose duty it is to carry them out. If you will study the information issued by the Fuel Department on this basis, you will realize, I believe, more fully than ever, that the success in achieving the very large measure of economy that is possible and that it is up to us to secure, will depend on influence from the top, on our leadership, on our support of the policies of the Fuel Section of the administration. The result will be better, more efficient and less expensive railroading, satisfactory to the administration and creditable to the several departments and large number of officers and men through whose co-operating endeavors only, can such success become realized and which it is our duty to secure.

Fuel Economy in New England

By B. R. Pollock

In ordinary times 60 per cent of the fuel consumed in New England is transported by water and discharged from large and small vessels as well as barges, and communities situated near discharging plants are not dependent upon rail transportation to any degree, while cities and towns inland are dependent upon a short haul only; the result is that railroads can employ their energies largely in the handling of other commodities. Because of war activities and the need of vessels for other purposes and for various other reasons over which we had no control, a large number of the coal carrying vessels were withdrawn from carrying coal into New England, making it necessary for railroads to not only absorb the loss due to the withdrawal of these vessels, but to take care of an increase in coal as well as other traffic due to this increase in war activities.

This load thrown onto New England railroads when they were already handling their maximum amount of traffic forced them to adopt extreme measures which under ordinary circumstances they would not do. Passenger train service was curtailed; parlor and dining cars were cut off; passenger stations were closed or partitioned off to reduce the area necessary to heat; old timber and ties were gathered up, portable saws were employed to saw them and stations and heating plants were put on wood rations except during the months of December, January, February and March, exceptions being made at places where water would freeze in pipes. A canvass was made of all power plants and where possible arrangements were made to supply them, either entirely or partly, with wood, and where we could not get wood cut by our own people we employed outsiders who had small plants to saw wood for us, and in some places our

employees said: "You furnish the ties as they come out of the track and we will do the rest."

The public was appealed to to bear with us under the circumstances as it was not a question of how well we could live, but whether we could live at all.

We suffered seriously because of the quality of fuel we were receiving and made up our minds that if we were to give the maximum service we must obtain good fuel. We had a limited number of fuel inspectors, and, because of the large number of points from which we were receiving fuel, decided to place inspectors at junction points where the fuel was received on our lines, with instructions to reject coal not fit for engine use. This resulted in not only helping the Boston & Maine, but other roads—thanks to the helpfulness of the manager of the Fuel Conservation Section.

As the conditions became more urgent we realized it was not a one, two or three-man job. Committees were formed, a general committee composed of general officers, a fuel conservation committee for investigating and suggestion, and nine division committees consisting of a superintendent, master mechanic, division engineer, road foreman of engines, agent, locomotive engineer, fireman, power plant man, one representative at least from each department. Sub-committees at important places were also appointed. These committees hold regular meetings at which matters relating to fuel economy are discussed, and between times, on post cards sent out for the purpose, suggestions are received from employees in all capacities, all of which are acted upon through the divisional committee meetings. Thus you will see that the conservation propaganda is carried on in a similar manner to that of the "Safety First."

Places where coal is used or ashes drawn are visited, men talked with and interested, and usually we get more from the man on the job than we give him as to how things should be done and we feel that if we cannot get our men interested and their support and co-operation, our efforts cannot be successful. Efforts in other directions also have been started with a view to greater results.

The suggestions we receive from the fuel administrator and other sources, are placed in the hands of our men, and are very helpful to all of our committees in the important work of fuel conservation.

Address by Robert Collett

The efforts of the Fuel Conservation Section have been chiefly directed towards passing on to the various railroad officers the good things we have found their neighbors doing. In all of this there has never been a time that any suggestions that were applicable to the conditions have not been kindly received, and if there has been anything left undone the fault lies with ourselves and not in lack of co-operation.

If anything more is needed to further the cause it is the continued co-ordination of the efforts of all departments. More people need to know more about the fuel, its potential possibilities and the relation these possibilities bear to good railroad operation. In times past fuel economy campaigns were more or less spasmodic, too much of a local proposition, frequently due to the stress of dull business and hard times. Obviously the organization was not so thorough as might otherwise have obtained and it was not surprising that with the return of heavy business the efforts of those selected to specialize were diverted to the natural channels of keeping the business moving. Those campaigns also sometimes depended too much on statistics which were too prone to error and were lacking in that personal contact toward every angle of the situation which is so essential in order to bring about the interest that alone will bring results.

The efforts to establish a fuel economy department entirely separate from the supervision already provided for looking after locomotive and train performance, without including

such supervision, has fallen somewhat short of expectations. Maximum results are now obtained where the full measure of responsibility is being taken by each individual and department, such responsibility being clearly established and defined with the supervision complete from the chief operating officer right down the line. This is extremely important.

To obtain results the supervisor must first understand the language of the individual he is to supervise and then he must really supervise. He must not follow the line of least resistance, but by friendly counsel and encouragement point the way.

Never again will fuel become the commonplace proposition it once was. By reason of the lessons we have learned through the stern necessities of war every department of the railroad will see to it that the use of fuel receives more nearly than it ever has in the past the attention it deserves.

Remarks by Mr. Woodbridge

H. C. Woodbridge, assistant manager of the fuel conservation section, Allegheny region, spoke briefly and to the point concerning the effect of leaks in shop air lines and power houses upon the coal pile. He mentioned an instance, fairly typical of conditions in general, in which he had recently found a shop compressor running at about one-half of its full capacity to maintain the leakage, at a time when no work was being performed in the shop.

New Wage Increase for Telegraph and Telephone Operators

DIRECTOR GENERAL McADOO on November 16 announced his award of increased wages, effective October 1, for telegraphers, telephone operators excepting switchboard operators, agent-telegraphers, agent-telephoners, towermen, levermen, tower and train directors, block operators and staffmen. The award affects between 60,000 and 70,000 employees, and involves increases approximating \$30,000,000 per annum.

All rates of wages paid as of January 1, 1918, prior to the application of General Order No. 27, and exclusive of all compensation for extra services, are first reduced to an hourly basis, which is arrived at in case of monthly paid employees by dividing the annual compensation by the number of regularly assigned working days for the year 1918, and then dividing the daily rate thus obtained by the regularly assigned or established number of hours constituting a day's work exclusive of the meal hour. The hourly rate for weekly and daily paid employees is arrived at similarly.

Rates thus obtained, where less, are first advanced to a basic minimum of 35 cents per hour, and to this basic minimum, and to hourly rates which are above the minimum, 13 cents per hour is added.

Eight consecutive hours, exclusive of the meal hour, constitutes a day's work and overtime will be paid at the rate of time and one-half. There has been no consistent practice on the several railroads with respect to this item. On the majority of railroads there has been in effect, however, varying rates for overtime, some of which were less, and in instances more, than the time and one-half rate.

The award does not apply to cases where individuals are paid \$30 per month or less for special service which only take a portion of their time from outside employment or business, and in the case of employees who are paid upon a commission basis or upon a combination of salary and commission, not including express or outside commissions, the Board of Railroad Wages and Working Conditions is in-

structed to make individual recommendations when properly presented.

The director general has for consideration, and will announce some time during the week, an award covering compensation for exclusive agents who are not telegraphers.

The text of the award, which is supplement No. 10 to General Order No. 27, is as follows:

ARTICLE I

All employees herein covered shall be paid on the hourly basis.

(b) To determine the hourly rate for positions held by monthly paid employees, other than those provided for in paragraph (a), Article VIII, multiply by 12 the regular monthly rate in effect as of January 1, 1918, prior to the application of General Order No. 27 (exclusive of all compensation for extra services) and divide by the number of regularly assigned working days for the year 1918; then divide the daily rate thus obtained by the regularly assigned or established number of hours constituting a day's work, exclusive of the meal hour.

(c) To determine the hourly rate for positions held by weekly paid employees, other than those provided for in paragraph (a), Article VIII, multiply by 52 the regular weekly rate in effect as of January 1, 1918, prior to the application of General Order No. 27 (exclusive of all compensation for extra services), and divide by the number of regularly assigned working days for the year 1918; then divide the daily rate thus obtained by the regularly assigned or established number of hours constituting a day's work, exclusive of the meal hour.

(d) To determine the hourly rate for positions held by daily paid employees, other than those provided for in paragraph (a), Article VIII, divide the regular daily rate in effect as of January 1, 1918, prior to the application of General Order No. 27 (exclusive of all compensation for extra services) by the regularly assigned or established number of hours constituting a day's work, exclusive of the meal hour.

(e) Where there are no regularly assigned or established daily hours, for the purpose of computing the hourly rate, ten hours shall be used as the divisor.

(f) In determining the hourly rate, fractions less than one-fourth of one cent shall be as one-fourth of one cent; over one-fourth and under one-half, as one-half cent; over one-half and under three-fourths, as three-fourths of one cent; over three-fourths, as one cent.

Method of obtaining hourly rate as of January 1, 1918:

Monthly

Examples

I. $\$160 \times 12 = \$1,200$, divided by 367 days = $\$3.267$, divided by 8 equals 48.86c. Hourly rate 49c.

II. $\$100 \times 12 = \$1,200$, divided by 312 days = $\$3.846$, divided by 9 equals 42.73c. Hourly rate 42.75c.

III. $\$100 \times 12 = \$1,200$, divided by 365 days = $\$3.2876$, divided by 10 equals 32.88c. Hourly rate 33c.

Weekly

Examples

IV. $\$4.50 \times 52$ equals $\$2,340$, divided by 312 days equals $\$7.50$, divided by 8 equals 41.66c. Hourly rate 41.75c.

V. $\$20 \times 52$ equals $\$1,040$, divided by 365 days equals $\$2.8493$, divided by 10 equals 28.49c. Hourly rate 28.5c.

Daily

VI. $\$3.00$ per day divided by 8 equals 37.50c. Hourly rate 37.5c.

$\$3.00$ per day divided by 9 equals 33.33c. Hourly rate 33.5c.

$\$3.00$ per day divided by 10 equals 30.00c. Hourly rate 30c.

ARTICLE II—RATES OF PAY

For positions held by telegraphers, telephone operators (except switchboard operators), agent telegraphers, agent telephoners, towermen, levermen, tower and train directors, block operators and staffmen, who were on January 1, 1918, prior to the application of General Order No. 27, receiving less than 35c. per hour, establish a basic minimum rate of 35c. per hour, and to this basic minimum rate and all hourly rates of 35c. and above, add 13c. per hour, establishing a basic minimum rate of 48c. per hour.

ARTICLE III—PRESERVATION OF RATES AND CLASSIFICATION

(a) The minimum rates and all rates in excess thereof, as herein established, and higher rates which have been authorized since January 1, 1918, except by General Order No. 27, shall be preserved.

(b) The entering of employees in the positions occupied in the service or changing their classification or work shall not operate to establish a less favorable rate of pay or condition of employment than is herein established.

(c) Where existing pay roll classification does not conform to Article II, employees performing service in the classes specified therein, shall be classified in accordance therewith.

ARTICLE IV—EXCEPTION

The provisions of this order will not apply in any case where amounts less than \$30 per month are paid to individuals for special service which only takes a portion of their time from outside employment or business.

ARTICLE V—HOURS OF SERVICE, OVERTIME AND CALLS

(a) Eight consecutive hours, exclusive of the meal hour shall constitute a day's work, except that where two or more shifts are worked, eight consecutive hours with no allowance for meals shall constitute a day's work.

(b) Overtime shall be computed at the rate of time and one-half time. Even hours shall be paid for at the end of each pay period; fractions thereof will be carried forward.

(c) When notified or called to work outside of established hours,

employees will be paid a minimum allowance of two hours at overtime rate.

(d) Employees will not be required to suspend work during regular hours or to absorb overtime.

ARTICLE VI—UNITED STATES MAIL

When the carrying of United States Mail and Parcel Post by the employees herein specified becomes unduly burdensome or interferes with the proper operation of trains, they will be relieved from such work.

ARTICLE VII—DISCIPLINE AND GRIEVANCES

(a) An employee disciplined, or who considers himself unjustly treated, shall have a fair and impartial hearing, provided written request is presented to his immediate superior within five (5) days of the date of the advice of discipline, and the hearing shall be granted within five (5) days thereafter.

(b) A decision will be rendered within seven (7) days after completion of hearing. If an appeal is taken, it must be filed with the next higher official and a copy furnished the official whose decision is appealed within five (5) days after date of decision. The hearing and decision on the appeal shall be rendered by the time limits of the preceding section.

(c) At the hearing, or on the appeal, the employees may be assisted by a committee of employees, or by one or more duly accredited representatives.

(d) The right of appeal by employees or representatives in regular order of succession and in the manner prescribed, up to and inclusive of the highest official designated by the railroad to whom appeals may be made is hereby established.

(e) An employee on request will be given a letter stating the cause of discipline. A transcript of the evidence taken at the investigation or on the appeal will be furnished on request of the employer or representative.

(f) If the final decision decrees that charges against the employee were not sustained, the record shall be cleared of the charge; if suspended or dismissed the employee will be returned to former position and paid for all time lost.

(g) Committees of employees shall be granted leave of absence and free transportation for the adjustment of differences between the railroad and the employees.

ARTICLE VIII—RULES FOR APPLICATION OF THIS ORDER

(a) The foregoing basis will not be applied to positions where the compensation as of January 1, 1918, was upon a commission basis, or upon a combination of salary and commission (not including express or outside commissions). The Board of Railroad Wages and Working Con-

ditions will consider and make individual recommendations as to the correct salary for such positions when presented to it in the manner prescribed in Supplements No. 6 and No. 6-A to General Order No. 27.

(b) The pay for female employees, for the same class of work, shall be the same as that of men, and their working conditions must be healthful and fitted to their needs. The laws enacted for the government of their employment must be observed.

(c) Vacations with pay are abolished, effective January 1, 1919.

ARTICLE IX—INCORPORATION OF PRIOR ORDERS

The rates of pay and rules herein established shall be incorporated into existing agreements and into agreements which may be reached in the future, on the several railroads; and should differences arise between the management and the employer of any of the railroads as to such incorporation, intent, or application of this order prior to the creation of additional railway boards of adjustment, such question of differences shall be referred to the director of the Division of Labor for decision, when properly presented, subject always to review by the director general.

Agreements or practices, except as changed by this order, remain in effect.

After issuing the order, Director General McAdoo made public a telegram which he had received on November 16 from J. F. Siefert, general chairman of the Order of Railway Telegraphers, stating that the operators, despatchers, train directors and levermen employed on the Terminal Railroad Association of St. Louis and affiliated lines would cease work at 7 o'clock on Monday morning unless the award was made by that time. To this Mr. McAdoo replied: "It so happens that the order recommended by the Board of Railroad Wages and Working Conditions was signed by me before receipt of your telegram. If the decision had not thus been made before your threat of a strike was received the order would have been withheld until this threat had been eliminated. You must understand that the United States Government cannot be intimidated, and that it is highly improper to attempt to do so."

Standard Time Zones Defined By the Commission

Dividing Lines Moved West; Most of the Large Cities
Relieved of Double Standard

THE INTERSTATE COMMERCE COMMISSION has issued its report fixing the boundaries of Eastern, Central, Mountain and Pacific standard time zones, and the changes are to go into effect at 2 a. m. on January 1, 1919. This order is made pursuant to the daylight-saving act, and it follows closely the tentative report issued by the commission two months ago, and noticed in the *Railway Age* of September 13, page 525. The present order is dated October 24. The daylight saving act requires common carriers engaged in interstate and international commerce to govern their movements by standard time, and provides that in determining the time within which acts shall be done by any federal officer or department the United States standard time shall govern.

The lines fixed by the Commission separating the time zones are shown in the map. Some railroads, however, which cross the boundaries between their division or terminal points will be permitted to carry their general time standard into an adjoining zone. These exceptions are enumerated in the order and the commission says that in such cases it expects that the carriers will advertise and show on their time tables and bulletin boards the arrival and departure of trains with reference to the standard of time generally used in the various communities.

The law, and this order, continue the use of the mean astronomical time of the 75th, 90th, 105th and 120th degree meridians west of Greenwich as standards for the Eastern, Central, Mountain and Pacific time zones, respectively, which have been used as standards since 1883, when the original plan was adopted. Several states and many municipalities have since adopted the time of one of the standard time meridians, but the commission finds that public sentiment and

habits have been more potent factors in fixing time standards than state statutes, and the usages of carriers have been and are largely controlling in determining local time, as it has been generally less inconvenient for communities to adjust standards and habits to railroad time than to endure dual time standards. The local conflicts as to what time standards should be followed in cities such as Cleveland and Detroit have been prolonged and bitter, and similar controversies have occurred at many less important points situated nearly midway between the time meridians.

The most pronounced differences in the line dividing Eastern from Central time are between Toledo, Ohio, and Kenova, W. Va., and south of Atlanta. The present line, from Lake Erie southward, takes in places as far east as Buffalo, Pittsburgh, Wheeling and Parkersburg, and from Atlanta it turns eastward and runs to the coast at Savannah. The new line sticks close to the meridian of 82½ and pretty nearly conforms to that suggested in the map presented by Mr. Judd in the *Railway Age* of August 2, page 209. The new line between Central time and Mountain time is somewhat more direct than the existing one, as far south as North Platte, Neb. Thence southward the old one forms a serpentine course to the east.

Between Mountain time and Pacific time the new line runs near the eastern boundary of Idaho, whereas the old one, according to the Rand-McNally Atlas, is not far from the western boundary of that state. From Ogden south the line is not much changed.

To accommodate the lines to railroad division termini the order makes numerous exceptions, as below:

1. Those portions of the lines below named located east

of the Eastern-Central boundary line shall be excepted from the Eastern zone and shall be included in the Central zone, viz.:

Railroad	From	To—
Atlantic Coast Line	Georgia-Fla. state line	River Junction, Fla.
Baltimore & Ohio	Dundas, Ohio	Parkersburg, W. Va.
Baltimore & Ohio	Columbus, Ohio	Newark, Ohio.
Chesapeake & Ohio	Huntington, W. Va.	Big Sandy River
Cleveland, Cincin., Chic. & St. L.	Delaware, Ohio	Galion, Ohio.
Cleveland, Cincin., Chic. & St. L.	Marion, Ohio	Cleveland, Ohio.
Cleveland, Cincin., Chic. & St. L.	Columbus, Ohio	Delaware, Ohio.
Cleveland, Cincin., Chic. & St. L.	Clyde, Ohio	Sandusky, Ohio.
Cleveland, Cincin., Chic. & St. L.	Edison, Ohio	Mt. Gilead, Ohio.
Georgia, Florida & Alabama	Georgia-Fla. state line	Carabelle, Fla.
Lake Erie & Western	Fremont, Ohio	Sandusky, Ohio.
Louisville & Nashville	River Junction, Fla.	Apalachicola River.
Northern Ohio	Plymouth, Ohio	Akron, Ohio.
Norfolk & Western	Valley Crossing, Ohio	Columbus, Ohio.
Norfolk & Western	Williamson, W. Va.	Ohio River at Kenova.
Pelham & Havana	Georgia-Fla. state line	Havana, Fla.
Pennsylvania Company	Bellevue, Ohio	Sandusky, Ohio.
Pennsylvania Company	Newark, Ohio	Columbus, Ohio.
Pennsylvania Co., Toledo div's'n	Toledo Junction	Mansfield, Ohio.
Penn'slv'a Co., Zanesville div's'n	Lancaster, Ohio	Triway, Ohio.
Southern	Johnson City, Tenn.	Emberville, Tenn.
Toledo & Ohio Central	Martel, Ohio	Thurston, Ohio.
Toledo & Ohio Central	Columbus, Ohio	Corning, Ohio.
Zanesville & Western	Thurston, Ohio	Zanesville, Ohio.
Zanesville & Western	Fultonham, Ohio	Shawnee, Ohio.

Railway, McDonough, Ga., to Macon, Ga.; Perry, and Thomasville, Ga. All others on this boundary line not specifically named shall be considered as within the Central zone.

3. Those portions of the lines named below east of the Central-Mountain boundary line shall be excepted from the Central zone and shall be included in the Mountain zone, viz:

Railroad	From	To—
Great Northern	M. St. P. & S. S. M. Ry.	Northgate, N. Dak.
Chicago, Burlington & Quincy	Curtis, Neb.	Line between townships 30 and 31 west of sixth principal meridian.
Do.	Ravenna, Neb.	Line between townships 18 and 19 north.
Fort Worth & Denver City	Childress, Tex.	Donley County, Tex.
Missouri Pacific	Hoisington, Kan.	Ness County, Kan.
Atchison, Topeka & Santa Fe	Great Bend, Kan.	Ness County, Kan.
Kansas City, Mexico & Orient	Altus, Okla.	San Angelo, Tex.

4. The following lines, located west of the boundary line, shall be included within the Central zone, viz:

Railroad	From	To—
Missouri Pacific	Glade, Kan.	Lenora, Kan.
Clinton & Oklahoma Western	Ralph, Okla.	Cheyenne, Okla.



Boundaries of the Eastern, Central, Mountain and Pacific Time Zones

2. The following railroad lines located west of zone boundary line above described shall be included within the United States standard Eastern time, viz.:

Railroad	From—	To—
Apalachicola Northern	Apalachicola, Fla.	Port St. Joe, Fla.
Atlanta, Birmingham & Atlantic	Manchester, Ga.	Line of Dooley County.
Carolina, Clinchfield & Ohio	Dunganon, Va.	Johnson City, Tenn.
Carolina, Clinchfield & Ohio	Virginia-Kent'ry line	Elkhorn City, Ky.
Norfolk & Western branch	Big Sandy River	Morcel and McVeigh.

The following named municipalities shall be considered as within the Eastern zone: Fremont, Clyde, Bellevue, Monroeville, Willard, Shelby Junction, Galion, Lancaster, Dundas and Gallipolis, Ohio; Dunganon, Va.; Bristol, Va.-Tenn.; Asheville and Franklin, N. C.; points on Southern

Wichita Falls & Northwestern... Elk City, Okla. Forgan, Okla.
Missouri, Kansas & Texas of Tex. Okla.-Texas state line. Wellington, Tex.
Galv's'n, Harris'b'g & San Ant'o. Del Rio, Tex. 100 degree meridian.

5. Those portions of the lines named below located west of the Mountain-Pacific boundary line, shall be excepted from the Pacific zone and shall be included in the Mountain zone, viz:

Railroad	From	To—
Chicago, Milwaukee & St. Paul	Butte, Mont.	Deer Lodge, Mont.
Gilmore & Pittsburgh	Armstead, Mont.	Gilmore and Salmon.
Oregon Short Line	Blackfoot, Idaho	Mackay, Idaho.
Oregon Short Line	Moreland Junc, Idaho	Aberdeen, Idaho.
Oregon Short Line	Brigham, Utah	Malad City, Idaho.
Oregon Short Line	Clearfield, Utah	Syracuse, Utah.
Los Angeles & Salt Lake	Delta, Utah	Lucerne, Utah.
Los Angeles & Salt Lake	Milford, Utah	Newhouse, Utah.
Los Angeles & Salt Lake	Caliente, Nev.	Utah-Nevada state line.

Doings of the United States Railroad Administration

Railroad Unification Will Continue Despite End of the War; Equipment Orders Delayed

WASHINGTON, D. C.

NEITHER THE END OF THE WAR nor the election of a Republican Congress supposedly hostile to the idea of permanent government operation or ownership of the railroads is to interfere with Director General McAdoo's plans for continuing the process of railroad unification. The law under which the roads are now being operated provides for the termination of federal control not later than 21 months from the date of the peace proclamation, and also authorizes the President to relinquish the roads before that time, but it can be stated authoritatively that Mr. McAdoo is not contemplating any relinquishment of control over the roads, and that he does not consider the fact that the 21 months presumably will soon begin to run sufficient reason for anticipating now the process of readjustment. While he does not believe that the time should be allowed to expire without the adoption of some permanent plan for the future, he expects that Congress will actively take up the consideration of that question at the next session, and meanwhile he proposes to give an object lesson of the methods by which he thinks the transportation service may best be conducted.

Having taken over the railroads to meet conditions growing out of the war, the Railroad Administration has never considered that its activities were limited merely to changes which could be declared necessary to winning the war, and now that the war has been won the director general plans to go right ahead with his efforts to demonstrate the superiority of a unified railroad system, under federal control and comparatively free from state interference, unless Congress shall in some manner call a halt. For example, he considers the proposed zone system of standard class rate scales, to be applied to both state and interstate freight, a most important reform which promises results sufficiently valuable to justify an effort to make it effective even under a temporary control. He considers that he has already given better service in many respects, and now that the pressure of war traffic may be expected to be lightened, the director general expects to make government operation produce better service and to be able to give greater consideration to public convenience, and he also hopes that the economies resulting from unification will ultimately produce results that will make it possible to reduce rates.

While there has been a strong impression in many quarters that Director General McAdoo has been working in the direction of government ownership, he has stated on more than one occasion that he is not in favor of government ownership, and he has declined to commit himself beyond a policy of unified operation of the railroads as a national system of transportation, without the wastes incident to competition and with uniform methods and practices throughout the country. In this connection it is recalled that in his recent letter to the regional directors asking them to arrange for more direct contact between the officers of the railroads and the public, he asked that railroad officers explain "the advantages which have accrued and will accrue in the future by the improvements in transportation conditions worked out by the Railroad Administration *and which are bound to be continued permanently* because of their efficiency, economy and expediency in the handling of traffic.

There had been some speculation in Washington, as soon as the attention of the authorities was suddenly challenged from the problems of war to the necessity of the transition to a peace basis, as to whether the scrambling process would be continued with the former degree of activity, or whether there

might not be a slowing up in the efforts in that direction in anticipation of the expiration of the period of government control. Some of the railroad men who compose the organization of the Railroad Administration had begun to feel some of the same kind of nervousness that prevailed among the officers of the individual roads about the time Mr. McAdoo began their reorganization. They wondered whether to proceed any further in their efforts to find permanent and comfortable residences in Washington. They may now feel it advisable in considering their future prospects to cast a weather eye in the direction of Capitol Hill.

Republican leaders in Congress are now engaged every day in discussing a reconstruction program, which includes a provision for dealing with the railroad question, embodied in a resolution drafted by Senator Cummins. One of the chief ideas of the plan is to keep control of reconstruction measures in the hands of Congress rather than of the executive, and the Cummins resolution provides for the creation of six joint congressional committees of 10 members each to investigate and make recommendations to Congress. One of the six would be a committee on interstate transportation, to consider whether the railroads should be returned to their owners and operated as heretofore, whether government operation should continue, with or without government ownership, or, if private ownership is to be continued, what system of regulation and control will be best adapted to the purpose. This plan was approved at a conference of Republican Senate leaders on Tuesday. The joint committee on interstate transportation would also consider the question of the disposition of telegraph and telephone lines which have been taken over by the government, and control of which Postmaster General Burleson is apparently endeavoring to make permanent.

Price Question Delays New Railroad Orders

The idea of using large orders for cars, locomotives and rails for the railroads to take up the slack in the steel business and ease over the transition from war to peace has encountered a stumbling block in the price question. It appears that the government is no more anxious than private corporations to pay war prices, but the government has certain advantages over private corporations in the matter of prices which may assist in removing the difficulty. While the Railroad Administration has placed additional orders for locomotives since its original order for 1,025 in April, bringing the total up to 2,030, it has been deterred from increasing its order for 100,000 freight cars by the scarcity of labor and materials and because of the war department's requirements for cars for French service; and it has placed no rail orders this year because of objection to the price recommended by the price-fixing committee of the War Industries Board. It has been understood that it was actively preparing to place new orders as soon as the steel was made available and at a conference last week of a committee representing the American Iron & Steel Institute with Chairman Baruch and other officers of the War Industries Board, the steel men suggested that large railroad orders would help considerably to keep the steel industries and their employees busy during the reconstruction period. It was then that the stumbling block came into evidence.

Director General McAdoo has ordered the railroad corporations to pay for the cars and locomotives already ordered, in spite of their protests. While he declined to change his position in this matter at their request, he is said to have

some doubts as to whether he can make his decision stick without a lawsuit. The railroad corporations have still greater objections, now that the war is supposed to be over, to paying war prices for equipment over which they will have no control for some time, from which they will earn no revenue, and which they could probably purchase at much lower prices later on if or when their properties are restored to them. Director General McAdoo also has a similar disinclination to pay high prices for equipment over which he may have control for only a short time. The steel companies do not see how they can reduce prices materially as long as the war wages continue and the Department of Labor is trying to maintain wages.

Point is given to the statement that there is some doubt as to the effect of the director general's order that railroad corporations must pay for the equipment by a brief filed by attorneys for the Toledo, St. Louis & Western in the federal court at Toledo, contesting the order directing Walter L. Ross, receiver of the road, to buy 1,250 freight cars at a cost of \$3,572,250. The company contends that payment should be made from the director general's revolving fund.

If John Skelton Williams, director of purchases for the Railroad Administration, can succeed in lowering prices, possibly the objections of both the director general and the railroads can be overcome, as the administration is willing to assist in financing the purchases.

As far as the rail question is concerned, the rail mills will be kept busy for several months to come in turning out rails on the uncompleted orders placed a year or two ago by many roads for 1918 delivery and on some orders placed in advance for 1919 delivery. It was recently estimated that of the 2,000,000 tons ordered for 1918 rolling, only about 1,400,000 tons would be delivered this year. It now appears likely that hardly more than 1,100,000 or 1,200,000 tons will have been delivered by the end of the year, and there are 472,000 tons on order for 1919 delivery, which means that it will be well into 1919 before present orders are completed. Deliveries during most of the year have been at the rate of about 25,000 tons a week, and now that the war is over it is expected that deliveries may be made at the rate of perhaps 50,000 tons a week, beginning with December, because the steel mills can change very quickly from rolling shell steel to rolling rails. The rails delivered this year were contracted for at comparatively low figures, \$30 to \$36 a ton, at about the time the standard price was raised to \$45 a ton because the steel companies offered to take contracts for future delivery at the old prices. When the Railroad Administration began pooling rails this fall and distributing rail delivered on the old orders to the roads which had failed to place advance orders, the steel mills, it is said, displayed marked reluctance, taking the position that rails for the roads which had not ordered in advance should be placed at higher figures. No new contracts have been placed, however, because the price question has remained unsettled. The cost of probably 80 to 90 per cent of the new rails would be charged against the Railroad Administration rather than against the corporations, because they would be used largely for maintenance work rather than for new work.

The federal control law provides two ways of securing additional equipment and other improvements. The revolving fund of \$500,000,000 plus any surplus earnings may be used to provide terminals, motive power, cars and other necessary equipment or the President may make or order any carrier to make the improvements at the carrier's expense. A company may make claim for loss accruing to it by reason of expenditures for improvements or equipment made by order of the director general, the claim to be adjusted as provided in the act by reference to the Interstate Commerce Commission, but the companies are debarred by the standard contracts with the government, which have not yet been signed in most cases, from claiming a loss on the ground that the cost was greater

than under other market and commercial conditions. There are limitations to the revolving fund and it is probable that Director General McAdoo sees very clearly the expediency of keeping his expenses sufficiently below the sum of the revolving fund and current revenues to avoid the necessity of asking for another appropriation.

Although the \$500,000,000 has been drawn on rather heavily, plans are being considered by which it may be replenished sufficiently to enable it to continue revolving. The principal drafts on the fund have been to make advances to railroad companies on account of their unsettled compensation or loans to meet maturing obligations. It is now contemplated that many of such loans shall be transferred to the War Finance Corporation, if certain changes in the law can be made, which would then reimburse the revolving fund. It has also been proposed to use the War Finance Corporation to assist railroad companies to finance the purchase of equipment or other improvements ordered by the director general. In case a company cannot find a market for its own equipment trust securities, the War Finance Corporation might take them and issue its own securities at a lower rate of interest.

Conditions in Central Western Region

A substantial improvement in the railroad service given in the loading of livestock, grain and coal during the month of October, 1918, as compared with the same month in 1917, was noted by Hale Holden, regional director for the Central Western Region, in a report for the month of October to Director General McAdoo. The number of cars of livestock loaded showed an increase of 7.2 per cent; coal cars loaded, an increase of 15.5 per cent; grain cars loaded, an increase of 15.9 per cent. Special arrangements were also made for handling the fruit traffic from California and Colorado, 116 fruit specials with 4,545 cars having been operated during the month from California to the Missouri river and Chicago, and 24 through trains, with a total of 643 cars, having been operated from Colorado. A full car supply was maintained at all times for the movement of oil traffic in the region. Mr. Holden reported with regard to coal that the outlook is better for the winter than it has been since the fall of 1915.

With regard to routing, Mr. Holden reported a saving of 7,507 cars for the month of October, or 1,310,588 car miles, an average of 174 miles per car. A number of unifications of facilities were also arranged, with a resulting saving of approximately \$400,000 per annum. Some extracts from the report follow:

The car supply for coal and other rough freight was ample to meet requirements but the shortage of box cars suitable for grain loading on certain lines, has been quite pronounced, due, in a measure, to the heavy outbound movement of grain and flour from primary markets, which rapidly depleted the supply for loading at country points. Arrangements are already effective for movement of an additional supply of empty cars from other regions to meet this condition.

The harvesting of the sugar beet crop in the western territory commenced during the month and is progressing satisfactorily. To handle this traffic it was necessary temporarily to withdraw a considerable number of cars from the coal trade but this has been accomplished without visible effect on coal production.

There was experienced a shortage of double deck cars for sheep movement in Colorado, but the condition was not serious nor long continued, and the range stock movement has been handled with reasonable satisfaction to the shippers.

Coal, grain and livestock loading increased quite substantially but there was a falling off in the loading of forest products, ore and miscellaneous freight to the extent that the total revenue freight loaded shows a decrease of 3.9 per cent. The fact that this record is made as of carloads, however, is not conclusive because the indications are there was

heavier loading per car, indicating that the total tonnage of all freight loaded will probably show an increase for the month.

Oil Traffic.—A full car supply was maintained at all times. Operated out of the Mid-Continent fields a total of 586 trains, with 15,973 cars, an average of 27 cars per train, of which the Santa Fe road handled 94 trains, with 2,849 cars, an average of 30 cars per train.

Troop Movements.—The Eighth Division, with 20,732 men, moved from Camp Fremont, California, to Camp Mills, Long Island, during period October 18 to 24, inclusive. This movement consisted of 42 trains with a total of 580 cars, all of which departed from Camp Fremont on schedule time. No personal injuries of consequence were reported. Altogether, and including the Eighth Division, a total of 97 trains, with 39,194 men, moved within the Central Western Region.

Coal Traffic.—Coal loading generally for the Central Western Region showed an increase of 15.5 per cent. In the western fields of Colorado, Utah and Wyoming, there is every evidence that the market was kept completely full of coal. The coal situation in Illinois and Indiana has been most satisfactory and the loading has exceeded all previous months of the year except July, which was the record month. Notwithstanding the heavier loading, there was less complaint of car shortage than in any similar period during the past seven months. The only serious car shortage in October was on the C. C. C. & St. L., but that has been corrected and mines on that road are now enjoying full car supply. Production of coal in these states has overtaken consumption. This was recognized by the Fuel Administration and all restrictions against furnishing bituminous coal for non-essential or non-preferential uses, even including country clubs, have been withdrawn. During the month some mines were closed for a time for lack of market, and unbilled coal in cars awaiting sale is appearing at the mines in certain fields at times in considerable quantity. As a result, some of the mines have temporarily suspended operations. The outlook for the winter is better than it has been since the fall of 1915. The country is stocked up to a greater extent than ever known before. The car supply in October was better than it has been during any sustained period since July, 1916, and the mines are producing more coal than ever before in their history.

All things considered the Railroad Administration can, in respect of fuel supply, view the future in this region with serenity, confident that there will be no lack of fuel through any failure of the transportation system.

Sailing Day Plan.—During the month of October the Sailing Day Plan was inaugurated at 33 additional stations in this region which, combined, show a weekly saving of 527 cars, making a total car saving at points within the Central Western Region on account of sailing day, of 4,251 cars per week.

Terminal Situation.—All of the large terminals in the region have been operating effectively and there has been practically no congestion in carload or less carload business. The terminal managers at Kansas City, Omaha, Ogden, Salt Lake, Peoria, Tri-Cities and Des Moines all report a free movement through their gateways and generally satisfactory conditions.

Power and Equipment Conditions.—The labor situation in the mechanical department seems to have become stabilized which is reflected in increased shop output at various points.

NUMBER OF MEN IN CAR AND LOCOMOTIVE DEPARTMENTS OCTOBER 19, 1918				
	1918	1917	Inc.	Percent
Car department	23,976	22,052	1,924	8.7
Locomotive department	64,153	57,640	6,513	11.3
Total	88,127	79,692	8,435	10.5

NUMBER OF LOCOMOTIVES TURNED OUT OF SHOP, WEEK ENDING OCTOBER 19, 1918		
1918	1917	Increase
846	733	113 15.4%

We have repaired five eastern line locomotives in Central Western Region shops during the month and have just received 35 additional Baltimore & Ohio locomotives for general overhauling at shops of the Chicago, Burlington & Quincy; Atchison, Topeka & Santa Fe; Chicago, Rock Island & Pacific and Illinois Central. Fifty-seven of our

western line locomotives are still in service on eastern lines and we have received from builders during the month of October 80 new locomotives.

Maintenance of Way.—Federal managers as a whole report the condition of their track and property to be as good as it was last year with a very few exceptions.

The number of men working on maintenance of way this year compared with last year is as follows:

October, 1918	69,401
October, 1917	68,082
Per cent increase	8.7

Routing.—The reports of activities in the way of re-routing indicate a saving of 7,507 cars for the month of October or 1,310,588 car miles, an average of 174 miles per car. Of this total 2,880 cars with saving of 836,764 car miles, or an average of 290 miles per car, were routed by agents at points of origin. We have been making special efforts to secure proper initial routing and the above figures indicate that good results are being obtained. Large volume east-bound traffic from Southern California, heretofore moving over Southern Pacific to Ogden, has been diverted over the Los Angeles & Salt Lake and reverse movement for Southern California destinations, formerly moving over Southern Pacific and Western Pacific, has been re-routed over the Los Angeles & Salt Lake at Ogden, Salt Lake and Provo connections. Coal from Wyoming for Northern Idaho is now moving through Silver Bow and over northern lines, which results in a saving of 270 miles per car compared with the distance via the Huntington gateway.

Unification of Facilities.—Pairing of tracks of Denver & Rio Grande and Santa Fe between Denver and Pueblo was made effective October 1. Arrangements for pairing of Western Pacific and Southern Pacific tracks between Winnemucca and Wells were concluded during the month of October and joint operation began November 3. Agreement was entered into for consolidation in the vicinity of Salt Lake, Provo and Ogden which will effect a yearly saving of \$340,000. There have been some consolidations effected at Peoria between the eastern and western lines resulting in a saving of \$4,600 per month by proper use of car inspection and car repair forces. During the month of October the inspection of cars at Blue Island, Ill., on the Chicago, Terre Haute & Southeastern, was discontinued and this work transferred to the Faithorn Terminal, resulting in approximate saving of \$14,400 per annum. The general good effect of unification of facilities is most noticeable at large terminals where terminal managers make use of their authority to transfer bad order cars from one line to another line able to make repairs promptly.

General Order No. 55

Director General McAdoo, on November 14, issued General Order No. 55, prescribing the following regulations to govern the assessment and collection of transportation and other charges for all services performed by carriers under federal control; the refund of overcharges, and the collection of undercharges, and also the disposition in the accounts of such carriers of uncollectible undercharges and agency relief claims:

(1) Officers and agents of carriers under federal control are required and instructed to collect the amount of charges for transportation, rate or rates applicable to such services, plus charges for intermediate or terminal services not included in the rate or rates for transportation, and war taxes applicable to the foregoing.

(2) They shall continue, or if not already established, institute such methods as may be necessary to ascertain promptly and correctly the correctness of such charges before the collection thereof.

(3) When the amount of overcharge is determined after collection of charges, refund shall be made on presentation of original freight receipt, and the amount of such refund shall be indorsed on such receipt.

(4) Formal claims for overcharge presented by claimants shall be prepared on the standard form approved by the Interstate Commerce Commission. They shall be supported by the original paid freight receipt, and if claim is based on weight, misrouting, valuation, etc., by all other obtainable documents or particulars. If the original paid freight receipt cannot be presented claimant's indemnity bond may be required. If overcharge is based on the rate clear reference shall be shown to the tariff or base in which the rate claimed is published. Such formal claims shall be presented to, and adjusted by, either the initial or the destination carrier. If claims are presented to intermediate carriers they shall be immediately transmitted to one of those named.

(5) Claims paid by carriers other than the carrier which collected the

freight charges shall, in the discretion of the accounting officer, be sent to such collecting carrier to be registered, in order that duplicate payments may be avoided.

(6) No apportionment shall be made among carriers of overcharge claims paid, or of agency relief claims covering charges absorbed, such as switching, elevation, transfer charges, terminal delivery charges, icing, cost of grain doors, or other analogous items. This rule does not apply to claims for charges on freight destroyed or confiscated.

(7) Claims for overcharges which cannot be refunded by agents shall be promptly forwarded to the proper officer having jurisdiction. Such officer, upon receipt of such claims, properly supported, shall take immediate steps, consistent with accuracy, to determine the correct charge applicable. If the amount claimed be found correct, or if an overcharge in any amount be found, such amount shall be promptly refunded, and any difference between the amount claimed and the amount refunded clearly explained to the claimant. If the claim be wholly invalid, the claimant shall be notified promptly.

(8) In the event an undercharge be developed after collection of transportation charges, or in the investigation of a claim or otherwise, the officer or agent having jurisdiction shall promptly prepare a freight bill for such undercharge, upon which bill shall be shown all facts incident to the transaction, and such freight bill shall be promptly presented for collection.

(9) The duty of collecting such undercharge shall rest with the officer or agent whose duty it is to collect transportation charges, and he shall exhaust every reasonable effort to collect such amounts.

(10) In the event of failure to make collection of an undercharge, after every reasonable effort has been made to do so, the officer or agent charged with the duty of collecting the undercharge shall promptly transmit the bill therefor, with a statement of all facts incident to his efforts and failure to collect, to the accounting officer having jurisdiction. Appropriate adjustment of the agent's accounts shall be made by station claim or otherwise, according to the established practice of the carrier.

(11) If the facts presented with such undercharge indicate that every reasonable effort has been made to collect it, appropriate action shall be taken as follows:

(a) General order 55 reads: If a bill for an undercharge be for five dollars or less in any one case, and in the exercise of his business judgment he concludes that further efforts to collect would be futile, the chief accounting officer shall direct that it be charged off.

(b) If a bill for an undercharge be for more than five dollars (\$5.00) in any one case, it shall be promptly transmitted by the accounting officer to the chief counsel of the carrier interested, and his recommendations as to its disposition shall be followed.

(c) If the party liable for the undercharge cannot be located, or service cannot be had, or where, upon investigation by counsel in good faith, it is found that legal process would be futile and ineffectual, counsel shall direct the claim to be charged off and it shall be so disposed of; otherwise, suit shall be entered for its collection.

(12) All undercharges determined to be uncollectible as prescribed in subparagraphs a, b, and c, of paragraph 11 hereof, shall be borne by the carrier which originally settled the freight charges on the erroneous basis, regardless of the responsibility for such error in settlement.

(13) In the event that suit be instituted to collect an undercharge, the cost of such suit shall be borne by the suing carrier. The undercharge be not collected under suit, the amount thereof shall be disposed of as provided in paragraph 12 hereof.

(14) In the event freight be destroyed or confiscated in transit, so as to preclude the possibility of delivery of the freight or collection of the charges, no part of the freight charges accruing thereon to any participating carrier shall be included in interline accounts. If waybills have been audited and settled before information concerning the destruction or confiscation of the property is available, such waybill shall be made void, and resettled with participating carriers by correction account or through claim channels.

(15) The provisions of this order shall apply to overcharges, uncollectible undercharges, and to other charges herein referred to, which accrued or which may accrue on and subsequent to January 1, 1918. Settlements which have already been completed on the basis of rules heretofore in effect, shall not be readjusted.

Arrangements to Give Preference to Exports of Foodstuffs

Owing to the cessation of hostilities, the previously arranged shipping program for overseas freight on account of the United States and her allies will be materially changed as to commodities. At a recent meeting between members of the New York Freight Traffic Committee and representatives of the ministries of shipping of the British, French and Italian governments, it was determined that foodstuffs of all kinds shall be given preference in shipments abroad.

According to the report of the Exports Control Committee, for the week ended November 17, in order to take care of the prospective demand that will be made for transportation facilities, a large number of permits have been cancelled and freight held non-essential will not be forwarded from points of shipment. Any freight for which permits will hereafter be issued will be for immediate overseas movement, with the exception of some weight cargo. Various commodities now on ground storage will have to be held for future developments. Goods for the account of the Belgian Relief

Commission and for neutral countries probably will be moved in considerable volume.

The war department is now engaged in taking an inventory of all freight on hand which is considered non-essential for overseas. There is an earnest desire evidenced by all those concerned so to arrange matters that the railroad terminals will promptly be cleared of freight now on hand and in transit. According to the report of the Exports Control Committee there was a decrease of 75 cars of steel at the South Atlantic and Gulf ports for the week ended November 17. The indications are that there will be quite a heavy movement of clothing to Belgium and Northern France in the near future, and cars will be needed to transport it to the seaboard.

The grain situation, according to the Exports Control Committee, for the week ended October 7, shows that at North Atlantic ports there were 422,102 tons in elevators, while 93,690 tons had been cleared. At the Gulf ports there were 258,510 tons on hand, while 13,862 were cleared. The storage capacity of elevators at Gulf ports is being utilized, but the slow lifting at these points prevents the maximum turnover as transfer facilities. There is sufficient quantity of grain at Philadelphia and Baltimore amply to provide for ships in port and due. Government oats at north Atlantic ports, of which there are several hundred cars being held, will be forwarded from shipping point at the rate of 30 cars a day, but cars have been bunched in transit and have arrived beyond the possibility of immediate unloading into the elevators. At New Orleans the excess accumulation of grain in cars has been entirely cleared up, and in view of the available space in elevators and open tonnage allocations, permits were issued during the week to cover 426 cars of grain to move from interior points.

At Galveston the handling of export grain continues inactive. No grain has been delivered to vessels since October 16, and there are no ships in port, although five have been scheduled to call during the present month. The stock of grain in elevators is 2,289,000 bushels, and permits were issued during the week to cover 52 additional carloads to move from interior points.

In the Puget Sound district the situation has not improved in the past week. There has been an excess of arrivals over deliveries of 248 cars, which is chargeable to the arrival of export freight without permit or shipped under expired permits. In the San Francisco district there were 1,448 cars on hand on November 8 as against 1,426 on November 1.

On November 9 the primary elevators of the country held a total of 114,041,000 bushels of grain, as compared with 17,356,000 bushels on the same day in 1917. On November 9, 1918, there were in the primary elevators 3,767,000 bushels of corn, as compared with 157,000 bushels on the same day 1917; on the same day in 1918 there were 15,841,000 bushels of oats, as compared with 12,160,000 bushels on the same day in 1917; on the same day in 1918 there were 94,433,000 bushels of wheat, as compared with 5,039,000 on the same day in 1917.

P. S. & A. Circulars

Recent circulars issued by the Division of Public Service and Accounting are summarized as follows:

P. S. & A. Circular No. 40 provides that effective at once, no bills shall be made by one carrier under federal control against other carriers under federal control for tariffs or other publications, or copies thereof, furnished by one such carrier to another; neither shall any charge be made by any tariff bureau or publication agent for the publications furnished to the lines under federal control. Tariffs, or copies thereof, or other such publications furnished by lines under federal control, or by tariff bureaus, or publication agents, to the public or to lines not under federal control shall be billed as heretofore.

P. S. & A. Circular No. 41 provides that all valid claims for overcharge presented for payment by shippers or consignees to lines under federal control on or after November 1, if not paid within 30 days, shall bear interest at a rate of 6 per cent to the date of payment. Interest shall not be paid on any overcollection of war taxes which is refunded in connection with the overcharge. Any overcharges collected prior to January 1, 1918, or subsequent to December 31, 1917, claims for which have been filed prior to November 1, 1918, shall bear interest at a rate of 6 per cent per annum, if not paid within 30 days from the last-named date. General Order No. 25 requires shippers and consignees to promptly pay transportation charges. In the event that an overpayment is made by a shipper or consignee, due to an error in weight, rate, extension, or classification, it is the duty of the carrier to promptly adjust the error; therefore, accounting officers of lines under federal control shall immediately inaugurate appropriate methods of accounting such as will result in the payment of claimants of overcharge claims within the prescribed free time of thirty days after filing or with a minimum of delay beyond that period.

P. S. & A. Circular No. 42 provides for the method of accounting for tickets issued in exchange for scrip, mileage, government transportation requests or other forms of orders.

P. S. & A. Circular No. 43 provides that, pursuant to General Order No. 49 prescribing standard forms of monthly ticket and excess baggage reports, carriers under federal control shall issue instructions to their agents for the preparation of such reports to conform with detailed regulations set forth in the circular.

P. S. & A. Circular No. 44 provides that, immediately after the close of the September accounts there shall be forwarded to the Division of Public Service and Accounting a copy of the trial balance of the federal books, the accounts arranged so far as practicable, in the numerical order as to primary accounts provided by the classifications of the Interstate Commerce Commission, and arranged further in sequence, first, Income, second, Profit and Loss, and third, Balance Sheet Accounts. I. C. C. account numbers shall be shown with the name of each account.

P. S. & A. Circular No. 45 extends the provisions of General Order No. 20 to include bills rendered to or by the Pullman Car Lines.

Maintenance Records

A meeting of the engineering representatives of the seven regions will be held at Washington on November 26, with C. A. Morse, assistant director of the division of operation, in charge of maintenance and engineering, to discuss the amount of information in addition to that called for by Circular No. 22, which will be required in order to keep a proper record of the amount of maintenance during the period of federal control as compared with the work done during the three-year test period before federal control. This is necessary in order to comply with the provisions of the federal control law requiring that the railroads be returned to their owners in substantially as good condition as when they were taken. Circular No. 22, which was published in last week's issue, sets forth the more important information required and meetings of the chief engineers of railroads in each region have been held for the purpose of deciding on the amount and character of additional data which it will be advisable to collect. Each of the regional engineering assistants had prepared his own tentative outline for consideration at the regional meetings. Because of the increases in the costs of labor and materials it is proposed to record units of work done rather than the amount of money expended. Mr. Morse is not building up an elaborate organization, but has appointed a maintenance committee consisting of the engineering assistants to the regional directors or other representatives of each region, as follows: Eastern region,

Francis Lee Stuart; Allegheny region, E. B. Temple; Poca-hontas region; J. E. Crawford; Southern region, W. R. Rodenbaugh; Northwestern region, J. C. Hough; Central Western region, H. R. Safford and Southwestern region, E. A. Hadley.

Traffic Tonnage at Principal Cities

Director General McAdoo has issued the following comparative statement showing the freight handled by the railroads under federal control at 25 of the more important railroad termini of the country during the 23 days ending October 14, 1918.

The purpose of this statement is to provide information that will assist in measuring the relative business activity of the country as indicated by the comparison between the tonnage handled this and last year at the points named.

Other cities will be added to the list as rapidly as arrangements can be made for the compilation of the figures. It is hoped that the information will be useful as a partial index of the country's business expressed in terms of cars and tons that will complement and supplement the statements issued by the Federal Reserve Board and the clearing houses in which the volume of business is reflected in terms of dollars.

The subjoined statement is noteworthy in that it shows an increase of 6.13 per cent in the tonnage as against an increase of only 0.23 per cent in the number of cars used to carry the increased tonnage.

	1917	1918	1917	1918
Atlanta	7,617	7,489	197,668	211,179
Birmingham	16,047	15,920	664,394	691,737
Boston	29,097	25,027	429,181	473,458
Buffalo	26,429	25,735	927,518	931,810
Chicago	155,869	156,809	6,027,182	6,352,070
Charleston	3,334	5,475	88,070	183,128
Cleveland	30,504	34,096	1,149,320	1,336,680
Duluth & Superior	80,892	89,335	3,576,881	4,046,549
Galveston	4,145	4,346	42,470	47,079
Hampton Roads	35,882	45,191	1,493,576	1,863,135
Kansas City	24,565	32,382	554,666	768,124
Los Angeles	6,001	5,559	140,539	135,418
New York	92,852	84,223	2,291,105	2,262,392
New Orleans	15,034	14,928	467,185	432,140
Omaha	13,219	13,074	434,261	445,887
Portland, Ore.	6,627	7,761	152,923	198,839
Philadelphia	66,517	46,885	1,819,457	1,547,232
Pittsburgh	9,635	9,668	344,000	344,000
Seattle	28,358	30,059	929,964	1,012,274
St. Louis	17,966	20,195	574,543	674,266
San Francisco	11,081	8,476	345,880	259,190
Savannah	6,023	5,987	100,165	111,005
Tacoma	3,096	4,327	96,029	140,520
Twin Cities	42,533	43,031	1,087,119	1,288,020
Toledo	34,433	34,431	1,544,790	1,134,412
Total	785,074	786,871	25,952,961	27,543,629
Increase		1.7%		1.9%
Average tons per car		=0.23%		=6.13%

Passes for Corporate Officers Restricted

Some of the money which the government pays to the railroad corporations as rental for the use of their property may be returned to the government in the form of passenger fares paid by officers and directors of the corporations when traveling, because the issuance of passes to the corporate officers will be considerably restricted as compared with former years. C. R. Gray, director of the division of operation, has written to the chief executive officers of each railroad corporation, saying it has been decided that passes will be issued upon their request for directors and other officers who are assigned to work on the line, which transportation will be good over the railroad owned by the company. In addition, the chief executive officers will be furnished an annual pass over a much larger territory, and the vice-presidents, where they devote substantially their entire time to the business of the corporation, will be given transportation good over all lines in the region in which their railroad is located. This letter does not promise passes to vice-presidents located in New York of a railroad located in the West, who would have to travel over other lines to reach their property, and it indicates a decided reduction in the number of passes

which will be available to directors and officers below the rank of vice-president.

Express Company Taken Over and Rates Raised

The American Railway Express Company was directly taken over by the government and placed under the jurisdiction of Director General McAdoo as of noon on November 18 by a proclamation signed by the President on November 16, and on November 20 Director General McAdoo issued General Order No. 56 initiating an increase in express rates effective January 1, which it is estimated will produce an increase in revenues of about \$24,000,000. The proclamation stated that the entire transportation system of the express company had been necessarily in substance and effect placed under federal control and that it was desirable in order to administer its business and operations to the best advantage to make it specifically clear by proclamation that the President has the entire possession, use, control and operation of the system, but it is understood that the main reason for the step was to enable the director general to initiate the increase in express rates without incurring the liability of having them suspended by the Interstate Commerce Commission, which might have been done if they had been initiated by the company, and also to make it impossible for state commissions to refuse to accept the new rates.

The status of the express company was a peculiar one, which had led to many misunderstandings. It was a private corporation formed by consolidation of the principal express companies and had made a contract with the director general making it the sole agent of the government for conducting the express business of railroads under federal control and which gave the director general control over its actions. It had been popularly assumed that the company was actually under federal control like the railroads and the Pullman car lines, and Director General McAdoo had been obliged to take up the rate question in order to secure revenues with which to pay increased wages, had had to deal with a strike of express employees and had referred the entire question of express wages and working conditions to his Board on Railway Wages and Working Conditions. It was, therefore, considered that express questions could be handled more simply by taking over the company.

The essential features of the rate increase order provide that in the territory north of the Ohio and Potomac rivers and east of the Mississippi river, the increase in express merchandise rates ranges from 16 cents to 17 cents per hundred pounds regardless of the distance hauled in that territory. The increase in the balance of the United States will range from 10 cents to 12 cents per hundred pounds on merchandise. The increase on food products will be about three-quarters of the increase on merchandise shipped by express.

When the director general recently submitted the plan for increased express rates to the Interstate Commerce Commission for its advice he indicated to the commission that it was necessary to raise approximately \$24,000,000 additional revenue, which under the contract would go practically half to the railroad revenue and half to the express revenue, and inquired whether the plan proposed would yield approximately that amount, and if so whether the plan was proper. The commission after a public hearing announced its conclusion that, if the amount of increased revenue was needed, the plan proposed was proper and preferable to any other method that had been suggested. The commission pointed out that under this plan the greater increase in rates would be applied in the eastern territory which is the territory "of lowest rates, of the greatest cost of operation and greatest increase in those costs," and stated that while the plan would be a departure from the original zone relationship established by the commission, that departure appeared under the

circumstances now presented to the commission to be justified.

The commission, however, raised for the director general's consideration the question whether the increase in rates could be obviated by a reduction in the amount which the express company is required to pay the Railroad Administration for the express privilege, but as the director general has heretofore announced, he considers that such change in the contract is not practicable in view of the relative cost to the Railroad Administration of handling the express business and in view of the heavy increase in the operating costs attributable to the railroad handling of that business.

The commission took the position that the Railroad Administration had not shown its need of increased revenue, although the latest monthly report of railroad earnings and expenses would seem to indicate why the \$12,000,000 additional revenue could be made useful. Some people thought there was some significance in the remark with which the commission concluded its opinion, that "no view as to jurisdiction of the initiation of the proposed rates has been requested or considered and no opinion on that point is expressed." It was also thought likely that when the express tariffs were filed the commission might suspend them pending an investigation to determine whether the \$12,000,000 increase might not be given to the express company without giving an equal amount to the railroads, but with the express company under federal control the rates become President-initiated rates which the commission cannot suspend but may only review after complaint and investigation.

The authority of the President was exercised, as in the case of the railroads, through Newton D. Baker, Secretary of War, and the taking over includes all appurtenances and property of every kind or nature, directly or indirectly owned, leased, chartered, controlled or used in the conduct of or in connection with the business of the American Railway Express Company. The proclamation further directed that the possession, control, operation and utilization of the system shall be exercised by and through William G. McAdoo and that he might perform the duties imposed upon him so long and to such an extent as he shall determine through the board of directors, officers and employees of the express company under the contract already made. Until and except so far as the director general shall otherwise provide, the board of directors, officers and employees of the company shall continue the operation thereof in the usual and ordinary course under such contract.

In a statement explaining the increase in express rates Director General McAdoo said:

"The fact that the eastern territory is the region of greatest cost of operation and of greatest increase in such cost is due to the fact that in that region there is the greatest percentage of short haul traffic on which relatively the terminal and other costs are greatest. Another important advantage in increasing the rates in the eastern territory to a greater extent than other parts of the country is that it will have a tendency to restore the proper balance between express and freight rates, which has been disturbed in recent years by the greater increases in freight rates that have been granted in that territory than in other parts of the country, which has resulted in the transfer from freight to express transportation of much traffic which ought to move by freight. This eastern territory has been swamped with express traffic for the past two years, a great deal of it having been diverted from the regular freight trains, causing congestion of terminals, over-crowding of passenger trains and producing a volume of traffic which prevented giving good express service on shipments which were usually handled in that way.

"It is expected the increased express rates will have the effect of transferring considerable of the short haul business to motor trucks and back to the freight service where it really

should be handled. It is also anticipated that another result will be the transferring of the handling of some of the smaller packages to the parcel post. It will increase the rates in some of the middle western states where the express rates have been unduly low; in fact, in some cases where they have been lower than the freight rates and considerably lower than the express rates in surrounding states which had adopted the Interstate Commerce Commission basis of rates made for the express.

"The express company increased the wages of its employees to the extent of about ten million dollars beginning July 1, which used up approximately the increase of 10 per cent in express rates effective July 15. It soon became evident that many express employees were still underpaid and the question of their wages is now being presented to the Board of Railroad Wages and Working Conditions and it is expected that the further increased wages will practically consume all of the increased revenue which will come to the express company after January 1 under this order."

The rate order provides for an additional increase in the states which did not accept the 10 per cent increase recently authorized by the Interstate Commerce Commission. Its main provisions are as follows:

Between points in Zone 1 and between points in Zone 1 and points in all other zones, the first and second class rates, both interstate and intrastate, shall be increased three scale numbers. Between points both outside of Zone 1, the first and second class rates, both interstate and intrastate, shall be increased two scale numbers.

Merchandise rates from points in the United States to points in Canada shall be increased 15 cents per 100 pounds, and commodity rates not stated in scale numbers shall be increased 10 cents per 100 pounds.

Commodity rates, both interstate and intrastate, stated in scale numbers, shall be increased not more than 10 cents per 100 pounds.

Commodity rates, both interstate and intrastate, which are stated in cents or in dollars and cents per 100 pounds, per pound, or other unit of weight, shall be increased 10 cents per 100 pounds, except as to mileage or commodity rates on milk and cream. Commodity rates, both interstate and intrastate, which are stated in cents or in dollars and cents per crate, barrel or other package or per car, shall be increased at the rate of 10 cents per 100 pounds based upon the authorized billing weight.

Milk and cream mileage or commodity rates, both interstate and intrastate, shall be made 25 per cent higher than rates in effect July 1, 1918.

Intrastate first and second class rates in states which have not adopted the existing Interstate Commerce Commission basis of first and second class rates, shall be made the same as the increased interstate rates in the same zone.

In states which did not adopt the increase of 10 per cent on commodity rates on intrastate traffic as authorized by the Interstate Commerce Commission on intrastate traffic, by Fifteenth Section Order No. 746, such commodity rates shall be increased 10 per cent and in addition increased 10 cents per 100 pounds, except on milk and cream which shall be made 25 per cent higher than rates in effect July 1, 1918.

All intrastate rates which are to be increased under this order, if not now on file, shall be immediately filed with the Interstate Commerce Commission. Such intrastate rates shall not be applied to interstate shipments and the schedules containing said rates shall be so corrected.

Weekly Report Traffic Conditions

Director General McAdoo's report of traffic conditions throughout the country for the week ended November 18 shows that as a result of the subsidence of the influenza epidemic, freight and passenger service have materially improved. An encouraging note is sounded affecting the relief work which this country will have to perform in the stricken European areas. While on October 1 there were but 7,000,000 bushels of grain in elevators and cars in the eastern region ready for shipment overseas, at the end of the current week 10,000,000 bushels were on hand to be loaded into vessels bound for European ports.

Arrangements for diversion of carload freight traffic from Pittsburgh gateway have been cancelled.

Tickets between New York and Atlantic City have been made interchangeable between the two roads.

Passenger schedule on Cumberland Valley has been rearranged to make better connections to and from the West.

Re-routing reports of week ending November 14 show saving of 327,087 car miles in central western region. The Salt Lake Line handled 100,000 men on special trains for shipbuilders during October.

With the consent of the War Industries Board the general

lumber embargo was cancelled under date of November 16.

The Food Administration reports continued shortage of cars for grain loading in Indiana and Illinois, and difficulty now being experienced in that direction in Idaho. These matters are being taken up by Car Service Section.

The Fuel Administration reports that in the Eastern, Allegheny and Pocahontas regions there is a surplus of car supply, and transportation is ample, except that the Chesapeake & Ohio is still overloaded eastbound.

In general, the car supply is reported as ample, and no material is reported to be held on account of car shortage.

Director General to Supervise Employees' Magazines

Director General McAdoo's office has arranged a plan for exercising a general supervision over the various employees' magazines published by many of the railroads, without interfering with the present management of each magazine. It has been arranged that they shall have a uniform date of issue and shall be distributed to the employees at the time they receive their pay checks. The director general's office will furnish them with a considerable amount of copy in the shape of orders, circulars and notices regarding the activities of the Railroad Administration and in addition some special articles by members of the organization. A newspaper man, Isaac Gregg, heretofore on the Washington staff of the New York World, has been added to the staff of the director general's office, to assist in preparing publicity matter including the material to be sent to the employees' magazines.

Notice to Be Given Companies of Expenditures for Capital Account

In Supplement No. 1 to General Order No. 12 the director general says "standard clauses" for the contracts between the government and the railroad companies provide that "prompt notice" shall be given the company of the making or ordering of additions, betterments, road extensions, equipment, etc., costing more than \$1,000, with an estimate of the cost thereof, and that "such notice shall be given before the beginning of the work or the acquisition of the property whenever in the judgment of the director general it is practicable to do so." In order the better to comply with said agreement, paragraph "Fifth" of General Order No. 12, dated March 21, 1918 (which authorized in certain circumstances work involving charges to capital account not in excess of \$25,000 to be contracted for and commenced in advance of approval by the director general) is amended, effective January 1, to read as follows:

Fifth: A requisition for authority on the form prescribed by D. C. E. Circular No. 1 and Supplement 1 and by other supplements issued or that may be issued thereto shall be prepared and a copy thereof shall be forwarded by mail to the president of the company to be charged therewith, as provided in said circular, as notice of the making or ordering of such addition, betterment, road extension, equipment, etc., required by said agreement; and such copy should be so forwarded before the beginning of the work or the acquisition of the property except in cases of emergency or other cases where the delay incident to the preparation and forwarding of such requisitions will be detrimental to the government, the service, or the company; and in all such exceptional cases the requisitions shall be forwarded as soon after the beginning of the work as reasonably practicable. No work involving a charge to capital account of \$1000 or more shall be contracted for or commenced unless it be authorized by the regional director except in cases of emergency; and no work involving a charge to capital account in excess of \$10,000 shall be contracted for or commenced unless it be authorized by the director of the Division of Capital Expenditures except in cases of emergency and in other cases where the delay incident to awaiting such authority on the usual form would be detrimental, in which latter cases preliminary

authority should be obtained by telegraph whenever practicable.

Monthly Report of Capital Expenditures

The monthly report of authorizations and expenditures in connection with work chargeable to capital account for all Class I railroads as of November 10, 1918, prepared by Robert S. Lovett, director, Division of Capital Expenditures, shows that a total of \$403,864,950 was spent from January 1, to September 30, chargeable to capital account, and \$35,483,125 chargeable to operating expenses.

Of this amount, \$173,716,897 was charged to capital

account for additions and betterments, \$216,186,206 for equipment, and \$13,961,847 for construction of extensions, branches, etc. The total expenditures on capital account represents 34.3 per cent of the amount specifically authorized during the calendar year 1918.

A total of \$433,731,488 was included in the 1918 budget for additions and betterments, and \$52,825,757 had been added to the budget up to November 10, 1918, for the same purposes. For equipment, \$486,979,925 was included in the 1918 budget, and \$6,580,113 has been added since. For additions and betterments, \$121,099,793 had been specifically authorized up to November 10, chargeable to operating ex-

AUTHORIZATIONS AND EXPENDITURES IN CONNECTION WITH WORK CHARGEABLE TO CAPITAL ACCOUNT AS OF NOVEMBER 10, 1918—CLASS I RAILROADS

Class of work (1)	1918 budget (2)	Additions to budget (3)	Work specifically authorized on D. C. E. forms 1, 2, 3, and 4, to November 10, 1918 Chargeable to—		Expenditures from January 1, 1918, to September 30, 1918 Charged to—		Unexpended balance Chargeable to—	
			Operating expenses (4)	Capital account (5)	Operating expenses (6)	Capital account (7)	Operating expenses (8)	Capital account (9)
ADDITIONS AND BETTERMENTS (Excluding Equipment)								
1 Widening cuts and fills, filling trestles, etc.	\$5,097,989	\$864,633	\$3,067,061	\$7,101,168	\$996,780	\$3,350,776	\$2,070,281	\$3,850,392
2 Ballasting	9,379,271	329,776	3,275,271	10,521,621	1,223,915	3,463,873	2,051,356	7,057,148
3 Rails and other track material	31,365,483	1,411,428	46,056,163	31,553,047	8,441,692	11,574,965	37,614,471	19,978,082
4 Bridges, trestles, and culverts	38,185,921	1,512,709	24,232,283	38,879,214	7,771,538	17,560,499	16,460,745	21,318,715
5 Tunnel and subway improvements	2,185,242	94,083	863,220	4,008,516	515,724	701,773	347,496	3,306,743
6 Track elevations or depressions	4,112,536	323,517	1,676,752	13,423,050	312,950	2,134,334	1,363,802	11,288,716
7 Elimination of grade crossings	7,438,957	372,768	1,183,995	11,966,544	318,830	2,842,244	865,165	9,124,300
8 Grade crossings and crossing signals	631,082	69,316	165,667	1,439,032	83,142	823,820	82,525	615,212
9 Additional main tracks, sidings and industry tracks	44,574,583	3,533,884	5,780,288	57,914,301	1,513,549	21,669,185	4,266,739	36,245,116
10 Additional yard tracks, sidings and industry tracks	97,199,114	14,369,943	9,281,505	114,841,142	2,092,494	39,128,671	7,189,011	75,712,471
11 Changes of grade or alignment	6,359,027	318,988	2,906,950	8,780,638	606,108	2,621,982	2,300,842	6,158,656
12 Signals and interlocking plants	10,962,461	1,666,063	2,420,807	13,800,195	629,301	4,746,873	1,791,506	9,053,322
13 Telegraph and telephone lines	5,129,149	466,831	745,318	5,520,453	406,890	2,046,069	338,428	3,474,384
14 Roadway machinery and tools	955,857	280,660	84,649	1,696,214	15,091	1,064,181	69,558	632,033
15 Section houses and other roadway buildings	1,306,847	314,181	208,850	2,786,560	85,431	1,846,772	123,419	936,788
16 Fences and snowsheds	817,655	107,378	452,329	2,143,709	173,401	727,926	278,928	1,415,783
17 Freight and passenger stations, office buildings	20,138,359	2,908,471	3,808,314	29,245,446	986,534	14,050,643	2,821,780	15,194,803
18 Hotels and restaurants	199,282	263,112	27,091	679,177	2,008	220,430	25,083	458,747
19 Fuel stations and appurtenances	6,090,558	1,650,249	1,109,456	7,756,573	320,188	2,590,363	789,268	5,166,390
20 Water stations and appurtenances	13,430,047	1,706,624	1,907,836	10,672,695	573,852	4,281,751	1,333,984	6,390,944
21 Shop buildings, engine-houses and appurtenances	62,694,927	9,256,573	6,465,459	52,772,474	1,730,632	15,698,759	4,734,827	37,473,715
22 Shop machinery and tools	9,142,488	4,636,668	1,325,637	20,172,327	307,501	5,467,487	1,018,136	14,704,840
23 Electric power plants, substations, etc.	10,781,347	2,455,969	2,072,696	20,912,341	321,253	4,978,991	1,751,443	15,933,350
24 Wharves and docks	3,236,167	2,666,420	524,607	4,891,347	276,433	644,677	248,174	4,246,670
25 Coal and ore wharves	7,024,937	307,073	661,002	5,416,026	284,012	3,077,488	376,990	2,338,538
26 Grain elevators and storage warehouses	2,914,202	118,296	437,163	2,668,523	81,321	1,972,361	355,842	696,162
27 Real estate	3,309,141	28,984	15,538	579,662	1,722	555,342	13,816	24,320
28 Assessments for public improvements	1,179,306	411,971	59,180	1,955,123	60,662	1,086,808	11,482	868,315
34 All other improvements	27,889,552	379,192	284,706	6,453,243	144,093	2,887,854	141,613	3,565,389
Total (excluding equipment)	\$433,731,488	\$52,825,757	\$121,099,793	\$490,549,941	\$30,276,047	\$173,716,897	\$90,823,746	\$316,833,044
EQUIPMENT								
35 Locomotives, steam	\$196,926,868	.....	.....	\$116,650,975	.....	\$51,183,309	.....	\$65,467,576
36 Locomotives, steam, ordered by R.R. Administration .....	.....	.....	.....	76,873,355	.....	23,957,762	.....	53,015,593
37 Locomotives, other .....	.....	.....	.....	2,359,213	.....	1,684,932	.....	674,281
38 Freight-train cars	212,858,464	.....	.....	94,716,146	.....	66,404,773	.....	28,311,373
39 Freight-train cars, ordered by R.R. Administration .....	.....	.....	.....	89,160,000	.....	44,490,812	.....	244,969,188
40 Passenger-train cars	28,459,830	155,337	.....	12,417,401	.....	8,836,325	.....	3,581,076
41 Work equipment	6,538,816	1,721,745	.....	7,016,124	.....	1,537,526	.....	5,478,598
42 Motor car and trailers	557,039	20,300	.....	58,588	.....	58,547	.....	1,339,011
43 Floating equipment	5,318,832	412,342	.....	5,129,889	.....	632,523	.....	4,497,366
44 Miscellaneous equipment	507,923	84,724	.....	603,677	.....	221,932	.....	381,745
45 Improvements to existing equipment	35,807,654	1,135,265	.....	40,421,567	.....	17,277,675	.....	23,143,892
Total equipment	\$486,979,925	\$6,580,113	\$19,276,960	\$646,235,905	\$5,213,654	\$216,186,206	\$14,063,306	\$430,049,699
44 Construction of extensions, branches and other lines	\$20,330,489	\$2,066,072	\$23,836	\$39,063,037	Cr. \$6,576	\$13,961,847	\$30,412	\$25,101,190
Total, all work	\$941,044,902	\$61,471,942	\$140,400,589	\$1,175,848,883	\$35,483,125	\$403,864,950	\$104,917,464	\$771,983,933

* Expenditures to date.

† Expenditure in excess of authorization.

penses, and \$490,549,941 had been specifically authorized chargeable to capital account. For equipment, \$19,276,960 had been specifically authorized up to November 10, 1918, chargeable to operating expenses, and \$646,235,905 had been specifically authorized chargeable to capital account. The detailed report is given on the opposite page.

Export Traffic

Director General McAdoo has announced a report from the Exports Control Committee for the month of October showing that arrivals of carload export freight at North Atlantic ports, (inclusive of bulk grain and coal), during the month totaled 45,210 cars, while deliveries were 42,655 cars, resulting in an increase of freight on hand, principally due to recent arrivals of United States government freight. The situation was the same in South Atlantic and Gulf ports, there being a slight increase at those ports. Arrangements have been made for a proper distribution of ocean tonnage to take care of this movement.

The estimated tonnage of export freight, including government freight, but exclusive of bulk grain and coal, handled during the month of October, compared with October export tonnage of previous years, is as follows:

With October, 1913.....	177.5% increase
With October, 1914.....	166.4% increase
With October, 1915.....	70.0% increase
With October, 1916.....	27.1% increase
With October, 1917.....	57.2% increase

The average daily delivery of cars of export freight at North Atlantic ports, April to October, 1918, inclusive, was as follows:

Port	April	May	June	July	Aug.	Sept.	Oct.
Boston	100	98	76	92	64	26	88
New York	680	814	845	932	741	712	1,029
Philadelphia	105	184	123	128	154	147	160
Baltimore	124	122	140	156	105	109	113
Newport News	14	106	104	103	76	147	145
Norfolk	22	24	63	69	92	107	112
Total	1,055	1,348	1,351	1,480	1,232	1,248	1,647

There was a decided increase during the month of October due to the rapidly increasing volume of freight for account of the government.

Government freight on hand at all North Atlantic ports on railroad operated terminals, as of November 5, was as follows:

Army	4,810 cars
Navy	54 cars
Total	4,864 cars

The total arrivals for the week ending November 5, inclusive, were:

Army	6,999 cars
Navy	63 cars
Total	7,063 cars

Over 4,000 cars for the government were under load at New York at one period during the first week in November. There is said to be ample storage space at the seaboard and the closest co-operation is being given by the War department and the Navy Department in the matter of prompt disposition after arrival. To show the enormous increase in the movement, the deliveries to all North Atlantic ports during September were about 13,000 cars, while for October they were over 20,000.

The provision program for account of the French government calls for the movement of 14,000 tons via New York and 1,000 tons via Boston; while the program of the Italian government calls for 40,000 tons via New York, during the month of November. Provisions on hand as of November 7 amounted to 176 cars, of which 56 cars are for account of the Commission for relief in Belgium. Frozen beef on hand as of November 7 amounted to 60 cars. Permits covering approximately 1,000 cars, or 15,000 tons, were issued during one week by the North Atlantic committee.

Railroad Agents to Cash Liberty Bond Coupons

P. S. & A. Circular No. 46 provides that effective at once, local freight and ticket agents, including agents of consolidated ticket offices, are authorized to cash coupons of Liberty Bonds when such coupons are due and payable. They should be considered as cash and so remitted, under proper safeguards, to the federal treasurer or to the bank where deposits are ordinarily made. Federal treasurers and federal auditors shall issue such instructions to agents under their jurisdiction as may be necessary to make the foregoing provisions operative at once.

Standard Appliances Committee Meeting Postponed

The meeting of the Committee on Standard Appliances for Cars and Locomotives, called to be held at Washington on November 19, was postponed until December 3.

Increased Savings in Car Mileage Through Rerouting

THE DIVERSION OF TRAFFIC to direct routes by lines in the Northwestern region is resulting in larger savings in car mileage every month. Instructions issued shortly after the railroads were placed under federal control soon caused the rerouting of a considerable amount of traffic, but it was necessary for each line to study the possibilities of the policy carefully before extensive diversions of traffic could be made. The steady improvement in the results achieved with increased experience under the rerouting plan is reflected in the statistics for the period from May 1 to September 30. In the months of May and June 4,441 carloads were rerouted in the Northwestern region, resulting in a total reduction in haul of 850,860 car miles. In July, 6,252 carloads were rerouted with a reduction in haul of 680,952 car miles; in August, 10,807 carloads were rerouted with a saving in car mileage of 1,147,457, while in September, the records show 13,441 cars rerouted and a saving in haul of 1,375,186 car miles.

These statistics are no real measure of what has been accomplished in the interests of economical routing, as they only indicate the number of carloads rerouted by the carriers and do not include shipments which are now being properly routed by the shipper as the result of the campaign to that end carried on by the railroads. In fact, the principal aim of the Railroad Administration has been to induce the shipper originally to name the most economical route, thereby eliminating the necessity for rerouting by railroad officers.

There are, of course, no records of the savings in car miles, resulting directly from improved routing by shippers. The large economies effected in August and September are therefore not fully representative of what has actually been achieved. They indicate only the savings attained through the perfected arrangements of the railroads for correcting the routing of shipments in transit.

From the first special railroad officers and committees have been delegated to execute diversions at various terminals and junction points in a region. On the individual railroad organizations federal managers are now held responsible for the correct routing of the business which they originate and likewise are expected to report any traffic handled by other railroads which could have been handled to better advantage by the lines under their jurisdiction. Despite the close attention given the problem for some months past, railroad officers continue to uncover business which can be routed more economically. In this connection it should be pointed out that the short line is not always the economical route. Other conditions which must be considered include grades, curves, the condition of connections

with other roads, the weight of rails, the absence of congestion, etc.

Minnesota Transfer, Minn., has been foremost among the terminals of the region in rerouting work. From May 1 to September 30, 9,570 carloads were diverted to new routes, with a reduction in haul of 1,189,466 car miles. In the Chicago switching district, between June 1 and September 30, 1,939 cars of westbound business were rerouted with a reduction in haul of 245,313 car miles.

A special effort has been made to divert eastbound traffic to Lake Michigan car ferry lines, not only to effect a reduction in loaded car mileage, but to avoid the use of the Chicago terminals. To this end the territory in Wisconsin and the upper peninsula of Michigan has been zoned and instructions have been issued to use the routes across Lake Michigan in preference to the routes through Chicago. Additional traffic necessary to give the car ferry lines full tonnage eastbound is secured by diverting traffic to these routes at Minnesota Transfer and other points. Since the inauguration of the plan to divert traffic across the lake, 6,551 cars have been rerouted over the ferry lines with a saving in car mileage of 587,809.

Since the railroads in the Northwestern region first undertook to divert traffic 34,941 carloads have been rerouted with the total reduction in haul of 4,054,455 car miles, or an average reduction in haul per car of 113 car miles. The details are given in the following table:

	Total Carloads Rerouted	Reduction in Haul (Car Miles)
At Minnesota Transfer, Minn., by joint agent for all lines, May to September.....	9,570	1,189,466
By agents in the Chicago Switching District, westbound traffic only June to September.....	1,939	245,313
Eastbound traffic diverted to Lake Michigan car ferry lines—for period ending September 30, 1918, by—		
C. & N. W., at Green Bay, Wis.....	759	65,828
C. & N. W., at Milwaukee, Wis.....	876	94,002
C. & N. W., at Menominee, Mich.....	521	41,268
C. & N. W., at Oconto, Wis.....	167	14,035
C. & N. W., at Antigo, Wis.....	104	13,228
C., M. & St. P., at Milwaukee, Wis.....	2,560	150,589
C., M. & St. P., at Menominee, Mich.....	532	70,632
M., St. P. & S. S. M., at Stevens Point, Wis.....	113	68,605
M., St. P. & S. S. M., at Minneapolis, Minn.....	513	70,254
M., St. P. & S. S. M., at Manistique, Mich.....	106	9,278
Total, 6,551 cars; 587,809 car miles.....		
By—		
C. & N. W.—May to September.....	1,705	136,86
D., M. & N.—July to September.....	57	4,934
M. & St. L.—June to September.....	2,245	184,777
C., M. & St. P.—August to September.....	797	96,764
M., St. P. & S. S. M.—June to September.....	1,053	185,019
C. & W., R. R. & N.—May to September.....	1,623	618,418
Nor. Pacific—July to September.....	3,375	49,711
D. & I. R.—July to September.....	260	16,835
C. & G. W.—July to September.....	348	2,482
C. & G. W., M. & O.—August to September.....	4,387	114,741
C., St. P., M. & O.—August to September.....	207	18,634
Ft. D., D. M. & S.—August to September.....	573	85,166
Gt. Nor.—August to September.....	60	14,700
S. P. & S.—August to September.....	30	11,666
Sou. Pac. Lines in Ore.—August to September.....	259	5,879
D. S. & N.—July to September.....		
Total.....		

individual freight houses of these lines in the Chicago switching district either by trap or ferry car, by dray or via the Illinois tunnel system. Under the present arrangement, merchandise for the same destination is consolidated into one car and routed over one line. The economies resulting include (1) a saving in freight house expense due to the fact that tonnage is handled only once at Chicago, whereas it was formerly handled twice; (2) a reduction in car days as a result of eliminating the use of cars for the transfer of tonnage from the inbound line to the outbound line; (3) a reduction in payments for transferring freight to connecting lines, which come out of the carriers' revenues; (4) better service and a diminution of claims.

The table shows the number of carloads of l. c. l. freight consolidated since the introduction of the plan:

		Total Carloads	
	Loaded at	For Eastern Points	For Western Points
Chicago and Forrest Hill Transfer—B. & O.	July 1918	91	
	August	102	
	September	110	
	October	16	
Chicago—C., B. & Q.	August	34	
	September	41	
	October	63	
Chicago—C. & G. W.	September	12	
	October	2	
Chicago—C. I.	October	179	346
Chicago, Union St. Sta.—C. & M. & St. P.	October	86	3
Chicago, 40th Street—C. & N. W.	August	357	
	September	397	
	October	553	
Chicago—C., R. I. & P.	August	16	1
	September	43	
	October	45	
Endicott Transfer, Chicago—Ill. Central.	October	6	17
Kensington Transfer—M. C.	July	143	
	August	218	
	September	268	
	October	79	
Englewood Transfer—N. Y. C.	July	50	
	August	149	
	September	163	
	October	192	
Stony Island Transfer—N. Y. C. & St. L.	July	332	
	August	256	
	September	182	
	October	114	
Chicago—Wabash	September	12	
	October	11	
Total		1,836	3,178



One of the Light Locomotives Used by the 12th Railroad Engineers in France

The Consolidation of L. C. L. Merchandise in Chicago

One of the most important features of the rerouting plan is the consolidation of l. c. l. freight originating, and transferred, in the Chicago switching district, over certain lines for specific destinations, thereby eliminating intra-terminal switching. For example, under the old plan merchandise might arrive at Kensington Transfer on the Michigan Central and be consigned to St. Paul, Minn., in separate lots, over the Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Chicago Great Western and the Chicago, Burlington & Quincy. This freight would have to be moved to the



Elevation of the Viaduct as Seen from the North End with Reinforcement in Place

Strengthening a Long Steel Viaduct on the C. & E. I.

Introduction of Heavier Power Necessitated New Center
Girders and Reinforcing of Columns

THE PURCHASE OF HEAVIER POWER by the Chicago & Eastern Illinois created a problem for the engineering department of that road because of the inadequacy of two bridges to carry new locomotives. In consequence, seven Santa Fe-type engines weighing 377,500 lbs. and 25 Mikado

by Consolidation locomotives weighing 190,000 lbs. One of these bridges is over the Okaw river, about three miles from Findlay, Ill., on the Chicago-St. Louis main line of this road, while the other is over the Kaskaskia river at Shelbyville, Ill., on the line extending south from the main line at Findlay into southern Illinois. Thus the structures introduced a serious obstacle in the coal route of this road from the southern Illinois fields.

The Okaw river structure was a wrought-iron viaduct and the one over the Kaskaskia river is a steel viaduct. Each was 1,400 feet in length, the former being built in 1892 and the latter in 1896. After a study of the situation it was concluded to replace the main line bridge by a concrete arch structure providing for two tracks, thereby permitting the completion of double track as far as Findlay. In the case of the bridge at Shelbyville, on the other hand, it was deemed inadvisable to resort to renewal at this time, in view of the fact that it was found possible to introduce reinforcing that would bring the capacity of the structure up to an equivalent of Cooper's E-55 loading.

This viaduct consists of 14 towers and two rocker bents of varying heights, carrying 35-ft. tower spans, 15 clear spans of 50 feet, and one clear span of 35 feet, in addition to a 125-ft. deck truss span over the channel of the river. The bridge was designed for a loading equivalent to Cooper's E-35 or E-40. The condition of the structure was good except that the cast pedestals under the columns were of a faulty design and had developed cracks in a great many cases.

The reinforcing included the addition of a center girder in all of the girder spans, as well as a center truss in the truss span, reinforcement of the columns of all bents and the addition of new center columns in the bents carrying the truss span. The erection of the new center girders, with the exception of those in the towers adjoining the truss span, was deferred until girders could be released from the old viaduct at Okaw river following the completion of the new structure



Close View of the Channel Span Showing a Portion of the New Center Truss

locomotives already in service weighing 300,000 lbs., were prevented from operating in the districts containing the two bridges, thus restricting the train-loading to that handled

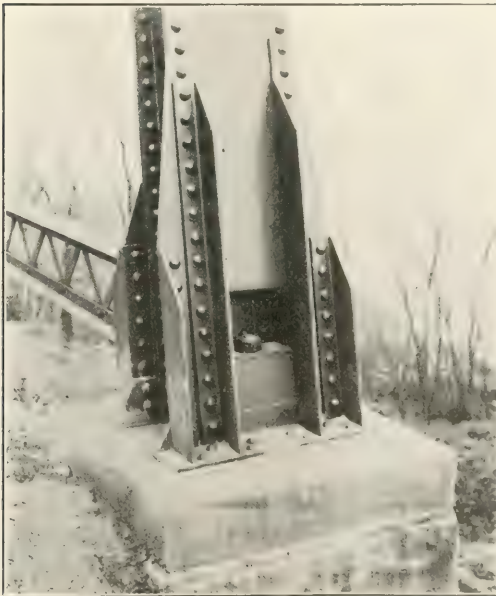
at that point. All of the other work was started last fall and completed in the spring of this year.

The old columns were of the Z-bar and plate section consisting of four 5-in. by 3-in. Z-bars riveted to a 12-in. plate. These were reinforced by riveting cover plates to the outstanding legs of the Z-bars on both sides of the columns and by increasing the strength and area of the column bases by means of plates and angles as shown in the drawing.

The reinforcing plates for the columns were punched in the shop, but for every shop hole in the plate there was a corresponding hole to be drilled in the field, or about 36,000 15/16-in. diameter holes in all. The plates were clamped into position against the columns so that they could be used as templates for punching the holes in the flanges of the Z-bars with a screw-operated punch worked by hand. Air-operated riveters were used for all of the riveting, and air-operated drills might have been used to advantage for the field holes but for the lack of high-speed steel for drills. Two men working with each punch could make about 300 holes per day. Only a small gang, averaging about 12 men, was employed on this work, and as the drilling was the slowest operation on the work practically the entire crew was employed on the punching until this had been completed on about 12 of the columns, when all the bolts available for temporary connections were used up. The riveting was done with a pneumatic hammer supplied with air by a pipe line

considerably larger area than the old casting on which it rests, and this additional area was made of use in carrying the load by putting a new reinforced concrete cap on the masonry pedestal to enclose the old casting and come up even with the top of the new sole plate.

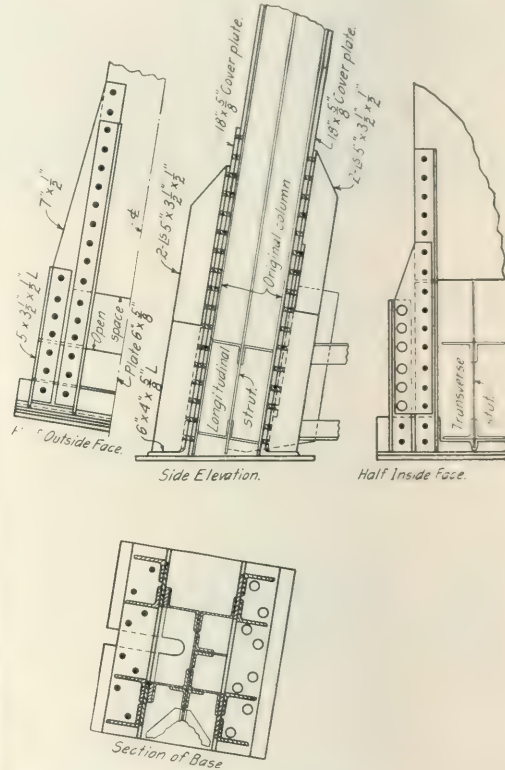
The introduction of the center truss and new center girders in the adjoining panels was a more complicated job because the regular train movements interfered more seriously with the work. The new truss is a riveted span of the same depth as the old ones, which are pin connected. The distribution of the load to the new truss is obtained by use of heavy



Reinforced Column Base

carried across the entire bridge. The reinforcing plates on the columns were milled for direct bearing at all splices. Old splice plates were removed and replaced on top of the reinforcing plates.

The assembling of the base reinforcement was a more complicated operation. Because of the presence of anchor bolts and bottom struts the new material had to be applied almost piecemeal. The sole plate was inserted between the base of the column and the bearing casting by jacking up the column and sliding it underneath, this plate being slotted to clear the single anchor bolt. This new column base has a



Method of Reinforcing the Column Bases.

cross frames, the connections of which were not riveted until the new girder was swung. The new steel was supported from the old by means of timbers bolted to the bottom chords of the old trusses and was placed by a derrick car from the deck, removing enough ties temporarily to clear the members being handled. The work was begun at one end of the span and, in general, proceeded in the regular order, putting in a section of the bottom chord first, followed by two web members and finishing with a section of the top chord. The time occupied in one of these operations, including the removal and the restoring of the deck, was about five hours. By co-operation with the despatcher this much time was made available without serious delays to trains; in fact, the longest delay to any train during the work was 20 minutes. This portion of the repair work on the structure was in progress from September, 1917, to March, 1918, the erection of the truss and the two adjoining girders occupying about two months.

Following the completion of the Okaw river bridge, the old viaduct was removed and work started on the reuse of the old girders of this structure as center girders and cross-girders in the viaduct at Shelbyville. The girders available were 60 ft. long and 5 ft. deep, while they were reused in spans of 35 ft. and 50 ft. between side girders having a depth of 6 ft. Accordingly the second-hand girders were cut to the required lengths, the portions remaining being used to make cross-girders, which serve to carry the end reactions of the center girders to the side girders. The center girders frame into the webs of the cross girders and the latter frame into the webs of the side girders as close as practicable to their bearings on the columns.

Owing to the fact that the new girders are shallower than the old ones, the introduction of the former did not interfere

with the top laterals. The ties are supported on the center girders by means of timber shims placed on their top flanges. There was no bottom lateral system so the new iron could be placed readily from underneath by a derrick car standing on the track. The new steel required for this work consists only of new cross frames, connection angles, etc.

All of this reinforcement was designed and installed under the direction of J. E. Bernhardt, bridge engineer of the Chicago & Eastern Illinois, and under the general direction of L. C. Hartley, chief engineer. J. A. Dunn was the resident engineer. The Strobel Steel Construction Company of Chicago had the contract for the first division of the work, and the Kelly-Atkinson Construction Company, Chicago, for the second part involving the use of the old girders from the Okaw river bridge.

Orders Issued By the Regional Directors

List of Old Locomotives Requested; Suggestions Governing the Handling and Issuance of Embargoes

INTERCHANGE OF FREE TRANSPORTATION WITH SHORT LINES, NOT UNDER FEDERAL CONTROL.—Order 1600-1-A252 of the Eastern regional director states that for the balance of the year trip passes can be exchanged with short lines not under federal control on the same basis as prior to government control.

Age of Locomotives.—The Eastern regional director in Order 5001-1-A246 asks for a list of locomotives over 25 years old which are not good for efficient service. Also a list of locomotives over 20 years and less than 25 years old, the type or condition of which is such that they are not contributing to the efficiency of operation. Locomotives in either list which have been heretofore reported to the Regional Purchasing Committee for sale should be marked with an X.

Railroads Under Federal Control.—Order 1500-1-4-163A 245 of the Eastern regional director states that the Director, Division of Traffic, has advised that the following railroads should not have appeared in the Division of Traffic Circular No. 5, dated October 10, 1918, and will be eliminated in the first supplement: Leetonia Railway, Waynesburg & Washington Railroad, Rapid Railway, Thomas Railroad and Hoboken Railroad, Warehouse & Steamship Company. The New York and Hartford Transportation Company, appearing in the same circular, should read, Hartford and New York Transportation Company.

Use of Director General's Name on Menus, Folders, Etc.—Order 1500-1-3-19A242 of the Eastern regional director states that at the present time notices of the director general appearing on menus, folders, etc., show in many cases the director general's name and title at the top. As his name and title appear as signature to the notices, this is an undesirable duplication and should be eliminated. Since menus are not official publications in the sense that tariffs and time tables are, they should show only "United States Railroad Administration" and name of road concerned, omitting the director general's name entirely, except as signature to any of his official notices which are authorized to be printed on menus.

Form OS-4, Distribution of Locomotive Hours.—Order 1801-22A249 of the Eastern regional director states that the following instructions have been received from W. J. Cunningham, Manager, Operating Statistics Section, regarding Items 6 and 7 on Form OS-4:

In the case of locomotives belonging to one railroad which are sent to the shops of another railroad for repairs, the hours of such locomotives should be taken into account and reported by the owning road on Form

OS-4, under Items 6 and 7. Locomotives belonging to one railroad undergoing repairs. The hours of such locomotives should not be taken into account by the road which makes the repairs.

Statement of Unsettled Freight Claims.—Order 600-19A 247 of the Eastern regional director requests that the freight claim agents send to J. H. Howard, Manager, Claims and Property Protection Section, Southern Railway Building, Washington, D. C., a statement of all unsettled freight claims for damage by freezing during the winter of 1917-1918. The statement should be prepared by months, for November and December, 1917, and January, February and March, 1918, and then a recapitulation for the five months showing the total number of claims and the total amount of money involved. The date of movement of the freight will determine the month in which to include it.

Form O.S. 7, Condensed Income Accounts.—Order 1801-22A233 of the Eastern regional director states that the question has arisen as to what should be done with certain items of income not provided for specifically on Form O.S. 7, Condensed Income Account. With the approval of the Division of Public Service and Accounting, it is ruled that all items of income properly chargeable or creditable to the income account of the director general, not otherwise provided for in the Condensed Income Account, shall, for the purposes of the Condensed Income Account, only, be included net in an entry opposite a new item to be numbered Item 23-A, and called "Miscellaneous Income (Net)." This will take care of such items as income from unfunded securities and accounts, interest on bank deposits, etc.

Repairs to Locomotives.—The Southwestern regional director announces that the practice of railroads repairing locomotives at their home shops, which prevailed during corporate control, will be continued as far as practicable. When the facilities are insufficient and it is desired to move engines for repairs to shops on another line under the same federal manager's jurisdiction or shops under authority of another federal manager, the approval of the regional director must be previously obtained.

Issuance of Free Transportation.—Supplement 1 to Order 109 Southwestern regional director—same as last paragraph abstract of Order 1600-1A215 of Eastern regional director. See page 867, *Railway Age*, November 15.

Grain Embargo—Primary Markets.—In Supplement 6 to Circular 34, the Northwestern regional director states that the Food Administration anticipates a heavy movement of oats from Chicago and Milwaukee for war department and

Allied account. To secure the prompt movement into these markets agents at country stations should be directed to telegraph the Grain Control Committees all applications filed with them for permits to ship oats to those cities. All permits issued will be transmitted by wire to the loading station.

Handling and Issuance of Embargoes. The Southern regional director, in Circular Letter No. 405, calls attention to the large number of embargoes which have been issued which might have been avoided by a more judicious method of disposing of the immediate problem confronting the issuing line.

The Car Service Section has issued instructions outlining a method of imposing and handling embargoes, and it is not the purpose of this circular to suggest any modification of those instructions. However, the embargo is being used for the purpose of correcting local and temporary congestions or delays, and it is such action that is causing criticism. It is of prime importance, before imposing an embargo, that the road issuing should know positively that the conditions fully warrant the action taken and that other methods will not serve.

Frequently, embargoes are issued against consignees when a different handling of the situation would render promulgation of a formal embargo unnecessary. For instance, when an individual permits an accumulation of coal, the superintendent or other proper official should communicate with the Fuel Administration and ask that the coal be reconsigned or delivered to some other consignee, or be diverted to the road's own use; in this way, a particular accumulation can be gotten rid of more quickly and an embargo avoided. Also, the superintendent should judge of the consignee's situation, and if necessary telegraph the mines to stop loading to that particular firm until it is in position to resume prompt receipt and unloading. Similarly, accumulations of freight from local territory, resulting in a local or individual congestion, may be overcome by having the agent where the condition exists, through the superintendent, correct the trouble by a judicious placing of equipment at the loading point, or for a few days equipment might be refused altogether by a "stop order." Such a method will correct an unduly heavy flow of cotton to a compress, or seed to an oil mill, and the like.

As far as may be possible, embargoes against I.C.I. freight particularly should be avoided, for such immediately throw an unduly heavy burden upon the express company in handling freight in addition to normal express matter. In many cases, I.C.I. congestions can be lessened by arranging for merchandise cars to temporarily break bulk at other than a congested place, or by having the originating point accumulate freight intended for transfer at the congested point into way cars, to be loaded into overhead way cars. Accumulations of merchandise at stations in the cities and larger towns for local delivery ought to be removed by "campaign" methods among consignees, securing the co-operation of the commercial clubs and local city officials, thus obviating the necessity of an embargo.

Numbers of embargoes are issued for short periods—some as short as 24 hours—which have created the impression that the issuance is not properly supervised, being left largely to the discretion of subordinate officials. Chief operating officials should be charged with personally watching the imposition of each and every embargo, and be prepared to justify it as being the only means left the road for controlling the particular situation dealt with. There is no doubt but that a more careful study of conditions in advance of instructing an embargo and the careful scrutiny of embargoes as they are planned to be issued will materially curtail the number of them.

Roads are asked to inaugurate such a system of supervision as will eliminate all unnecessary embargoes, and to

arrange with the proper official that when instructions to issue an embargo are given the regional director be given at the same time a brief statement of the embargo and the reasons for it.

Load Assumption in the Design of Concrete Floor Slabs

BULLETIN No. 210 of the American Railway Engineering Association contains a monograph by George H. Tinker, bridge engineer, New York, Chicago & St. Louis, Cleveland, Ohio, which is an analysis and compilation of information which he collected from bridge engineers of various railroads in this country on the practices followed in assuming the distribution of loads in the design of concrete floor slabs and flat top culverts. The questions asked in the questionnaire submitted to the bridge engineers were as follows:

- (1) Is the designing of flat top culverts or reinforced concrete floor slabs, what is your practice in, considering the distribution of loads—longitudinally, transversely and vertically?
- (2) In connection with the above, what impact allowance do you use?
- (3) Can you refer to any investigations or data bearing upon this subject?

Answers to this questionnaire were received from 33 different roads. The author prepared an analysis of these replies as given in the table on the opposite page and followed it with his explanation as follows:

Explanations and Analysis

Under the head of "Distribution of axle loads, longitudinally," it will be noticed that 12 use "concentrated" loads and 6 "uniform" loads. These generally mean the same thing, *i. e.*, a moment taken from the moment table for concentrated loads or an equivalent load deduced from it. Combining these, it appears that 56 per cent use the moment table, 28 per cent distribute an axle load over five feet, 16 per cent over four, and three per cent over two feet.

Referring to the distribution transversely, it should be noted that all of those noted as 8 ft., 9 ft., 10 ft. or tie, indicate a uniform distribution for the length of the tie or slightly more, depending on whether the writer considers the distribution at the level of the base of rail or a few inches below the bottom of the tie. Those given as 12 ft., 13 ft., or 14 ft., are included with those specifying uniform distribution for the distance between tracks. From this it appears that 71 per cent distribute over the length of the ties, 23 per cent over the distance between tracks, and 6 per cent over a distance of five or six feet.

By "vertical" distribution is meant the lateral distribution at varying depths below the rail. Five each specify vertical, 6 in. per foot and 12 in. per foot, and four 24 per foot. Eleven others have been shown as vertical, as best indicating the distribution as shown by the context. Combining these, it appears that 44 per cent prefer a vertical distribution as against 56 per cent who prefer a lateral distribution varying from 3 in. per foot to 24 in. per foot. It should be noted that 24 in. per foot is a slope of 45 deg. at each end of the tie.

The impact requirements are various and intricate. Some of the salient points may be indicated as follows:

- 39 per cent use 50 per cent impact; 45 per cent use 50 per cent or less.
- 42 per cent use 100 per cent impact; 55 per cent use over 50 per cent.
- 60 per cent use constant impact for all depths of fill.
- 31 per cent use varying impact for different depths.
- 51 per cent use a simple percentage of impact.
- 45 per cent use a formula.

Distribution of Loads

SUMMARY OF RULES

	Longitudinally	Transversely	Vertically	Impact
1	.....	.....	.....	40% for ballast 10 ft. below culverts
2	Uniform 10 ft. ....	.....	Vertical Straight 50% .....	.....
3	Concentrated 10 ft. ....	.....	Vertical 100% .....	.....
4	3 ft. ....	.....	Vertical 75% for 1/2 ft. ....	.....
5	Concentrated Entire width of slab. Equal to increase of load. 25% for fl. slabs; full impact for culverts	.....	Vertical 50% .....	.....
6	Uniform; 12,000 lb. per sq. ft.; 8 ft. at base of rail. 6" per ft. ....	.....	Vertical 50% .....	.....
7	5 ft. for $d \geq 15'$ 10 ft. ....	.....	Vertical 95% for 1/2 ft. ....	.....
8	Concentrated 10 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L + D}$	.....
9	3 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L + D}$	.....
10	Uniform; 12,000 lb. per sq. ft. for culverts	.....	Vertical N impact for culverts, $S = \frac{300}{L}$	.....
11	Concentrated for floor slabs 14 ft. ....	.....	Vertical 50% of $S = \frac{300}{L}$	.....
	One, for reinf. parallel with track, 9 to 13 ft. ....	.....	Vertical $S = \frac{L + D}{L}$	.....
	5 ft. for reinf. at angle with track, 9 ft. ....	.....	Vertical $S = \frac{L + D}{L}$	.....
12	24" for $d < 24'$; Unif. for $d \geq 6'$ 9 ft. ....	.....	Vertical 50% for $d \geq 6'$ to zero for $d = 24'$ span	.....
13	5 ft. ....	.....	Vertical 50% for $d = 6'$ to zero for $d = 18'$ span	.....
14	Equiv. uniform load 8 ft. ....	.....	Vertical Lower unit stresses	.....
15	4 ft. ....	.....	Vertical Full impact, $S = \frac{300}{L}$	.....
16	.....	.....	Vertical 100% for $d < 5'$ to zero for $d = 20'$ span	.....
17	Concentrated 4 ft. ....	.....	Vertical Full impact, $S = \frac{300}{L}$	.....
18	Concentrated 8 ft. ....	.....	Vertical 100% .....	.....
19	Uniform 8 ft. ....	.....	Vertical None	.....
20	5 ft. ....	.....	Vertical Full impact, $S = \frac{300}{L}$	.....
21	.....	.....	Vertical Full impact, $S = \frac{300}{L}$	.....
22	Concentrated 9 ft. ....	.....	Vertical Unit stress for 1 ft. ....	.....
23	Concentrated 13 ft. ....	.....	Vertical Full impact	.....
24	5 ft. ....	.....	Vertical Full impact for min. fill to zero for 10' .....	.....
25	5 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....
26	5 ft. ....	.....	Vertical Full impact for $d = 18'$; $S = \frac{300 + L}{L}$ to 0 for $d = 12'$ .....	.....
27	Concentrated 10 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....
28	5 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....
29	3 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....
30	Concentrated 13 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....
31	5 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....
32	.....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....
33	Concentrated 10 ft. ....	.....	Vertical Full impact, $S = \frac{300 + L}{L}$	.....

D. L. 500 lb. per sq. ft. Uniform for span and all depths.

Regulations for Admitting Mexicans

A MEMORANDUM RECENTLY SUBMITTED to the secretary of labor jointly by the director general of the United States employment service and the commissioner general of immigration, contemplating the issuance of instructions for admitting Mexican laborers to the country, has been approved by the secretary and Commissioner General A. Caminetti has issued an order providing that immigration officers will attend to the admission of alien laborers, the procurement and recording of the necessary data regarding them, and eventually, will see to the return of the aliens.

Employment officers will attend to the distribution of admitted laborers, ascertaining first, of course, if and where such laborers are needed, and in every instance whether the

laborers are of the kind suited properly to fill the positions involved and that the wages offered are those prevailing in the vicinity; will see that laborers properly qualified are sent where a sufficient supply is not available and that none is sent to places where there is already a sufficiency of similar labor unemployed; will assist, in order to expedite the handling of business, in the procurement from prospective employers of the agreements required under departmental orders; and will co-operate with immigration officials in keeping track of laborers after they are admitted and in establishing and enforcing a follow-up system, to insure, as far as possible, the eventual return of those admitted.

The privilege of importing Mexican laborers under the departmental orders will not be extended to agents or agencies that operate on a fee basis.

General News Department

The Railway Fire Protection Association will hold its meeting in Chicago (December 3, 4 and 5) at Hotel Sherman instead of at Congress Hall as heretofore announced.

An airplane carrying forty passengers flew over London, England, on Saturday, November 16, piloted by Clifford B. Prodder. The airplane passed over the city at an altitude of 6,000 ft.

Senator Cummins has introduced a bill, S. 5027, to withdraw the authority heretofore granted to the President and to other departments of the government relating to priorities in transportation and to restrictions upon the sale and distribution of commodities.

Two freight houses, the inbound and the outbound, of the Chicago & Alton, at East St. Louis, Ill., were almost entirely destroyed by fire on November 12. The conflagration started with an explosion in a section of one of the buildings containing some empty gasoline drums. Total estimated loss, including 11 freight cars, \$150,000.

The United War Work Campaign was the subject of a telegram sent last week by Director General McAdoo to the various railroad corporations expressing the hope that they might contribute to it as generously as possible; the railroad corporations had responded in fine fashion to the Fourth Liberty Loan and he hoped they would show the same degree of patriotism in this instance.

Five watchmen and a "special agent," all employees of the Missouri, Kansas & Texas and the St. Louis-San Francisco, were arrested at St. Louis on November 12, together with five other persons, alleged to be connected with extensive thefts with which the railroad employees were charged. The detectives say that goods already recovered or traced, in connection with the prosecution of these men, will amount to \$75,000 in value. Five tons of copper wire, all in one car, is one of the items mentioned.

The Russian Railway Service Corps, both officers and enlisted men, will have the same status and benefits as officers and enlisted men in the railway engineering organizations of the United States Army if Congress passes a bill which has been introduced by Senator Poindexter and referred to the Senate Committee on Military Affairs. This corps was enlisted and sent to Russia under special arrangement with the Russian government, which was to pay its expenses, and the members have not been considered as members of the United States Army.

The Priorities Division of the War Industries Board has announced the formal cancellation of outstanding priority ratings except on contracts for the Navy, the Emergency Fleet Corporation and the telegraph and telephone companies, effective November 22. The order does not, however, imply the cancellation of priority orders, directions and requests which are retained for the protection of those who have respected and observed them. Application for priority service may still be made in urgent cases and priorities have been recognized. It is declared to be in the public interest that all possible assistance be rendered toward stimulating the construction of railroad locomotives and the manufacture of other materials, equipment and supplies. Preference list number two and supplement and amendments are also cancelled. It is the intention to continue all maximum prices thus far established on commodities.

Railway Club of Pittsburgh

As the date of the regular meeting of the Railway Club of Pittsburgh occurs Thanksgiving Day, the meeting is being held this week (Thursday).

Coal Zoning System Saving Car Miles

Estimates made earlier in the fuel year, that approximately 160,000,000 car miles would be saved in the coal year through the operation of the zone system for the distribution of bituminous coal, are being fully realized, it is announced by the Fuel Administration.

This system has had a large share in bringing the nation's supply of bituminous coal to its present proportions, which, says the statement, will, with patriotic economy, be sufficient for the winter's requirements.

By this method of distribution the coal supply of all sections of the country is normally derived from mines relatively near, thus preventing abnormal and wasteful transportation movements. The latest figures show that 368,858,000 net tons of bituminous coal has been produced and delivered since April 1, about 60 per cent of which is affected by the zone system. Even more than the originally estimated 160,000,000 car miles will be saved in round-trips to and from the mines, the equivalent of a five per cent increase in the production.

Sailing Day Plan in Northwestern Region

With a view to increasing the efficiency of cars and decreasing the cost of operation, R. H. Aishton, regional director of the northwestern region, has established a committee known as the L. C. L. and Sailing Day Plan Committee. Practically every important station in the Northwestern region has now in effect plans for starting cars to specified points on certain days, so that instead of cars going out with two or three tons, they are now moving on a regular daily, semi-weekly or tri-weekly service with full loads. The saving of cars amounts to over 20,000 per month. The carrying out of this plan has also reduced the amount of freight handled at transfer points to such an extent that it will soon be possible to eliminate some of the transfer stations entirely.

The claim departments report that the loss and damage to merchandise has been reduced quite materially in that at all of the main points in the region the freight has been consolidated on one, two or three lines, making through cars, whereas under the old system it was necessary to pass it through several transfer points before reaching its ultimate destination.

The operation of pick-up cars has also been regulated so that local freight trains are making mileage with loads instead of empties.

Innumerable letters have been received from shippers expressing favorable comment, particularly on the fact that schedules are now being maintained. The concentration at certain centers of freight destined to points in the East, making through cars to Buffalo, Cleveland, New York, etc., has eliminated largely the congestion that existed at Chicago and other gateways; has expedited the movement of freight, and reduced materially the embargoes.

This plan has been worked out in such a way that it will not interfere with the interests of the shipping public, although the saving in dollars and cents in the way of car mileage, extra time for crews, etc., is large. At Chicago with its innumerable receiving and transfer stations the inauguration of the sailing day plan was delegated to the terminal manager and on September 30, he was able to announce to the public that cars to certain points would move on certain days, naming the routes by which the freight would move; and shippers are gradually getting used to concentrating their freight for through cars moving on established schedules.

The records of a number of shipments selected at random show a saving of 24 hours from Chicago to many places in Iowa, Wisconsin and other states.

Railway Revenues and Expenses for September

Net operating income of the railways in September, as reported by the Interstate Commerce Commission, continued to show an increase, although less in amount than was shown in the previous two months since the rate advances were put into effect, amounting to \$99,038,750, as compared with \$94,982,497 in September, 1917. Operating revenues increased \$129,000,000, while operating expenses increased \$126,000,000, and taxes (exclusive of war taxes) were slightly less than in 1917. For the first six months of the year there was a decrease in net operating income, in July there was an increase of \$45,000,000, in August an increase of \$26,000,000, and in September the increase was slightly over \$5,000,000.

For the nine months period the net operating income was \$518,656,323, as against \$730,414,706, a decrease of \$212,000,000, so that up to the end of September the Railroad Administration was still some \$200,000,000 short of the nine months' proportion of its guarantee, estimated at over \$900,000,000 for the year. Railway operating revenues for the nine months were \$3,541,343,402, an increase of \$570,000,000, while operating expenses were \$2,861,753,017, or \$779,000,000 greater than in 1917. Taxes show an increase of nearly \$8,000,000. The increase in revenues includes \$367,000,000 increase in freight, \$173,000,000 increase in passenger, and \$11,000,000 increase in express, while mail revenues fell off nearly \$5,000,000. The expenses include an increase of

RAILWAY REVENUES AND EXPENSES FOR SEPTEMBER

UNITED STATES										EASTERN DISTRICT									
		Amount		Per mile of road operated				Amount		Per mile of road operated				Amount		Per mile of road operated			
Item		1918	1917	1918	1917			1918	1917	1918	1917			1918	1917	1918	1917		
1. Average number miles operated.....		367,700	362,700.07	.....	.....			367,700	362,700.07	.....	.....			367,700	362,700.07	.....	.....
REVENUES																			
2. Freight.....		\$341,058,242	\$242,174,017	\$1,468	\$1,041			\$153,859,702	\$107,585,003	\$2,567	\$1,807			\$153,859,702	\$107,585,003	\$2,567	\$1,807		
3. Passenger.....		103,772,737	82,527,770	455	355			47,400,027	36,515,239	796	613			47,400,027	36,515,239	796	613		
4. Mail.....		4,343,521	4,771,814	19	21			1,622,985	1,869,916	27	31			1,622,985	1,869,916	27	31		
5. Express.....		13,731,911	9,402,030	59	40			6,619,624	4,464,749	113	75			6,619,624	4,464,749	113	75		
6. All other transportation.....		11,382,328	9,856,985	49	42			6,714,190	5,421,522	116	93			6,714,190	5,421,522	116	93		
7. Incidental.....		11,492,630	9,811,691	49	42			6,911,297	5,537,965	116	93			6,911,297	5,537,965	116	93		
8. Joint facility—Cr.....		305,984	305,986	.....	.....			.....	.....	.....	.....			.....	.....	.....	.....
9. Joint facility—Dr.....		153,820	141,896	1	1			80,009	80,615	5	5			80,009	80,615	5	5		
10. Railway operating revenues.....		488,135,960	358,798,497	2,100	1,542			222,336,812	161,514,663	3,734	2,712			222,336,812	161,514,663	3,734	2,712		
EXPENSES																			
11. Maintenance of way and structures.....		59,962,827	40,658,262	258	175			26,424,554	17,828,262	444	296			26,424,554	17,828,262	444	296		
12. Maintenance of equipment.....		117,967,295	58,375,169	508	251			53,998,100	27,530,068	907	461			53,998,100	27,530,068	907	461		
13. Traffic.....		3,457,832	5,393,805	15	23			1,560,634	2,139,061	26	36			1,560,634	2,139,061	26	36		
14. Transportation.....		176,977,007	129,430,372	762	556			85,036,621	63,260,401	1,428	1,063			85,036,621	63,260,401	1,428	1,063		
15. Miscellaneous operations.....		3,429,153	3,067,763	15	13			1,702,487	1,456,487	29	24			1,702,487	1,456,487	29	24		
16. General.....		9,171,051	8,112,884	39	35			4,030,195	3,484,571	68	59			4,030,195	3,484,571	68	59		
17. Transportation for investment—Cr.....		360,275	721,574	2	3			55,343	60,873	1	1			55,343	60,873	1	1		
18. Railway operating expenses.....		370,604,890	244,316,681	1,595	1,050			172,697,248	115,637,699	2,901	1,942			172,697,248	115,637,699	2,901	1,942		
19. Net revenue from railway operations.....		117,531,070	114,481,816	505	492			49,639,564	45,876,964	833	770			49,639,564	45,876,964	833	770		
20. Railway tax accruals (excluding "War Taxes").....		16,102,550	16,797,896	69	72			6,158,448	6,202,158	103	104			6,158,448	6,202,158	103	104		
21. Uncollectible railway revenues.....		38,567	45,993	.....	.....			16,670	13,298	.....	.....			16,670	13,298	.....	.....
22. Railway operating income.....		101,389,953	97,637,927	436	420			43,464,446	39,661,508	730	666			43,464,446	39,661,508	730	666		
23. Equipment rents.....		108,838	11,909,370	14	17			1,538,359	1,538,359	17	24			1,538,359	1,538,359	17	24		
24. Joint facility rent (Dr. Bal.).....		1,422,817	1,146,160	6	5			728,791	609,396	12	10			728,791	609,396	12	10		
25. Net of items 22, 23 and 24.....		99,038,750	94,982,497	426	408			41,732,198	36,469,533	701	613			41,732,198	36,469,533	701	613		
26. Ratio of operating expenses to operating revs. %		75.92	68.09	.....	.....			77.67	71.60	.....	.....			77.67	71.60	.....	.....
SOUTHERN DISTRICT										WESTERN DISTRICT									
		Amount		Per mile of road operated				Amount		Per mile of road operated				Amount		Per mile of road operated			
Item		1918	1917	1918	1917			1918	1917	1918	1917			1918	1917	1918	1917		
1. Average number miles operated.....		42,782.92	42,856.57	.....	.....			130,077.60	130,314.37	.....	.....			130,077.60	130,314.37	.....	.....
REVENUES																			
2. Freight.....		\$52,809,802	\$35,800,581	\$1,234	\$835			\$135,388,738	\$98,788,433	\$1,041	\$758			\$135,388,738	\$98,788,433	\$1,041	\$758		
3. Passenger.....		19,360,876	12,301,910	452	287			39,005,834	33,710,712	300	259			39,005,834	33,710,712	300	259		
4. Mail.....		705,983	722,143	17	17			2,014,553	2,179,755	15	17			2,014,553	2,179,755	15	17		
5. Express.....		1,900,456	1,087,214	44	25			3,111,831	3,880,067	40	29			3,111,831	3,880,067	40	29		
6. All other transportation.....		799,832	787,530	19	19			3,868,932	3,640,400	30	28			3,868,932	3,640,400	30	28		
7. Incidental.....		1,268,596	978,146	30	23			3,312,737	3,295,580	25	25			3,312,737	3,295,580	25	25		
8. Joint facility—Cr.....		111,070	95,991	3	2			114,145	99,111	1	1			114,145	99,111	1	1		
9. Joint facility—Dr.....		23,348	19,114	1	.....			50,463	42,167	.....	.....			50,463	42,167	.....	.....
10. Railway operating revenues.....		76,933,267	51,754,410	1,798	1,208			188,865,881	145,529,424	1,452	1,117			188,865,881	145,529,424	1,452	1,117		
EXPENSES																			
11. Maintenance of way and structures.....		9,558,313	6,208,649	223	145			23,979,960	16,621,351	384	128			23,979,960	16,621,351	384	128		
12. Maintenance of equipment.....		18,449,981	9,432,337	431	220			45,519,214	21,412,764	150	164			45,519,214	21,412,764	150	164		
13. Traffic.....		666,813	973,627	16	23			1,230,385	2,281,117	50	37			1,230,385	2,281,117	50	37		
14. Transportation.....		26,531,160	17,323,644	620	404			65,409,226	48,846,327	103	175			65,409,226	48,846,327	103	175		
15. Miscellaneous operations.....		328,889	267,212	8	6			1,397,727	1,344,342	11	10			1,397,727	1,344,342	11	10		
16. General.....		1,154,576	1,108,110	34	28			5,422,522	5,422,522	25	21			5,422,522	5,422,522	25	21		
17. Transportation for investment—Cr.....		75,268	143,054	2	3			229,664	517,647	2	4			229,664	517,647	2	4		
18. Railway operating expenses.....		56,894,464	35,254,525	1,330	823			141,013,178	93,424,457	1,084	717			141,013,178	93,424,457	1,084	717		
19. Net revenue from railway operations.....		20,038,803	16,499,885	468	385			47,852,703	52,104,967	368	400			47,852,703	52,104,967	368	400		
20. Railway tax accruals (excluding "War Taxes").....		2,359,573	2,319,968	55	54			7,584,529	8,275,770	59	64			7,584,529	8,275,770	59	64		
21. Uncollectible railway revenues.....		7,812	5,527	.....	.....			14,085	27,168	.....	.....			14,085	27,168	.....	.....
22. Railway operating income.....		17,671,418	14,174,390	413	331			40,254,089	43,802,029	309	336			40,254,089	43,802,029	309	336		
23. Equipment rents.....		118,401	1,194,903	3	28			193,472	1,121,594	2	31			193,472	1,121,594	2	31		
24. Joint facility rent (Dr. Bal.).....		269,210	175,604	6	4			424,816	361,160	3	3			424,816	361,160	3	3		
25. Net of items 22, 23 and 24.....		17,283,807	15,193,689	404	355			40,022,745	43,519,275	308	332			40,022,745	43,519,275	308	332		
26. Ratio of operating expenses to operating revs. %		73.05	68.12	.....	.....			74.74	71.74	.....	.....			74.74	71.74	.....	.....

† Debit item.

Note.—The average railway operating income corresponding to item No. 22 above for the month of September in the three years 1914, 1915, 1916, included in the "test" period of three years ended June 30, 1917, was \$415 per mile of line for the United States.

\$115,000,000 in maintenance of way and structures, \$277,000,000 increase in maintenance of equipment, and \$380,000,000 increase in transportation. General expenses were \$11,000,000 greater, while traffic expenses were about \$10,000,000 less than in 1917. The figures for September follow:

Engineering Education to Be Discussed with British Educational Mission

A joint meeting of the British Educational Mission to the United States and the Society for the Promotion of Engineering Education will be held at the Massachusetts Institute of Technology, Cambridge, Mass., December 6-7.

The topics to be discussed are:

"The Organization of Engineering Education in Great Britain and the United States." Discussion led by a member of the Mission representing Great Britain and Chas. S. Howe, President Case School of Applied Science, representing the United States.

"The Effect of the War on Engineering Education in Great Britain and the United States." Discussion led by a member of the Mission representing Great Britain and Dr. C. R. Mann, Massachusetts Institute of Technology, representing the United States.

"The Liberal Element in Engineering Education." Discussion led by a member of the Mission representing Great Britain and Professor George F. Swain, Harvard University, representing the United States.

The National Railway Appliances Exhibit

The Board of Directors of the National Railway Appliances Association held a meeting on November 12, and allotted space for the exhibit to be held at the Coliseum in Chicago, on March 17 to 20, 1919, inclusive.

The exhibitors who are awarded space are listed below:

Adams & Westlake Company.
Adams Motor Manufacturing Company.
A. G. A. Railway Light & Signal Company.
Air Reduction Sales Company.
Ajax Rail Anchor Company.
Alexander Milburn Company.
American Abrasive Metal Company.
American Hoist & Derrick Company.
American Steel & Wire Company.
The American Valve & Meter Company.
The Anchor Company.
Armco Iron Culvert & Flume Manufacturers' Association.
Associated Manufacturers of Malleable Iron.
The Austin Company.
Balkwill Manganese Crossing Company.
Benjamin Electric Manufacturing Company.
Bethlehem Steel Company.
The Buda Company.
Burden Iron Company.
Bryant Zinc Company.
E. M. Camp.
Carbic Manufacturing Company.
Carnegie Steel Company.
Cast Iron Pipe Association.
Chicago Bridge & Iron Works.
Chicago Flag & Decorating Company.
Chicago Malleable Castings Company.
Chicago Railway Signal & Supply Company.
Chipman Chemical Engineering Company.
Cleveland Railway Supply Company.
Crerar, Adams & Co.
Diamond State Fibre Company.
Paul Dickinson, Inc.
The Duff Manufacturing Company.
Edison Storage Battery Company.
Electric Storage Battery Company.
Thos. A. Edison, Inc.
Fairbanks, Morse & Co.
Fairmont Gas Engine & Railway Motor Car Company.
Federal Signal Company.
The Frictionless Rail.
General Electric Company.
General Railway Signal Company.
Wm. Graver Tank Works.
Grip Nut Company.
W. & L. E. Gurley.
Hall Switch & Signal Company.
Hegeman-Castle Corporation.
Hatfield Rail Joint Manufacturing Company.
Haves Track Appliance Company.
Hubbard & Company.
Hussey Manufacturing Company.
Ingersoll-Rand Company.

H. W. Jones Malleable Castings.
O. J. Jordan Company.
Kalamazoo Railway Supply Company.
Kastine Company.
Kelly-Derby Company.
Kilbourne & Jacobs Manufacturing Company.
Keystone Grinder Manufacturing Company.
Kerite Insulated Wire & Cable Company.
Lackawanna Steel Company.
Layne & Bowler Company.
Lipman Refrigerator Car & Manufacturing Company.
Long, Chas. R., Jr.
M. W. Supply Company.
Macomber & Whyte Rope Company.
MacRae's Blue Book Company.
Madden Company.
Marsh & Truman Lumber Company.
The C. F. Massey Company.
McGraw-Hill Publishing Company.
The Miller Train Control Corporation.
Mercury Manufacturing Company.
Monroe Calculating Machine Company.
Mudge & Co.
National Carbon Company.
National Lead Company.
The National Lock Washer Company.
The National Malleable Castings Company.
Northwestern Motor Company.
Nichols, Geo. P. & Bro.
National Surface Guard Company.
Ogle Construction Company.
Okonite Company.
O'Malley Beare Valve Company.
Page Steel & Wire Company.
Pittsburgh-Des Moines Steel Company.
Pocket List of Railroad Officials.
Positive Rail Anchor Company.
Protective Signal Manufacturing Company.
Pyrene Mfg. Company.
Q & C Company.
The Rail Joint Company.
The Railroad Supply Company.
Railway Review.
Reading Specialties Company.
Signal Accessories Company.
Simmons-Boardman Publishing Company.
Southern Pine Association.
Squire Cogswell Company.
Snow Construction Company, T. W.
Standard Asphalt & Refining Company.
Standard Underground Cable Company.
Toledo Scale Company.
Track Specialties Company.
Templeton, Kenly & Co.
Underwood Typewriter Company.
Union Switch & Signal Company.
U. S. Wind Engine & Pump Company.
Verona Tool Works.
Volkhardt Company.
Walls Frogless Switch & Manufacturing Company.
Waterbury Battery Company.
Wayne Oil Tank & Pump Company.
Western Electric Company.
Wyoming Shovel Works.

Preference List to Be Cancelled

The entire preference list of the War Industries Board, a classification of industries in the order in which they were regarded as essential to the winning of the war, which was the basis for orders giving priority as to transportation, fuel and raw materials, will be cancelled at once, it is announced by Edwin B. Parker, chairman of the priorities committee. Priority orders will continue to be issued, however, to aid in reconstruction work, giving preference in the allocation of materials and facilities to railroads, shipbuilding plants, waterways, public utilities, etc. Steel is already being offered to various manufacturers with assurance of prompt deliveries without priority orders.

The War Industries Board, through the priorities commissioner, has issued a rule giving to lumber orders for the railroads a priority rating higher than that accorded any other class of orders. Lumber priorities for the War Department are cancelled, while priorities for the Navy, Shipping Board and other departments are given an automatic rating of Class A-5. All orders heretofore or hereafter placed by any railroad company in the United States, except private railroads not operated as common carriers, are to be accorded by the mills receiving the order holding the same a rating of Class A-3, the effect of which is to give all railroad orders, whether or not the railroad is under the jurisdiction of the Railroad Administration, a rating higher than that accorded any other class of orders.

Traffic News

Thirty-five thousand women and children, whose homes are in Canada, but who are now in Great Britain and must soon return, will constitute the first after-war passenger-traffic problem of the railways of Canada. It is expected that these will come over before the demobilization of the Canadian soldiers begins. The Canadian Railway War Board has no idea of discontinuing its activities at present.

The annual convention of the National Industrial Traffic League opened at the Hotel Sinton, Cincinnati, Thursday morning with a record attendance. G. M. Freer, president for the past three years was unanimously re-elected. One hundred and twenty-three new members were admitted during the past year, 15 resigned and 2 were dropped for non-payment of dues, making the total membership 536, a net gain of 106, at the Thursday morning session progress reports were submitted by the committees on weighing, on baggage and on railroad leases and sidetrack agreements.

Coal Loading

The total loading of all kinds of coal by the railroads during the week ended November 2 amounted to 219,792 cars, as compared with 222,547 in the corresponding week of 1917, according to a weekly report issued by the Railroad Administration. A similar decrease is shown in the estimated reports for the week ended November 9 and is attributed to influenza among the miners and railroad workers. The total increase for the year up to November 9 as compared with the same period in 1917 was 698,661 cars. According to the Geological Survey report the percentage of reduction of full-time output on account of car shortage for the week of November 2 was 5 per cent.

Reduced Fare for Returning Soldiers

Because of the law allowing only 3½ cents a mile for transportation and sustenance for soldiers and in order to make certain that soldiers will not be required to pay any part of the expense of returning to their homes after being discharged from the Army, Director General McAdoe has authorized a reduction of one-third in the current coach fare for this purpose, making the rate to them approximately two cents a mile. It is estimated that the resulting total reduction of railroad revenue will be \$12,000,000. If the discharged soldiers require sleeping car accommodations, they will pay the additional charge of approximately five mills a mile, in tourist cars, and will have money left to pay for their meals. The low rate will be applicable until further notice to all discharged soldiers as well as to the 132,000 men stationed at the 14 camps throughout the country.

To Improve Transportation to South America

W. G. McAdoe, secretary of the treasury, as chairman of the United States Section of the International High Commission has taken up with the Shipping Board the question of providing adequate transportation facilities between Latin America and the United States and has made to the Shipping Board a number of suggestions relating to the further prosecution of its constructive plans. These suggestions include the immediate availability of ships for both the East and West coasts of South America and the careful planning of freight allocation so as to avoid empty cargo space on south-bound trips. Improvement of service for the West Indies and the avoidance of confusion and crowding of schedules by a careful adjustment of calling dates are also covered. The United States Section of the International High Commission has requested the Shipping Board to permit vessels now plying between the United States and South American countries, to continue in such employment, except so far as diversion therefrom may be a public necessity.

Commission and Court News

Interstate Commerce Commission

Classification Hearing

Hearings on various aspects of the proposed consolidated freight classification were held at Washington before Examiner Disque, of the Interstate Commerce Commission, all of last week and most of the present week, at which a large number of shippers and railroad traffic officers gave facts and opinions concerning the proposed rates on various commodities. J. C. Colquitt, the commission's freight classification representative, sat with Examiner Disque. An important announcement was made at the hearing that the commission is considering extending the provisions of the Official Classification, with the rates of the Central Freight Association territory scale, to the territory now covered by the Illinois classification, which would indicate that the commission is in accord with the plan of the Railroad Administration for publishing interstate rates and classifications which shall supersede those of the states.

Personnel of Commissions

Charles E. Elmquist, the representative at the national capital of the National Association of Railway and Utilities Commissioners, who was elected president of the association at its convention last week, has also been appointed general solicitor for the state commissions in addition to his former duties as solicitor for the valuation committee of the association and secretary of the Special War Committee. He has also been given an assistant and his office will be a general clearing house at Washington for the state commissions, in obtaining information and in appearing before Congressional committees. The Special War Committee was continued, to give attention to after the war problems.

Court News

Six months in jail, and a fine of \$1,000, is the penalty which has been imposed in the United States District Court, at Charleston, W. Va., in the case of the government against I. K. Dye, formerly traffic manager of the Coal & Coke Railroad Company, for violation of law in unjust discrimination in the distribution of coal cars to mines. Dye was arrested in November, 1917, and was indicted on five counts. According to press despatches he was convicted of favoring certain mines with which he had contracts, at the expense of other mines in the same territory. Attorneys for Dye announced on Tuesday of this week that they would appeal the case to the higher court. Judge Keller suspended execution of the sentence to allow for the appeal.

Hours of Service—Periods of Rest—Daytime Offices

The Circuit Court of Appeals, Eighth Circuit, holds that two periods, one of 3 hours 7 minutes, and one of 2 hours 24 minutes, during which a telegraph operator in a railroad station, who lived in the building, was off duty, and during which it was his practice to sleep, were substantial periods for rest, and not to be counted as periods of labor under the Hours of Service act.

It is also held that a railroad office, in which the regular hours of the telegraph operator, who is also station agent, are from 7 a. m. to 6 p. m. daily, with an intermission of an hour at noon for dinner, and in which he is required to serve ordinarily from 30 to 40 minutes at 1235 a. m. and from 30 to 40 minutes at 420 a. m., in order to attend to trains, but in which the aggregate of his time on duty does not exceed 13 hours in any 24-hour period, is an office "operated only during the daytime" within the meaning of the act. Judgment for the railroad was affirmed.—United States v. Minneapolis, St. Paul & Sault Ste. Marie, 250 Fed., 382. Decided March 11, 1918.

Equipment and Supplies

Cars Constructed in Railroad Shops

The statement of new cars constructed in railroad shops during the month of September, referred to in last week's issue, is as follows:

Class of Cars	Steel	Wood	Total
Passenger:			
Passenger baggage			
Milk	1		1
Total passenger equipment	1		1
Freight:			
Stock	22		22
Drop	144		144
Coal	30		30
Flat	7		7
Wear			
Caboose	88	68	156
Box	48		48
Refrigerator	10		10
Total freight equipment	221	68	289

From January 1 to September 30, 6486 freight cars and 92 passenger cars were constructed in railroad shops.

Railroad Supplies for Army in France

Whether the outstanding orders for cars, locomotives and other railroad supplies placed through the Director General of Military Railways for service in France shall or shall not be cancelled, has not yet been determined. They have been held up since the signing of the armistice, pending a decision as to whether the French government desires the orders completed for its account. This includes the 40,000 freight cars recently ordered. An arrangement was made with the French government by which it might acquire after the war the railway material sent over for the use of the American Expeditionary Forces.

Up to November 1 there had been shipped abroad 16,813 standard-gage and 3,650 narrow-gage freight cars, 1,326 locomotives and 440,650 tons of rails and fittings. The shipments included 251,000 tons of 80-pound rails, 47,955 tons of 67½-pound Russian type rail, 17,053 tons of 25-pound rail and 45,159 tons of fabricated portable track; 14,668 tons of angle bars, 13,393 tons of track bolts, 6,281 tons of spikes, 9,622 tons of (narrow gage) turnouts and 3,261 tons of slip switchers.

Locomotive Deliveries

A total of 56 locomotives have been delivered by the various builders to the railways during November up to and including November 9, of which 48 were of the U. S. R. A. designs. They were distributed as follows:

Works	Road	Number	Type
Atlantic Coast Line	Atlantic Coast Line	3	U. S. R. A. 6-wheel switchers
	Central New Jersey	1	U. S. R. A. 6-wheel switcher
	Chicago & North Western	1	Mikado
	East St. Louis & Chicago	5	U. S. R. A. heavy Mikados
	Hocking Valley	1	Mallet
	New York Central	12	U. S. R. A. 8-wheel switchers
	Michigan Central	6	U. S. R. A. light Mikados
	Rutland	1	U. S. R. A. 8-wheel switcher
	Southern	14	U. S. R. A. light Mikados
	Wheeling & Lake Erie	2	U. S. R. A. 8-wheel switchers
Total		40	
Illinois Central	Illinois Central	1	Mikado
	New York Central	4	Mohawk
	Total	5	
McAlister, Topoka & Santa Fe	McAlister, Topoka & Santa Fe	1	Mikado
	Cleveland, Cin., Chic. & St. L.	4	U. S. R. A. light Mikados
	Total	5	
Grand total		56	

In the statement issued on page 876 of the November 15 issue a mistake was made in some of the items for the period of October 27 to 31. Under the American Locomotive Company the deliveries for the Erie should have read: one U. S. R. A. Eight-wheel switcher and five U. S. R. A. heavy Mikados; for the Southern, 11 U. S. R. A. light Mikados, and

for the New York Central, two U. S. R. A. Eight-wheel switchers.

In addition to the number of new locomotives built last month, which was published in last week's issue, 19 were constructed in railway shops, as follows:

Central New Jersey	1	Switcher
Louisville & Nashville	2	
Pennsylvania Lines East	13	Decapod
Pennsylvania Lines East	1	Pacific
Southern Pacific		
Total	19	

Standard Car Deliveries

Of the 100,000 standard freight cars ordered by the Railroad Administration in April, 4,588 had been delivered up to November 14, and of the orders for 1,025 standard locomotives, since increased to 2,030, a total of 426 had been delivered up to that time. The cars were delivered by the various car building companies as follows: American Car & Foundry Company, 1,595; Haskell & Barker Car Company, 594; Pressed Steel Car Company, 1,112; Pullman Company, 146; Ralston Steel Car Company, 191, and Standard Steel Car Company, 950.

The Railroad Administration is now giving out a weekly statement of the car deliveries similar to its statement of locomotive deliveries. The combined statements for the two weeks ending November 9 show the following deliveries amounting to about 800 cars per week:

Road	Number	Type	Manufacturer	Total accepted for given roads
B. & O.	15	55 T. S. Hopper	A. C. & F. Co.	250
C. & N. W.	245	40 T. D. S. Box	A. C. & F. Co.	972
C. & N. W.	197	50 T. Comp. Gond.	A. C. & F. Co.	607
C. C. & St. L.	21	55 T. S. Hopper	A. C. & F. Co.	21
C. C. & St. L.	136	55 T. S. Hopper	Ralston Co.	126
C. C. & St. L.	112	55 T. S. Hopper	Std. S. Car Co.	112
C. C. & St. L.	151	55 T. S. Hopper	Pressed Steel Car Co.	151
C. & N. W.	54	50 T. Comp. Gond.	Hask. & Bark.	484
P. & L. E.	49	50 T. S. Hopper	Pressed Steel Car Co.	49
U. S. & O.	177	50 T. S. Hopper	Pressed Steel Car Co.	177
N. Y. C.	90	50 T. Comp. Gond.	Pressed Steel Car Co.	90
N. Y. C.	338	55 T. S. Hopper	Std. S. Car Co.	500
N. Y. C.	81	55 T. S. Hopper	Pressed Steel Car Co.	501
Total	1,656			4,040

Miscellaneous

The Ogle Construction Company, Chicago, has received a number of contracts for coaling stations on various railroads. It will build a 150-ton capacity frame station on a concrete foundation for the Colorado & Southern at Ft. Collins, Colo., and a station of like capacity for the same road at Trinidad, Colo. These stations will cost about \$18,000 each. It will also build similar stations for the Ft. Worth & Denver City at Amarillo, Texas, Childress and Wichita Falls. It has orders from the Cleveland, Cincinnati, Chicago & St. Louis for a 400-ton station, with a steel sub-structure and a timber superstructure, at Ansonia, Ohio, and a 100-ton timber station on a concrete foundation at Sheff, Ind. At Nelson, Ill., it will build a 350-ton timber station on a concrete foundation for the Chicago & North Western. The station will include a 300-ton coal pocket on one side of the four main line tracks and a 50-ton pocket on the other side, with an auxiliary conveyor connecting them. The company has orders from the same road to build 150-ton stations with frame superstructure and concrete foundation at Casper, Wyo., Scribner, Neb., and Onawa, Iowa.

Signaling

BUFFALO, ROCHESTER & PITTSBURGH.—A contract has been awarded to the General Railway Signal Company for the installation of an electric interlocking plant at the crossing of the B., R. & P. with the Erie and the Pennsylvania at Riverside Junction, N. Y.

NEW YORK MUNICIPAL RAILWAY CORPORATION.—This company has awarded a contract to the General Railway Signal Company for the installation of alternating current block signals and interlocking on its line under ground, to be built in Sixtieth street, Manhattan, New York City. This line extends under the East River to the Queensboro Plaza, Long Island City.

Supply Trade News

At a meeting of the board of directors of Fairbanks, Morse & Co., at Chicago, November 13, R. H. Morse was elected vice-president in general charge of purchasing and traffic, and will also continue as a director; **C. W. Pank**, general director of sales, was elected vice-president in charge of sales of all factory products; **W. S. Hovey**, general manager of the plant in Beloit, Wis., was elected vice-president in charge of general manufacturing at all factories; **W. E. Miller**, first vice-president, was elected vice-president and treasurer, and **F. M. Boughey**, retired as treasurer to become secretary and controller; all with headquarters at Chicago.

Latin-American Demand for American Steel

Latin-American concerns wishing to specify American structural steel for building and railway purposes can now do so without difficulty by referring to pamphlets in Spanish and English, just issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce. These pamphlets are intended to facilitate sales of such materials in Latin countries, and are published in response to numerous requests from those countries.

The text defines with scientific accuracy the generally accepted American standards, as adopted by the American Society for Testing Materials, and the publication of the series has been made possible by the co-operation of the American Society of Civil Engineers, the Bureau of Standards and the Bureau of Foreign and Domestic Commerce.

The five pamphlets announced are, "Standard Specifications for Structural Steel for Buildings," Industrial Standards No. 8; "Standard Specifications for Structural Steel for Locomotives," Industrial Standards No. 9; "Standard Specifications for Carbon Steel Bars for Railway Springs," Industrial Standards No. 10; "Standard Specifications for Quenched and Tempered Carbon-Steel Axles, Shafts, and Other Forgings for Locomotives and Cars," Industrial Standards No. 12; and "Standard Specifications for Carbon Steel Forgings for Locomotives," Industrial Standards No. 13. These can be purchased at five cents a copy from the Superintendent of Documents, Government Printing Office, Washington, D. C., or from any of the district or co-operative offices of the Bureau of Foreign and Domestic Commerce. Other numbers of the series will follow.

Trade Publications

STANDARD WOODEN BUILDINGS. The Austin Company, Cleveland, O., has issued an eight-page circular introducing the standardized wooden buildings built by that company to afford the same areas, framing arrangements and other features provided in its standard structural steel buildings. These involve the use of wooden columns and roof purlins with Austin lattice trusses. The smaller standards can be completed within 30 days and the larger ones in 60 days.

GRAPHITE PRODUCTS.—The United States Graphite Company, Saginaw, Mich., has published General Catalogue, No. 20, which gives detailed information about the line of lubricating graphite, greases, paints, etc., manufactured by this company. It also includes the report of tests made by the chief engineer of the Interborough Rapid Transit Company of New York, to determine the efficiency of graphite under actual operating conditions, and a number of microphotographs and curves.

UNITED WAR WORK FUND.—This fund was the recipient of \$130 on November 15, contributed by passengers on the Twentieth Century Limited. The train was 105 minutes late in reaching Chicago, and the rebate slips of 130 of the 137 passengers were given to George W. Cobb, who turned the amount over to this fund.

Railway Construction

BALTIMORE & OHIO CHICAGO TERMINAL.—A contract has been given to the Drumm Construction Company, Chicago, for building an extension to the roundhouse at Burley Avenue and East Eighty-seventh street, Chicago; the existing 15 stalls 70 feet in length will each be extended 33 feet. The addition will be of reinforced concrete, steel and brick construction, and will be equipped with drop pits and a new heating system. The same contractor will build a two-story brick and reinforced concrete toilet and locker building 24 feet by 81 feet at the same location. The cost of the entire work will be about \$140,000. The road also contemplates the construction of a cinder pit to cost about \$10,000.

CHICAGO & ALTON.—This company has awarded a contract to Mulvill Bros., Alton, Ill., for the grading of 12.2 miles of second track on the main line between Renicker, Ill., and Nilwood. Tracklaying will be done by the company's own forces.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—The 23-stall enginehouse of this company at Itasca, Wis., was badly damaged by fire recently. 15 stalls being completely destroyed. These will be rebuilt at once, contract having been awarded to Peppard & Fulton, Minneapolis, Minn., and Duluth.

DETROIT, TOLEDO & IRONTON.—A contract has been given to the Crowell-Lundoff-Little Co., Cleveland, Ohio, to build an eight-stall engine house and machine shop at Napoleon, O.; the cost of the structure will be about \$80,000.

ILLINOIS CENTRAL.—This road is calling for bids on a combination freight and passenger station, 34 ft. by 192 ft., to be constructed at Dawson Springs, Ky. The building will be of brick and frame construction, with a slate roof. It will have a brick platform running the whole length of the structure on the track side, which will be covered with a canopy, with a composition roof. At one end a heavy timber freight platform, 60 ft. by 34 ft., will be constructed. The building will be provided with a steam heating plant. The cost of the work is estimated at \$30,000.

OREGON WASHINGTON RAILROAD & NAVIGATION COMPANY. A freight house is being built at Walla Walla, Wash., to replace one destroyed by fire last July. It will be of frame construction, with concrete foundation, and will cost about \$25,000.

PENNSYLVANIA LINES.—This company is preparing plans for an addition to its shops at Fourteenth and Canal streets, Chicago.

PEORIA, HANNA CITY & WESTERN.—Construction work is under way on this road, which it is proposed to build from Hollis, Ill., northwest to Hanna City, tapping five coal mines en route and connecting with the Peoria Railway Terminal at Hollis. E. J. Case, Warren Sutliff and George H. Deemy, all of Peoria, Ill., are among the incorporators.

SOUTHERN.—This road is engaged in grading for 12 miles of second track out of Bakersfield, Cal., and 10 miles between Tehachapi and Cameron. It will probably be some time before tracklaying is commenced and the major portion of the work will be done next year.

WESTERN PACIFIC.—This road proposes to build a concrete bridge at Marysville, Cal., but it is problematical whether it will be constructed this year. When commenced the work will be done by the railroad forces.

LOCATION OF PORTUGAL STEELWORKS & BRIDGES IN CONNECTION WITH THE REPORT ON THE DEVELOPMENT OF BRAZILIAN RAILWAYS. published in the *Railway Age* of October 18, page 701, a number of inquiries have been received regarding the location of the purchasing offices of these railways. Information of this character can be obtained from the Bureau of Foreign and Domestic Commerce or its district or co-operative offices by referring to file No. 9465.

Railway Financial News

Railway Officers

CANADIAN PACIFIC.—The directors have elected Grant Hall, vice-president of the company, a member of the board to fill the vacancy caused by the resignation of Sir George Bury. Mr. Hall was also appointed a member of the executive committee of the board of directors.

INTERBOROUGH RAPID TRANSIT.—This company has arranged, through J. P. Morgan & Co., to issue additional three-year convertible 7 per cent notes to the amount of about \$6,000,000. This amount represents, approximately, the balance of the issue of \$39,700,000 authorized some time ago, \$33,400,000 of which have been issued.

KANSAS CITY TERMINAL.—The Continental Commercial Trust and Savings Bank of Chicago has purchased, in conjunction with the Halsey-Stuart Company, an issue of \$9,850,000 Kansas City Terminal Railway Company five year 6 per cent notes, which are secured by \$13,783,000 first mortgage bonds of the Terminal company and will be offered for sale in the near future.

LEHIGH VALLEY.—The stockholders at a special meeting adopted a resolution authorizing the directors to execute the contract with the director general. The compensation fixed by the government was \$11,321,233, but this sum is subject to such charges and corrections as the Interstate Commerce Commission may decide upon.

NEW YORK CENTRAL.—The loan of \$6,000,000 at 6 per cent interest made by the Central Trust Company to the New York Central last May, has been extended for six months at the same rate of interest.

NEW YORK, ONTARIO & WESTERN.—The stockholders have voted to accept the company's contract with the government for the use of its road during federal control. The amount of the company's rental compensation has been fixed at \$2,103,589.

TOLEDO, ST. LOUIS & WESTERN.—The attorneys for this railroad filed a brief in the United States District Court at Toledo on November 19, attacking the power of the director general of railroads. The brief is in answer to an order from Director General McAdoo to Walter L. Ross, receiver for the railroad, to purchase 1,250 freight cars at a cost of \$3,572,250. Stockholders protested the order. The Ross petition refers to the proclamation of the President of the United States taking possession on Dec. 28, 1917, of all railroads, in which the President said: "Investors of railway securities may rest assured that their rights and interests will be as scrupulously looked after by the government as they could be by the directors of the several railroad systems." The company, through its receiver, contends that payment for the equipment should be made from the revolving fund at the director general's disposal, under the congressional act. Hearing was set for Nov. 25.

RAILWAY TO CHIMNEY MOUNTAIN, CHINA.—The Peking-Suiyuan Railway administration is contemplating the construction of a branch line from Hsuanhuafu to Yentungshan, or Chimney Mountain, which is reported to be rich in coal and iron ores. In a memorandum to the Ministry of Communications, the administration states that the government sometime ago proposed to develop the iron and coal mines of Yentungshan, but to ensure success, transportation facilities should be the foremost consideration. A branch line connecting Yentungshan with the Peking-Suiyuan Railway can be easily built and this branch line would also be of use to other mines in the region. The Ministry of Communications has approved the project and surveying parties have been sent out to survey the route. The Peking-Suiyuan administration has also sent deputies to arrange for the purchase of land for the branch line. The land will be bought according to the land-purchase regulations of the Peking-Suiyuan Railway. The construction work on this branch line will begin as soon as the land is bought. The first railway station will be situated at Houchiamiao of Hsuanhua. *The Far Eastern Republic.*

Railroad Administration Central

V. P. Turnburke, statistician of the Great Northern, has been appointed assistant manager of the Operating Statistics Section, with office at Washington, D. C., succeeding **Joseph L. White**, who has been appointed assistant to **G. H. Parker**, assistant to the assistant director general of railroads.

Federal and General Managers

V. C. James has been appointed assistant to Federal Manager **J. S. Pyeatt**, with headquarters at Dallas, Texas., succeeding **O. M. Colston**, resigned.

The title of **W. L. Park**, general manager of the Chicago Great Western, with headquarters at Chicago, has been changed to federal manager, effective November 14.

F. E. House, general manager of the Duluth & Iron Range, and the Duluth, Missabe & Northern, with office at Duluth, Minn., will hereafter have the title of federal manager.

The title of **W. H. Bremner**, general manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been changed to federal manager, effective November 14.

A. J. Davidson, general manager of the Oregon Trunk, the Oregon Electric, and the Spokane, Portland & Seattle, has been appointed federal manager, with office at Portland, Ore., effective November 14.

G. F. Hawks, whose appointment as federal manager of the El Paso & Southwestern and the El Paso Union Passenger Depot Company, with headquarters at El Paso, Texas, was announced in the *Railway Age* of November 8, entered railway service in 1874 and has been connected with the El Paso Southwestern since April 1, 1907, when he became general superintendent. He was promoted to general manager on September 1, 1915, and was elected vice-president and general manager on October 24, 1917. In July last he was appointed general manager under federal administration, which position he held until November 1, when he was appointed federal manager as above noted. A portrait of Mr. Hawks was published in the *Railway Age* of August 30, page 394.

E. J. Pearson, federal manager of the New York, New Haven & Hartford, the Central New England, the New York Connecting, the Wood River Branch Railroad, the Union Freight Railroad, the Narragansett Pier Railroad, the Boston Terminal, the New England Steamship Lines, the Hartford & New York Transportation Line and the New Bedford, Martha's Vineyard & Nantucket Steamship Line, announces the following appointments, effective November 1: **B. Campbell**, assistant to federal manager and traffic manager on all lines, with headquarters at New Haven, Conn.; **C. L. Bardo**, general manager, and **Edward Gagel**, chief engineer, on all the railroad lines, both with headquarters at New Haven; **J. H. Gardner**, manager on all the steamship lines, with headquarters at New York; **J. C. Sweeney**, general solicitor; **George G. Yeomans**, purchasing agent; **H. S. Palmer**, federal auditor, and **A. S. May**, acting federal treasurer, for all lines, and all with headquarters at New Haven. **W. H. Wright** has been appointed manager of the Boston Terminal, with headquarters at Boston, Mass.

James Russell, whose appointment as general manager of the Denver & Rio Grande, the Rio Grande Southern, the Denver Union Terminal and the Salt Lake City Union Depot and Railroad, with headquarters at Denver, Colo., has been announced in these columns, was born at Duntroon, Ont., on February 27, 1865. He began railway work in 1878, and until 1882 was telegraph operator and agent on the Hamilton & Northwestern. The following two years he was employed

as telegraph operator on the Chicago, St. Paul, Minneapolis & Omaha, the Union Pacific and the Atchison, Topeka & Santa Fe, and subsequently until 1887 was telegraph operator and train despatcher on the Michigan Central. From the latter date to 1898, he was with the Great Northern successively as train despatcher, chief despatcher and superintendent. He was then engaged in other business for five years, returning to railway work in 1903 as superintendent of the Missouri Pacific. From 1907 to 1909, he was superintendent on the Chicago, Burlington & Quincy, and in the following four years was general superintendent of the Spokane, Portland & Seattle. Later he was general superintendent of the Great Northern, and in 1914 he went to the Denver & Rio Grande, where he remained until 1917 as assistant to vice-president and general manager. He was subsequently vice-president and general manager of the Minneapolis & St. Louis, and later—September-November—was vice-president and general manager of the St. Louis Southwestern. He then returned to the Denver & Rio Grande as vice-president in charge of operation, and in July last, was appointed assistant general manager under federal control. On November 1 he was appointed general manager of that road and other lines as mentioned above.

Operating

M. S. Montgomery has been appointed fuel supervisor of the Northern Pacific, with headquarters at St. Paul, Minn.

J. L. Durland, general fire prevention inspector of the Southern Pacific Terminal Company and the Galveston Wharf Company, with headquarters at Galveston, Texas, has had his jurisdiction extended to include all Galveston terminals.

The authority of **D. B. Daley**, superintendent of safety of the Kansas City Southern and other lines under the jurisdiction of **J. A. Edson**, federal manager, with headquarters at Kansas City, Mo., has been extended over the Missouri & North Arkansas.

F. N. Tinsman, superintendent of the Pan Handle division of the Chicago, Rock Island & Pacific, with headquarters at El Reno, Okla., has been transferred to the Colorado division, with office at Colorado Springs, Colo., succeeding **J. A. McDougal**, who succeeds Mr. Tinsman.

L. W. Bowen, general superintendent of the Great Northern, at St. Paul, Minn., having been granted an extended leave of absence, **P. F. Keating**, general superintendent, at Superior, Wis., has been appointed general superintendent of the Eastern district, and **D. J. Flynn**, trainmaster at Grand Forks, N. D., has been appointed assistant superintendent of the Superior and Mesabi division, with headquarters at Superior, Wis.

F. M. Clark, heretofore superintendent at New London, has been appointed superintendent of the Danbury division of the New York, New Haven & Hartford and of the Central New England, with office at Danbury, Conn., in place of **H. C. Oviatt**, promoted; and **R. M. Smith** has been appointed assistant superintendent of the New Haven division of the New York, New Haven & Hartford, with headquarters at New London, Conn. The New Haven division now includes what was formerly the New London division.

T. J. Brady, superintendent of the Baltimore & Ohio, Eastern Lines, with office at Pittsburgh, Pa., has been appointed superintendent of the Keyser division, with headquarters at Keyser, W. Va. The Keyser division was recently created and consists of that portion of the Cumberland division formerly known as the West End, west from Viaduct Junction, Cumberland, to the east end of Grafton Yard. **C. B. Gorsuch** has been appointed acting superintendent of the Cumberland division, with headquarters at Cumberland, Md. The Cumberland division has been changed to cover that portion which was formerly known as the East End, extending from Viaduct Junction, Cumberland, to the west end of Brunswick Yard, including the Romney and Berkeley Springs branches, and the line between Patterson Creek and McKenzie. **E. P. Welshonice**, trainmaster at Keyser, has been appointed assistant superintendent and **M. A. Carney**,

road foreman of engines, has been appointed trainmaster; both with offices at Keyser.

Financial, Legal and Accounting

J. M. Metheny, assistant secretary of the Grand Rapids & Indiana, with office at Grand Rapids, Mich., has been appointed auditor.

A. C. Torbert, acting federal treasurer of the Houston Belt & Terminal, also has been appointed acting federal treasurer of the Galveston Wharf Company, with office at Galveston, Texas.

Martin Walsh, assistant general manager and traffic manager of the Memphis, Dallas & Gulf, has been appointed acting federal treasurer, with office at Nashville, Ark., effective November 1.

Arthur E. Haid has resigned as assistant general attorney of the St. Louis-San Francisco to enter the general practice of law at St. Louis, Mo., and will be associated with Holland, Rutledge & Lashly.

G. R. Cottingham, federal auditor of the Southern Pacific Terminal Company and the Galveston Wharf Company, with office at Houston, Texas, will also have jurisdiction over all Galveston terminals.

George Thompson, general solicitor and **A. J. Biard**, federal auditor, of the Texas & Pacific, the St. Louis Southwestern, of Texas, and other lines under the jurisdiction of **J. L. Lancaster**, federal manager, both with headquarters at Dallas, Tex., will also have authority over the Dallas Terminal & Union Depot. **J. W. Hogan** has been appointed acting federal treasurer of the latter company, with office at Tyler, Tex.

Traffic

The jurisdiction of **Gentry Waldo**, traffic manager of the Wharf Company, has been extended to include all Galveston Southern Pacific Terminal Company and the Galveston Wharf Company, has been extended to include all Galveston terminals.

The following officers of the Missouri Pacific will also have jurisdiction over the Arkansas Central, the Natchez & Southern and the Natchez & Louisiana Railroad Transfer: **W. A. Rambach**, assistant freight traffic manager, St. Louis, Mo.; **W. I. Jones**, general freight agent, St. Louis; **D. R. Lincoln**, **C. E. Warner**, **J. F. Harris** and **G. H. Hamilton**, assistant general freight agents, all with headquarters at St. Louis. **C. C. P. Rausch**, assistant freight traffic manager, and **W. M. Cook**, assistant general freight agent, both with office at St. Louis, will, in addition to the above roads, have authority over the Memphis, Dallas & Gulf. **R. M. McWilliams**, division freight agent at Little Rock, Ark., will have included in his territory the Memphis, Dallas & Gulf; **Dan Jacobs**, division freight agent at Alexandria, La., will also have authority over the Natchez Southern and the Natchez & Louisiana.

Engineering and Rolling Stock

C. B. Smith has been appointed general foreman of the Philadelphia division of the Baltimore & Ohio, with office at Philadelphia, Pa.

E. L. Grimm, mechanical valuation engineer, has been appointed mechanical engineer of the Northern Pacific, with headquarters at St. Paul, Minn., vice **W. J. Bohan**, promoted.

The jurisdiction of **I. A. Cottingham**, chief engineer of the Southern Pacific Terminal Company and the Galveston Wharf Company, with office at Houston, Texas, has been extended to include all Galveston terminals.

T. F. Donahue, general supervisor of road on the Baltimore & Ohio, Eastern Lines, with office at Pittsburgh, Pa., has been appointed roadmaster in charge of maintenance of way and structures, with headquarters at Keyser, W. Va.

A. H. Hodges, master mechanic of the Baltimore & Ohio, Eastern Lines, with office at Glenwood, Pittsburgh, Pa., has been appointed master mechanic, and **L. Clamblitt**, assistant road foreman of engineers, with office at Cumberland, Md.,

has been appointed road foreman of engines, both with head quarters at Keyser, W. Va.

H. C. Oviatt, heretofore superintendent, at Danbury, Conn., has been appointed superintendent of motive power of the New York, New Haven & Hartford; the Central New England, the New York Connecting, the Wood River Branch, the Union Freight Railroad and the Narragansett Pier Railroad, with headquarters at New Haven, Conn.

E. G. Chenoweth, mechanical engineer in charge of car design on the Rock Island Lines, with office at Chicago, Ill., has been appointed mechanical engineer with authority over both locomotives and cars, in place of **G. S. Goodwin**, mechanical engineer in charge of locomotive design, who has resigned to accept the position of corporate engineer of equipment.

J. T. Wilson, district engineer of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed consulting engineer of the Baltimore & Ohio Eastern Lines, the Coal & Coke, the Wheeling Terminal Railroad, the Western Maryland, the Cumberland Valley, and the Cumberland & Pennsylvania. **Richard Mather**, district engineer at Huntington, W. Va., is now district engineer, with headquarters at Baltimore, Md., and **A. C. Clarke** has been appointed district engineer.

E. F. Mitchell, chief engineer of the Texas & Pacific, the St. Louis Southwestern of Texas, the International & Great Northern (excluding line from Spring to Ft. Worth and the Madisonville branch), the Trinity branch of the Missouri, Kansas & Texas of Texas, the Beaumont & Great Northern, the Galveston, Houston & Henderson, the Houston & Brazos Valley, the Trans-Mississippi Terminal and the Weatherford, Mineral Wells & Northwestern, with office at Dallas, Tex., will also have jurisdiction over the Dallas Terminal Railroad & Union Depot.

H. J. Armstrong, engineer maintenance of way of the Missouri & North Arkansas, has been appointed division engineer at Harrison, Ark. **V. V. Kirkpatrick**, formerly assistant division engineer of the Kansas City Southern, has been appointed valuation engineer of Missouri & North Arkansas, with headquarters at Kansas City, Mo. The jurisdiction of **C. S. Heritage**, bridge engineer, and of **R. E. Van Atta**, principal assistant engineer of the Kansas City Southern, both with headquarters at Kansas City, has been extended over the Missouri & North Arkansas.

Purchasing

N. P. Randolph, purchasing agent of the Southern Pacific Terminal Company and the Galveston Wharf Company, with headquarters at New Orleans, La., will also have authority over all Galveston terminals.

The jurisdiction of **R. L. Irwin**, purchasing agent of the Texas & Pacific, the St. Louis Southwestern of Texas, and other lines under the authority of Federal Manager **J. L. Lancaster**, with office at Dallas, Tex., has been extended to include the Dallas Terminal Railroad & Union Depot.

Corporate

Executive, Financial, Legal and Accounting

J. A. McCoy has been appointed auditor and general freight and passenger agent of the North Louisiana & Gulf, with headquarters at Hodge, La.

A. F. Allen, secretary of the Newburgh & South Shore, with office at Cleveland, Ohio, has been elected treasurer, vice **S. H. Berwald**, resigned, and **G. J. Gazeley** continues as assistant treasurer.

John F. Auch, freight traffic manager of the Philadelphia & Reading, has been appointed vice-president, and **Howard F. Glazier** has been appointed assistant treasurer, both with headquarters at Philadelphia, Pa.

The executive committee of the New York, Chicago & St. Louis announces the following corporate officers: Chairman

of the board and president, **O. P. Sweringen**; vice-presidents, **M. J. Van Sweringen**, **W. S. Hayden**, **J. R. Nutt** and **C. L. Bradley**; vice-president and general counsel, **H. D. Howe**; secretary, **W. D. Turner**; treasurer, **L. B. Williams**; assistant treasurer, **A. M. Spencer**; controller, **L. R. Deevers**; all with headquarters at Cleveland, Ohio.

Purchasing

Paulino López, purchasing agent of the Constitutionalist Railways of Mexico, with office at Mexico, Mex., has resigned, and his former position has been abolished; **Augustus Herrera** succeeds Mr. López, with the title of assistant to the general purchasing agent, taking charge of all matters heretofore handled by the former. Mr. Herrera was formerly purchasing agent for the National Railways of Mexico, having resigned that position when the Constitutionalist Railways of Mexico took full control of the railway lines in Mexico.

Operating

W. J. Uren, superintendent of the Canadian Pacific, at Toronto, Ont., has been appointed superintendent of the Farnham division.

T. H. Hamilton, assistant superintendent on the Canadian Pacific, with office at Trenton, Ont., has been appointed assistant superintendent on the Smith's Falls division, with office at Smith's Falls, in place of **J. A. Cook**, resigned.

J. A. Tobin, assistant superintendent of the Canadian Pacific, at Toronto, Ont., has been transferred to the Trenton division, with headquarters at Trenton, Ont., succeeding **T. H. Hamilton**, transferred to the Smith's Falls division, with office at Smith's Falls, Ont., in place of **J. A. Cook**, resigned; effective November 14.

John Kenneth Savage, whose appointment as assistant general superintendent of the Canadian Pacific, with headquarters at Toronto, Ont., has already been announced in these columns was born on October 5, 1876, at Forreston, Ill., and was educated in the public schools. He began railway work on March 1, 1890, with the Canadian Pacific, and served as station agent at various places in Quebec, until May, 1894, and then for three years was despatcher at Farnham, Que. From January to September, 1904, he was night chief despatcher at Toronto, and then to September, 1906, was inspector of train despatching, Western lines, with headquarters at Winnipeg, Man. He was then to the following March, chief despatcher at Kenora, Ont., and later served as train-master at Brandon, Man. From December, 1908, to January, 1912, he was chief despatcher at Central Brandon and then to January, 1917, he was superintendent of the Regina division, Saskatchewan. He then served as superintendent of the Smith's Falls division at Smith's Falls, Ont., until his recent appointment as assistant general superintendent on the same road as above noted.

Engineering and Rolling Stock

A. F. Rust, valuation engineer of the Kansas City Southern, has been appointed consulting engineer for the corporation, with headquarters at Kansas City, Mo.

Samuel T. Wagner, chief engineer of the Philadelphia & Reading, has been appointed chief engineer for the corporate company, with headquarters at Philadelphia, Pa.

W. J. Robider, master car builder of the Central of Georgia, with office at Savannah, has been appointed general master car builder of the Canadian Pacific, with headquarters at Montreal, Que., succeeding **C. W. VanBuren**, deceased. Mr. Robider was born on February 15, 1869, at Savannah, Ga., and entered the service of the Central of Georgia as an apprentice in the car department in October, 1884. He subsequently served as foreman in the passenger shop and then as general foreman of the car department. In October, 1905, he was promoted to master car builder and since the government took control of the railroads in the United States, he has served as an alternate member of the Committee of Standards and Inspection. His appointment as general master car builder of the Canadian Pacific became effective on October 15.

EDITORIAL

Railway Age

EDITORIAL

Mark Twain in "A Mediaeval Romance," the scene of which was laid in the year 1222 wrought the reader's feelings up

Speaking of Resignations

to the highest pitch of excitement and then at the end of the fifth chapter he stopped short and said: "The truth is, I have got my hero (or heroine) into such a particularly close place that I do not see how I am ever going to get him (or her) out of it again, and therefore I will wash my hands of the whole business and leave that person to get out the best way that offers—or else stay there. I thought it was going to be easy enough to straighten out that little difficulty, but it looks different now."

With the relaxation of war-time severity the traveling public will again call upon the railroads to furnish for passengers

The Two-Day Ticket Limit

everything that is pleasant and to take care to impose nothing that is unpleasant. The assembled railroad commissioners at Washington have already given notice that centralized strictness is exceedingly distasteful to them and their constituents, and their message to Mr. McAdoo, as it is read between the lines, seems to be that they intend to "move immediately upon his works" with all the vigor of Grant at Fort Donelson. One of the things which, according to the Springfield Republican, must be discontinued without delay is the two-day limit on all local tickets. Inasmuch as 99 per cent of such tickets, probably, are used within a very few hours after they are bought, it is not easy to see why so much prominence should be given to this point. One of the objects aimed at in the adoption of this rule was to prevent the dishonest use of a ticket for a second journey, in which trick many conductors have joined, defrauding their employers of thousands of dollars. The public will reply to this with the taunt "detect your thieves yourself; it is not our business." But that is easier said than done. Those railroads which have tried to introduce strictly business methods in the collection of tickets and fares on trains have met the opposition not only of innumerable obstinate passengers, but of state officers as well. However, the discouragement of dishonesty is a constant duty, and it may be that the Railroad Administration can contrive some new way to deal with this ancient problem.

In the period immediately preceding our entrance into the war deferred maintenance had necessarily accumulated.

Take Up Deferred Maintenance

during the last two seasons maintenance has been still further neglected because of conditions inherent to the period through which we were passing. Consequently the roads now require the expenditure of greatly increased sums for maintenance if they are to be brought back to the standards normally prevailing previous to 1914. For instance, it has been estimated by one student of the rail situation that the roads are over 10,000,000 tons in arrears in the renewal of rails. During the year now closing, the renewals have been less than one-half those of a normal year. The railways themselves must make good the deferred maintenance which accumulated

previous to the inauguration of federal control. Under the terms of the act providing for the taking over of the railroads by the government it is provided that the roads will be returned to their owners at the termination of the period of federal control in as good condition as when they were taken over. The government is, therefore, under agreement to make good all the deferred maintenance which has accumulated this year. Railway managements have been criticized in the past for their common practice of making improvements in times of general industrial activity and high prices and of retrenching during periods of industrial depression when labor and materials were cheaper. In other words, few managements had the ability or courage to spend during the periods of greatest economy because these were times of decreasing earnings. The large quantities of materials which the roads will require will, if ordered, do much to tide many industries over the period of transition until they can develop their peace time business and will provide employment for their men. Plans should be initiated at once for the railways to undertake at the earliest possible date the extensive program of reconstruction which the properties require.

Although only a short time has passed since the signing of the armistice, various events occurring in the material market

A New Aspect on the Material Situation

indicate that the transfer of industrial activities from war work to peace pursuits will take place rapidly. Representatives of the steel trade have indicated their desire to discontinue the economic waste entailed in the manufacture of war materials after the need for them has disappeared. The government has also taken cognizance of the state of peace through the elimination of certain war work. Changes that will undoubtedly follow in due season will make vast quantities of steel and iron available for non-war purposes. Similar action has been undertaken with respect to lumber. The United States Shipping Board has announced that wood ship production will be curtailed within the limits of those ships now under construction or those contracted for by efficient yards. To offset these reductions in war work, the Priorities Committee has already taken action to decrease the restrictions on certain non-war work. It has provided for the removal of the restrictions on all railroad and public utilities construction and many other projects, while railway supplies appear in the list of undertakings to receive precedence in programs for increased production. These changes indicate clearly that the relation of the railroads to the steel market will soon bear a different aspect than it had during the war. It is true that the changes have only begun and that prices are still on a war basis, but a readjustment is bound to take place and with this prospect in view, railway men preparing plans for improvements to be made next season must study the effect which these changes will have on the work to be done. During the past season, work on bridges, buildings, water tanks, etc., was planned with the knowledge that steel was scarce and that in many cases its use was prohibitive; also that there were certain definite restrictions on the use of lumber. These conditions will not hold during the coming season, and while all materials should be considered with an open mind, it is necessary to scrutinize relationships carefully before arriving at a decision.

An Opportunity for Patriotism

SHIPPERS, IF THEY WILL ONLY look at it in the right way, may experience the same patriotic thrill that accompanies the purchase of a Liberty Bond or a war savings stamp, or a contribution to the United War Work Campaign, whenever they pay an express rate after January 1, when the increased rates initiated by Director General McAdoo go into effect. Of course, they may feel, in much the same way, that they are contributing to one of the expenses of the government every time they pay a freight bill which has been increased 25 per cent, if they are numbered among the numerous shippers who, being shippers, naturally feel that freight rates are too high. But, as the result of a coincidence, there will be an especial glamor about paying the higher express charges, because it so happens that the \$12,000,000 by which the railroad revenues will be swelled by the increase in express rates announced in the afternoon papers of November 20, is precisely the amount by which it is estimated the railroad passenger revenues will be depleted by the order announced in the morning papers of the same day, that discharged soldiers returning to their homes shall be transported at a reduction of 33 1/3 per cent from the regular passenger fare.

We understand the slogan of the next Liberty Loan campaign is to be, "To Bring the Boys Back Home." The slogan of the man who pays an express rate, therefore, may well be, "Bring the Boys All the Way Home," for he can easily convince himself that his money is paying the bill.

Director General McAdoo has done a handsome thing in helping to make it possible for our returning heroes, and those who would have been heroes if the necessity had not been suddenly removed, to travel from the point at which they leave the government service to their homes, within the allowance of 3½ cents a mile which another branch of the government has allowed them for that purpose, without being compelled to satisfy a soldier's appetite for food and other incidentals for ½ cent a mile. We also believe that any railroad officer would have been glad of an opportunity to do the same thing. The boys deserve it. The railroad officer might have issued the order for the reduction in rates as easily as could the director general of railroads. He could not so easily, however, pass around the privilege of paying for it. He would have to consult the Interstate Commerce Commission and 48 state commissions first. We trust the express shippers will appreciate their advantage over the freight shippers. Their dollars will stand in the same relation to those of the shippers by the slower method of transportation as the man in uniform to the man behind the man behind the gun. The glory goes with the uniform and the express shipper is helping to pay for that. The freight shipper is paying the high wages of the man who stayed at home and got less glory.

And thus is illustrated the wisdom of the scriptural saying that "it is more blessed to give than to receive." Mr. McAdoo doubtless knew, when he reduced the soldiers' rates, just where he would be able to recoup and if the express shipper or even the freight shipper has any doubts as to where he shall get his, let us whisper in the words of Clifford Thorne: "The Ultimate Consumer." The world having been made safe for democracy, why shouldn't democracy pay the bill?

These thoughts are inspired merely by a modest desire to suggest the proper philosophical viewpoint to the harassed shipper who, like many others, now finds himself obliged to deal in larger figures on both sides of his accounts than in the good old ante-bellum days when a dollar was just as large and round as today, but was of a less ethereal substance. A glance at the Interstate Commerce Commission's latest monthly report of railroad revenues and expenses will convince him that Mr. McAdoo does not keep the shippers' money; he merely keeps it in circulation, which is what the circulating medium is for.

William G. McAdoo and the Administration's Railroad Policy

THE CLOSE OF THE WAR and the necessity for appointing a new director general of railroads to succeed William G. McAdoo affords an excellent opportunity for President Wilson to make known to the country in unmistakable terms what his policy toward the railroads and other public utilities now in the hands of the government is to be. Possibly he will do so in his message to Congress at the opening of the new session next week.

Before choosing a man for such an important position it will undoubtedly be necessary for the President to make up his own mind as to whether he wants some one to begin now, or soon, to carry on the process of readjustment which the federal control act plainly contemplates and for which it allowed a reasonable time, not to exceed 21 months, or whether he wants him to follow the plan which it was recently announced Mr. McAdoo intended to follow, of continuing the process of unification just as if government operation had been decided upon as a permanent policy. It would naturally be supposed that the President already has clear ideas on the subject, but what is needed is a definite public announcement of them.

It is scarcely necessary to say what we believe that policy should be. The strange thing is that there should be any doubt about it. But the policy which has been followed during the past year in the case of the railroads, and more recently in the case of the telegraph, telephone and cable lines, is so widely at variance with that which it had been announced would be followed, that some definite explanation of the intentions of the administration for the future is called for.

In the case of the railroads we were assured that the exercise of the President's authority to commandeer them was purely to meet the emergency conditions created by the war. The law specifically said so, and the President himself announced that nothing was to be altered or disturbed which it was not necessary to disturb. We recall that the administration draft of the federal control bill carefully omitted to confine its effect to the period of the war, but Congress corrected the omission and the President signed the bill with a time limit in it. Since that time a careful observer might have been excused for forming an opinion that almost everything in the railroad business was being disturbed which it was possible to disturb. We do not object to all the disturbances that have been made. Our only point is that the policy has been what might have been entirely proper if the government's control had been made permanent, but went rather farther than was suited to a temporary control.

In the case of the telegraph and telephone lines, spokesmen for the administration called for votes for the measure authorizing the President to take them over by declaring that it was not proposed to exercise the power unless some war necessity should demand it thereafter. No one was greatly surprised when it was learned soon after that the conditions were deemed sufficiently imperative to require that the lines be taken over, but there was a great deal of surprise when, the armistice having intervened before any effective measures had been taken, the unification of Western Union and Postal operations was undertaken, and the authority conferred by Congress was further taken advantage of to commandeer the ocean cable lines after the war had practically come to an end. The express business was also taken over after the armistice had been signed, but it had been so generally understood that the express company had virtually been taken over, and so many direct reasons appeared for the step, that there has been less comment on the possible indirect reasons than there has been in the case of the other utilities. The telegraph, telephone and cable lines were placed under the direction of the postmaster general, long

an out-and-out advocate of government ownership of those properties. The railroads were placed under the direction of a man who said he was not in favor of government ownership but whose actions since have been such as to create a strong impression that he was at least trying to bring about a plan of permanent government operation.

If such an impression does Mr. McAdoo an injustice it may be attributed to the fact that he has allowed it to spread uncontradicted, and while he has had plausible reasons for not announcing his ideas for the future disposition of the railways until he had had an opportunity to develop them after experience, he has never given any impression that he attached much importance to the changes which Congress put into the bill against his wishes for the purpose of confining its effect to the emergency. Possibly Mr. McAdoo, or Mr. McAdoo and the President, were so confident that they could demonstrate the superiority of government over private operation that they felt that they could afford to overlook the limitations inserted by Congress and to rely on the removal of the limitations before it would be necessary to consider them seriously. If such was the case, recent developments, such as the election of a Republican Congress, the resolution passed by the state commissioners at their Washington convention, and the resolution passed by the Industrial Traffic League, opposing government ownership and demanding the return of the roads, may have shaken their confidence.

However, whether or not this explanation of the situation be correct, we believe the time has come to give some effect to the section of the federal control act which expressly declares the law to be emergency legislation, and to that which provides for the termination of federal control within a reasonable time—not exceeding 21 months—from the proclamation of peace. The purpose for which the railroads were commandeered having been accomplished, from now on attention should be directed to putting the affairs of the railroads in such shape that they may be returned to their owners. We do not believe that this should be done at once by an order of relinquishment, because the relations of the corporations to the government are still in such a chaotic state that financial disaster might ensue. But these relations should from now on become simplified rather than further complicated, and at the same time consideration should be given to the legislation needed to improve the system of government regulation and to preserve the advantages of some of the reforms which the Railroad Administration has accomplished. What success the Railroad Administration has attained is attributable far more to its freedom from the restrictions imposed upon private management than to any superiority of government control over private management and we should endeavor to perpetuate rather the advantages than the disadvantages of the present system.

Mr. McAdoo, with the almost unlimited authority conferred upon him by law and with the assistance of some of the ablest railroad men that the former regime had developed, has undoubtedly accomplished with a considerable degree of success the primary object for which the railroads were placed under his charge—the operation of the railroads in such a way as fully to meet the demands of the war traffic. Very likely the Railroad Administration has been able to handle the war traffic more successfully than it could have been handled by the railroad companies under any plan of voluntary co-operation subject to the limitations which had been placed upon the private companies. To say this, however, is not to concede that the railroad companies might not have done just as well or better if allowed some of the freedom from restrictions which the Railroad Administration has enjoyed, nor does it eliminate the conclusion that the Railroad Administration might have done better had it not attempted to do more. Neither does it follow that the methods which were successful in time of war could be successfully followed in ordinary times.

The railroads under the direction of the Railroad Administration have handled a greater volume of traffic than the railroads under private management had ever handled, with very little increase in facilities, but at an enormously greater expense. The Railroad Administration has done even less than the railroads ever did in a year to increase the supply of cars and locomotives, partly because of war conditions and partly because instead of placing orders immediately it stopped to standardize first. If it has succeeded in handling a greater volume of traffic satisfactorily without much addition to the equipment, the methods by which it has done this are of considerable importance. While giving Mr. McAdoo credit for having the courage to do what the situation called for, it is well to recall that he did not originate the idea that operating efficiency could be increased by heavier car and train loading and by using cars as rolling stock instead of as warehouses. But where the Railroads' War Board could only appeal to the patriotism of shippers to load cars to capacity and to waste as little time as possible in loading and unloading them, Mr. McAdoo was able to embargo the shipper who did not load heavily and to impose a demurrage rate effective in the states as well as in interstate traffic high enough to secure the prompt release of cars.

A strong talking point for the Railroad Administration has been the improvement in the handling of the coal traffic. Up to November 16, the railroads this year handled 645,831 more cars of coal than during the corresponding period of last year, and there was less car shortage. This was due not to the fact that there were more coal cars, because most of the coal cars which the Railroad Administration ordered have not yet been built, but it is attributable mainly to the adoption of the zone system to avoid cross-hauling, which was repeatedly urged by the Railroads' War Board last year. The basis of the plan which was later adopted, and which, according to a recent statement of the Fuel Administration, has saved over 160,000,000 car miles, was worked out under the direction of the Railroads' War Board, but it had no power to make it effective.

Another point to which the press notices issued by the Railroad Administration have pointed with pride has been the improvement in the handling of export traffic, although the facts would seem to indicate that this has been the result of a greater degree of co-ordination between the government traffic officers, the Allies and the Shipping Board and the railroads, which the Railroads' War Board tried to bring about but was able only to recommend, rather than primarily a matter of railroad efficiency.

Mr. McAdoo also was able to pay railroad employees wages high enough to keep them on the job because he was given an emergency war power to raise freight and passenger rates sufficiently to do so. This has made him popular with the employees, some of whom are offering to contribute to pay him a salary to remain in office, but it has made him rather unpopular with shippers and we imagine that the man who succeeds him and has to maintain an equilibrium between the two factions during times of peace may have to spend more hours in his office.

In many respects the problem of the proper handling of the railroads in time of peace presents even greater difficulties than the railroad war problem, which is one of the reasons why its solution should be undertaken before it becomes more difficult. While there appears to be a widespread demand for the return of the roads to private management, we have heard of very little demand, except that of the state commissioners, for a return under the conditions which formerly prevailed. The railroads are not asking for the complete freedom from regulation which Mr. McAdoo has enjoyed. The representatives of the railroads that have expressed themselves on the subject recently have conceded the necessity for a very strong form of government regulation.

If a beginning could be made now toward working out

a plan for the future of the railroads we believe the chances for a satisfactory result would be much greater than if an effort is made to take advantage of the government's temporary control to "put over" any particular theory.

What's to Become of the Railroads?

WILLIAM G. McADOO, director general of the United States Railroad Administration and secretary of the treasury, resigns all of his offices; Samuel Rea advises caution in discussing the railroad situation; and the Association of Railroad Security Owners, quick on the trigger as always, gets to the newspapers first with a somewhat incoherent statement. In the meantime, there has been some very earnest and thoughtful study of this, the greatest single economic problem which faces the United States—the question of the future status of the railroads.

The facts stand out clearly and ruggedly enough. A successor will be appointed to Mr. McAdoo; a constructive policy for working out an organization for the railroads must be adopted. There will be more than one plan suggested. The government or rather the present administration will presumably have and eventually announce some definite plan. If the present administration is for government ownership, the sooner a definite announcement of this fact is made, the better for all concerned. Bankers, holders of railroad securities, insurance company and saving bank officers, manufacturers of railway supplies, and shippers, whose business is vitally affected by the policy of railroad rates and operation which is adopted, have a clear right to know how the administration stands on this question.

There will pretty surely be some advocates of a return to ownership and operation of the railroads by the existing corporations. The greatest railroad system in the world, our own, was built up under corporate ownership and management; no other system holds out the same incentive to betterment of service, economy in operation, progress in both the science of railroading and the design and development of plant and equipment.

But authority to fix income and expenses of any corporation or individual must carry with it the responsibility for the success of the corporation or individual. This was the fundamental defect in American regulation of railroads. Even given an Interstate Commerce Commission of infinitely greater capacity than the personnel of the commission has ever included and there would still be this fatal defect. If the commission were not responsible for results it would be economically wrong to give it final authority in the fixing of income and expenses. Will the public be willing to turn back the railroads to their owners and curtail the powers of the Interstate Commerce Commission? How about the local state authorities whose depredations on the roads were as harmful or more harmful than the honest but rather stupid mistakes of the Interstate Commerce Commission. A return to private ownership and initiative, competition and progress, will bring about a more rapid development, a better service, as low or lower rates, as any other solution of the railroad problem, but a big constructive program must be developed to bring this about.

Difficult as is the problem, (and to some it even appears insurmountable), there is, however, a very real question whether or not if such a solution of the problem is, in the long run, the most desirable and is economically sound where any other solution so far suggested is economically unsound it would not be better to face the difficulties, take the immediate losses and hardships, and attempt to do that thing which is right, even if it does not appear as the most expedient. At any rate, it can do no harm to face the facts squarely. Such a plan might entail the following: The Clayton act and the Sherman law should be repealed. The

Interstate Commerce Commission should take jurisdiction over the regulation of the railroads within the states and could do so, it would seem, under the Supreme Court's decision in the Shreveport case. A secretary of railroads or a secretary of transportation might be appointed and be a member of the President's cabinet. The railroads should be returned to the corporations that owned them in fully as good condition as when they were taken over. If there is to be a period of depression or at least of considerable recession of business, no very extensive new financing need be undertaken except by such companies as are financially able to raise new money. Some railroads would have to pass through a receivership probably, and there is the rub. It would take an immense amount of courage to carry out such a program as this, and a co-operation on the part of the railroad executives, bankers and politicians, that it will be extremely difficult to bring about.

In the discussions in the *Railway Age* and elsewhere of the problems of reconstruction and administration of the roads after the war, it has been assumed almost unanimously that it would be impossible to return to old conditions. Even E. P. Ripley of the Atchison, Topeka & Santa Fe, in his discussion of this subject in the Investments Section of the *Railway Age* of November 15, assumes that some new form of railroad administration will have to be devised. Those who have given the greatest study to this problem propose some form of regional operation of the railroads under private ownership, but with some form of partnership with the government, by which the government's credit may be used to help finance the railroads and in return that the government shall have a voice in the management of the roads. This does not mean necessarily the elimination of competition. It is true that in the plan outlined by F. J. Lisman and published in the Investments Section of the *Railway Age* of July 12, competition, except as between regions, was to be almost entirely eliminated, and it has been erroneously said that Frank Trumbull, chairman of the board of the Missouri, Kansas & Texas, and of the Chesapeake & Ohio, and first chairman of the Railway Executives Advisory Committee, also favors the elimination of competition. This is entirely incorrect. Whatever study of regional railroads Mr. Trumbull may have made, he is by no means of the opinion that competition must be eliminated. Competition as between different railroads would not be inconsistent with government participation in the profits of all companies and participation in the responsibility for the success of railroad operation as a whole. One of the greatest advantages of such a plan lies in the fact that government and private co-operation would be substituted for antagonism. To repeat, until the time that President Wilson took over the roads, the Interstate Commerce Commission and state commissions had the authority but not the responsibility for the broad policies of railroad management. In any of the plans which may have been formulated by members of the Railway Executives Advisory Committee, it is safe to say that the changing of this condition is a basic part of such plans.

The all important question is: can private credit be enlisted in the work of rehabilitation of the railroads, or must government co-operation be sought.

On December 4 the Railway Executives Advisory Committee will hold a meeting to discuss the present situation and the future of the railroads. It is to be hoped that at this meeting the discussion will be entirely frank, regardless of former prejudices and former rivalries, and that before the dangerous step of taking the government into partnership shall be decided upon, the possibility of private ownership, private operation, private responsibility and private authority, subject only to such government regulation as has been found necessary with other great industries will be carefully and courageously considered.

Doings of the United States Railroad Administration

McAdoo's Unexpected Resignation Brings Out Speculation as to His Successor and Government's Policy

DIRECTOR GENERAL McADOO left Washington Saturday evening for an inspection trip over the railroad lines in the South, his final inspection trip as director general of railroads, which will complete a general survey of railroads in all parts of the country, as on previous trips he has recently travelled extensively over the western lines, the central and eastern lines and those in New England. Mr. McAdoo planned to be away from Washington about nine or ten days, returning before the President sails for Europe. He had a conference at Atlanta on Monday with Regional Director Winchell and other railroad officers of the Southern region, after which he went to Pensacola, where his son is at a naval aviation training station. Later he planned to go to New Orleans and possibly up to St. Louis for a further conference with railroad officers. The trip had been planned before his resignation.

Mr. McAdoo was accompanied by C. R. Gray, director of operation; John Skelton Williams, director of finance and purchases; Oscar A. Price, assistant to the director general, and for the first part of the trip W. S. Carter, director of labor.

A definite announcement by President Wilson or by Director General McAdoo as to the future policy of the Railroad Administration as to whether it proposes to continue along the lines of the past year or whether it will begin preparation for winding up its affairs is to be made within a few days. Members of the staff of the Railroad Administration have been working on the details of the announcement this week.

McAdoo Resigns as Director General

William Gibbs McAdoo has resigned as director general of railroads, effective on January 1, 1919, or upon the appointment of his successor. He announced on November 22 his intention to retire to private life and, after a period of rest, to resume the practice of law in New York City. His resignation both as secretary of the treasury and as director general of railroads was tendered to President Wilson in a letter dated November 14 and was accepted by the President in a letter dated November 21, to become effective in the case of the cabinet office upon the appointment and qualification of his successor. The fact that a separate time is suggested for his retirement from the railroad office from that for his retirement from the treasury is taken as an indication that the new director general of railroads to be appointed will not combine the two offices.

Mr. McAdoo's reasons for the step, as given in his letter to the President, were that for almost six years he has worked incessantly under the pressure of great responsibilities, whose exactions have drawn heavily on his strength, and that the inadequate compensation allowed by law to cabinet officers and the very burdensome cost of living in Washington had so depleted his personal resources that he must, for the sake of his family, get back to private life to retrieve his personal fortune. He has received no compensation as director general of railroads and under the law could not be paid a salary for that office in addition to his salary as secretary, of \$12,000 a year, although he has fixed the salaries of members of his staff and of his federal managers at figures greatly in excess of his own and is paying his regional directors \$40,000 and \$50,000 a year. In his recent report to the President he showed that 136 officers of the regional and central administration were being paid salaries aggregating

\$1,642,300, which is an average of over \$12,000 a year. In announcing his resignation to the newspaper men, Mr. McAdoo declared that the reasons as set forth in the letter were his only reasons, that he had fully intended to retire to private life at the expiration of his first term as secretary of the treasury in March, 1917, but that he had remained in office because of the prospect of the country becoming involved in the war. Now that an armistice has been signed and peace is assured he felt at liberty to ask relief from his official responsibilities to look after his private affairs.

President Wilson, in accepting Mr. McAdoo's resignation, expressed deep regret and the highest appreciation of his "distinguished, disinterested and altogether admirable service" in both posts. Regarding the railroad office he said: "The whole country admires, I am sure, as I do, the skill and executive capacity with which you have handled the great and complex problem of the unified administration of the railways under the stress of war uses, and will regret, as I do, to see you leave that post just as the crest of its difficulty is passed."

Mr. McAdoo's announcement of his resignation was totally unexpected and even leading members of his railroad staff appear to have been kept in ignorance of the plan until after it had been given to the press. In spite of the strong reasons officially stated, a flood of speculation was aroused as to the possibility of other motives actuating the step and naturally many political considerations were advanced. The most common suggestion of this character was that Mr. McAdoo intends to become a candidate for President in 1920, and that he is now retiring, at the pinnacle of his success both in his handling of the country's finances and in his management of the railways under war conditions, before subjecting himself to any possibility of loss of prestige under the new conditions.

It was argued that while Mr. McAdoo as director general has undoubtedly made a success of the handling of war traffic, the large measure of credit which he has gained from that achievement might not fully survive the opposition and criticism which are regarded as an inevitable accompaniment of the process of readjustment, particularly with a Republican Congress, and that the prospects of a possibly thankless task are not such as to induce him to make further personal sacrifices. For instance, there have been many indications that a strong fight will be made to bring about the return of the roads to their owners within the 21 months' period provided by the law, and while Mr. McAdoo has not yet publicly stated his plans or ideas for the future of the railroads it is known that he was strongly opposed to this limitation on the time allowed him to work out his theories. It is also regarded as certain that an effort will be made to curtail the almost unlimited authority he has possessed in dealing with rates and there are difficulties on the horizon in dealing with the demands of labor for the maintenance or even further increase of the high wages he had granted during the past year without a control over the rates. At any rate, it is considered that Washington has nothing further to offer him short of the Presidency.

Naturally there has been much speculation as to whom the President will appoint as director general of railroads, particularly as it is considered that the appointment will give some indication as to whether the new man will be appointed for the purpose of preparing to restore the roads to their owners, or whether he will be expected to continue

the process of unification. The names most frequently mentioned are Walker D. Hines, assistant director general, and Charles A. Prouty, director of the Division of Public Service and Accounting. There has been an idea prevalent that Mr. McAdoo would some day relinquish the direction of the railroads to his assistant, but there is also a strong feeling that the President would not appoint a railroad man to the office.

Pending the President's announcement there have been some signs of a cessation of activity on the part of the Railroad Administration as far as new plans for the future are concerned, which have led to some speculation as to whether or not they indicated a plan for an early settlement of the relations of the administration with the corporations. For example, prospective orders for new equipment have been held up and activity in connection with changes in rates has been suspended, although only a week before Mr. McAdoo's announcement of his retirement the newspapers had been allowed to predict an active continuance of the work of completing the railroad unification.

Railroad Equipment Orders Held Up and Improvement Program Carried Over Into 1919

[Since the following was received from Washington the builders have been notified to resume work on the orders for 600 standard locomotives mentioned as having been held up.—EDITOR.]

The Railroad Administration has held up the order for 600 locomotives recently placed with the American Locomotive Company and the Lima Locomotive Works, for which the contract had not definitely been signed, and has asked the builders for a statement of expenses already incurred in connection with the tentative order. It is stated that the reason is to give the railroad corporations an opportunity to say whether they want the locomotives and will pay for them instead of endeavoring to force the railroads to purchase equipment, which was the policy of the Railroad Administration while the war was still in progress. The prospective orders for 2,000 hopper cars for the Virginian and for the 886 baggage cars for the Railroad Administration also has been held up, and it is understood that nothing will be done for the present regarding the expected orders for 375 passenger coaches and 129 combination passenger, baggage, mail and express cars, except that the work of completing the designs for the passenger cars will be taken up at next week's meeting of the Committee on Standard Appliances for Cars and Locomotives. Uncertainty as to what the future may develop as to the continuance of the Railroad Administration, the volume of traffic and the question of prices are also given as reasons.

Expenditures for equipment and improvements authorized for this year by the Railroad Administration but not completed, together with the additions and betterments which it is estimated must be authorized for next year, will constitute a program of capital expenditures for 1919 amounting to \$909,000,000, according to a statement authorized by Director General McAdoo, without reference to any additional orders for equipment.

The statement was issued by way of comment on the various suggestions being made that the Railroad Administration place large orders for equipment and other materials and supplies to help tide over the transition from war to peace conditions in the steel and allied industries. It was issued after the decision had been reached to hold up the new locomotive order, but no announcement was made of the latter action.

The Railroad Administration had previously let it be known, as reported in last week's issue, that neither it nor the railroad companies were anxious to place orders now at war prices, although it had been expected that the release of additional steel would give the administration an oppor-

tunity to go into the market with large orders. The 100,000 cars ordered in April consist of box, gondola and hopper cars, and none of the refrigerator, general service and stock cars, for which standard designs were prepared, have been ordered because the shortage of steel made it necessary to curtail materially the original program.

The statement is as follows:

"The equipment which has been ordered by the Railroad Administration and allocated to the railroads and not yet delivered is approximately 1,415 locomotives and 100,000 freight cars, representing a contract price of approximately \$366,333,355.

"As to immediate railroad additions and betterments (excluding equipment and new extensions), authority has been granted to the latest available date (November 10) for the railroads and also for the 108 terminal and switching companies other than the class 1 roads, aggregating \$533,-860,502. Of this amount only \$179,995,902 had been expended up to September 30, 1918, and it appears probable that about one-half of the aggregate work thus authorized to be done in 1918 will not be done during this year.

"It is estimated that corresponding additions and betterments which must be authorized for the year 1919 will aggregate upwards of \$250,000,000, excluding equipment. It is also estimated that maintenance of way and structures will necessitate very substantial expenditures in order to bring the property up to standard.

"It would seem, therefore, that the following necessary expenditures remain to be made for this year and next, not including additional equipment:

Amounts already authorized for additions and betterments, way, structures, probably not yet expended.....	\$293,000,000
Equipment ordered and not yet delivered.....	366,000,000
Additions and betterments to way and structures to be authorized for 1919.....	250,000,000
Total.....	\$909,000,000

"It is evident, therefore, that a very substantial and absolutely necessary program will be carried forward by the Railroad Administration."

The figure given for the number of locomotives ordered does not include the 600 recently ordered from the American and Lima Companies, for which the specialties have not yet been placed. Bids on these had been asked and the locomotive specialty manufacturers were in Washington last week being interviewed by the purchasing committee, when on Thursday they were suddenly told without explanation that they could go home, and it was subsequently learned that the builders had been directed to hold up the orders and to render statement of how much they had expended on them. Of the locomotives originally ordered, about 500 have been delivered and of the 100,000 cars, about 5,000 have been delivered, much of the delay since the original delay incident to the process of standardization being attributed to the inability of the builders to obtain the necessary lumber. This is the reason for the issuance of the order by the War Industries Board last week, giving priority for orders for lumber for railroad purposes.

As the orders for the 100,000 cars was distributed among practically all the car building plants in the country it would seem that there was no object in placing additional car orders until more of the original order have been delivered. It has also been suggested that as the railroads succeeded in handling the war traffic with practically no new cars except the 42,000 which had been ordered prior to January 1, the administration might wait to see what is to be expected in the way of traffic under peace conditions before placing new orders. Another suggestion is that the price question is the important consideration.

The 1918 budget of improvements, only half of which are expected to be completed, will be further reduced by the discontinuance of work on projects undertaken directly for war purposes, such as trackage and other facilities at camps and

other centers of war activity. A survey of this class of work has been undertaken to find out how much of the work can be discontinued and how much is warranted by the prospects for the future.

Volume of Traffic at Principal Terminals

Director General McAdoo has issued the following comparative statement showing the traffic handled by the railways under federal control at 25 of the more important railroad terminals of the country during the week ending October 21, 1918.

The statement in the form submitted comprises only a few of the more important cities of the country. Others will be added to the list as rapidly as arrangements can be made for the compilation of the figures. It is hoped that the information will be useful as a partial index of the country's business expressed in terms of cars and tons that will complement and supplement the statements issued by the Federal Reserve Board and the clearing houses of the United States in which the volume of business is reflected in terms of dollars.

The statement shows an increase of 5.25 per cent in the tonnage as against an increase of only .28 per cent in the number of cars used to carry the increased tonnage.

	Cars	Tons
Atlanta	19,175	1,178,777
Birmingham	2,581	54,401
Boston	8,644	1,046,176
Buffalo	8,913	7,811,309
Chicago	49,469	50,931,940
Charleston	1,083	1,431,22
Cleveland	10,510	9,194,372
Duluth & Superior	23,852	27,122,104
Galveston	1,217	1,152,26
Hampton Roads	12,970	13,589,529
Kansas City	7,928	9,574,184
Los Angeles	1,727	1,704,32
New York	26,990	26,427,666
New Orleans	4,358	4,589,119
Omaha	4,707	5,321,166
Portland, Ore.	2,175	2,200,55
Philadelphia	20,063	15,499,535
Pittsburgh	8,450	7,849,271
St. Louis	11,091	12,469,359
Seattle	2,579	3,104,72
San Francisco	3,658	2,737,109
Savannah	2,011	2,036,37
Tacoma	1,434	1,710,40
Twin Cities	13,171	13,631,346
Toledo	9,554	10,906,388
Total	194,536	145,143,840
Increase	687	422,222
	=0.28%	=5.25%
Average tons per car	746	746

Many Car Thieves Convicted

The activities of the Claims and Property Protection Section in its war on car thieves are bearing fruit in various sections of the country.

Reports to the director general show that as a result of operations directed from Washington three car thieves, arrested in the act of tampering with a freight car in the New York Central yards at Buffalo, N. Y., were sentenced by Judge Hazel to long terms of imprisonment. Howard Brown and John Malloy, received five years each, while Joseph Torms got one year and six months. Brown was also fined \$1,000. For receiving stolen goods, Samuel Goldberg was sentenced by the same court to serve one year and six months in the penitentiary. At Buffalo there are now pending 69 indictments for this class of offenses, and many more are expected from the grand jury which is now in session.

At Pittsburgh, on November 20, Charles A. Fairfax, an employee of a transfer company, who secured various notices of freight arrivals and thus obtained possession of certain shipments, was sentenced to a year and a day in the penitentiary.

At New Jersey, Jacob Behrman, of Paterson, was convicted on November 19 of receiving 80 bundles of silk stolen from interstate shipments. Week before last there were 12 arrests for this class of offenses at Sandusky, Ohio, and 7

of the parties have confessed. A large amount of goods were recovered as the result and searches made incidental thereto.

Arrests made on November 22 in Washington by Inspector O'Dea of the Railroad Administration force, make a total of 38 in the past six weeks for railroad thieving at the Washington Terminal and for receiving stolen goods.

At Arcadia, California, on November 22 Dale Jones, a bandit, who was wanted in connection with the hold-up of an M. K. & T. train at Paola, Kansas, on July 10, last, was killed by a deputy sheriff who attempted to arrest him. In the gun battle that ensued, the deputy was killed as well as the wife of Jones, who accompanied him in his flight. Two other bandits, Roy Sherrill and Roy King, charged with participating in the hold-up, pleaded guilty and were sentenced to serve 25 years apiece in the Leavenworth penitentiary on November 15. Roy Lancaster, another member of the band sought by the federal authorities for this same "job," was killed at Kansas City, Mo., on September 24. The Paola hold-up was one of the boldest ever consummated in this country, and in the effort to run down the parties responsible there have been various gun battles in Kansas City, Colorado Springs and Denver. In these encounters more than a dozen people have been shot and three police officials killed.

Additional Economies Reported

Figures made public by the director general show that economies amounting to \$25,286,207 per annum have been effected in three regions, the Southern, Southwestern and Northwestern, by unification of terminals and the cutting down of train service. In the Northwestern region \$25,229,352.45 a year has been saved, according to the report of R. H. Aishton, regional director, made up as follows:

Reduction in passenger train service, \$20,155,954; elimination of duplication in freight train service, \$1,338,726; unification of terminals at Chicago, \$940,765.90; unification of terminals at Minneapolis and St. Paul, \$465,653.60; unification of terminals at Omaha, \$212,970; unification of terminals in the Duluth-Superior district, \$126,376.00; unification of terminals in the St. Louis, East St. Louis district, \$437,466.45; consolidation of live stock agencies at Kansas City, \$12,948; economies in the handling of ore in the Lake Superior district, \$660,000; joint switching, \$489,618.30, and miscellaneous economies, \$388,874.20.

B. L. Winchell, regional director for the Southern region, reports that in addition to economies previously effected, a saving of \$17,000 a year has been brought about in the terminal arrangements and rearrangements at Louisville, Kentucky.

In the Southwestern region, B. F. Bush, the regional director, reports that through the consolidation of freight yards and depots there will be a total annual saving to the government of \$39,766 a year. Of this sum, the consolidation of the freight depot and freight yards of the Missouri, Kansas & Texas, with those of the Houston Belt & Terminal Company, wipes out an annual expenditure of \$30,000.

Large Increase for Non-Telegrapher Station Agents

Director General McAdoo, on November 23, announced his award, effective October 1, with respect to rates of pay, rules for overtime and working conditions upon railroads under federal control for agents whose regular assignment does not require the sending or receiving of railroad train orders by telephone or telegraph. The order applies to approximately 2,500 employees.

There is established, first, a basic minimum rate of \$70 per month and to this basic minimum, and to all rates of \$70 and above in effect as of January 1, 1918, prior to the application of General Order No. 27, there is added \$25 per month. The only exceptions to this basis are in the case of those who are paid \$30 per month or less for special service, which takes only a portion of their time for outside employ-

ment or business, and also in the case of all agents who receive \$50 per month or less, to whom a straight advance of \$25 per month is granted.

Eight consecutive hours, exclusive of the meal hour, constitute a day's work. Overtime for the ninth and tenth hour of continuous service to be paid pro rata. All after the tenth hour is to be paid for at the rate of time and one-half. The usual provisions with respect to right of appeal in cases of individual grievances are established.

Capital Expenditures of Switching and Terminal Companies

A report of the Division of Capital Expenditures of authorizations and expenditures in connection with work chargeable to capital account for 118 switching and terminal companies and the Pullman Car Lines shows expenditures up to September 30 amounting to \$12,275,656 charged to capital account and \$422,590 charged to operating expenses, as compared with total authorizations up to November 10 of \$54,454,247 chargeable to capital account, and \$2,259,427 chargeable to operating expenses. The total budget for 53 companies for 1918 as shown in the report, was \$17,612,882, and the additions to the budget amounted to \$1,166,344. Of the capital expenditures actually made to September 30, \$6,321,653 was for additions and betterments, \$2,926,842 was for equipment and \$3,027,161 was for construction of extensions, branches and other lines. The equipment column includes an item of \$2,314,022 for passenger train equipment, which doubtless represents principally the expenditure of the Pullman Company.

Shop Employees' Hours Reduced

The emergency under which railroad employees in locomotive and car repair shops worked long hours during the war period having in some degree passed, Director General McAdoo, on November 22, issued directions under which the locomotive and car shop hours, as far as practicable, will be reduced to 9 hours per day, effective on November 25, and to 8 hours per day effective on December 9.

The director general sent the following telegram to all regional directors:

Last spring when the railroads were still struggling with congested traffic and weather conditions were very severe, the different mechanical organizations responded in a most gratifying way to the request that the men work a greater number of hours in the shops throughout the country than they had been accustomed to, or than some of their agreements with the railroads provided, in order to repair locomotives and cars for the prompt transportation of munitions of war and for food and other supplies for our army and navy abroad and the Allies. It is now possible, in view of the signing of the armistice, to anticipate an early return to normal conditions, and directions have been issued that wherever practicable the locomotive and car shop hours shall be reduced on November 25 to nine hours per day where greater number is now being worked and to basis of eight hours per day on December 9. The director general desires to express his deep appreciation of the patriotic response of the mechanical workmen on all railroads and his gratification that it is no longer necessary to call for number of hours of service heretofore required.

Claim Circular No. 3

The Claims and Property Protection Section has issued Circular No. 3 prescribing regulations governing the investigation and settlement of claims for loss and damage to fruits and vegetables as follows:

It is the practice of some carriers to pay claims for damage on fresh fruits and vegetables when receipt of shipment was received at point of origin in apparent good condition, and damage by frost, deterioration or decay is found at time of delivery, even though investigation discloses no fault in the transportation service.

Other carriers decline to assume any liability when shipper's specific shipping instructions, as provided by tariff publications, have been fully complied with, and damage by frost, deterioration or decay is found to exist at the time of delivery, the damage being attributed to the inherent vice of the commodity or to some cause other than negligence of the carrier.

Such varying practices result in undue preference and unjust discrimination, and should not exist. Therefore, to establish uniform practices, the following rules are prescribed:

Rule 1.—Shippers of fresh fruits and vegetables must give carrier rea-

sonable notice of the commodity to be shipped and the kind of container used.

Rule 2.—Shippers must declare in writing to the initial carrier at loading station whether or not their shipments are tendered by them for transportation under refrigeration or ventilation, as provided in current tariff publications. Changes in refrigeration or ventilation instructions en route, given reasonably in advance to the carriers, may be made by the shipper, or the owner, or the duly authorized agent of either.

Rule 3.—The agent at the loading station must insert on the waybill the shipping instructions as to refrigeration or ventilation required by the shipment en route.

Rule 4.—The carriers shall keep accurate records of the services performed, and there shall be no question as to the compliance with shipper's instructions. The information shown by the carrier's records shall be furnished to claimant in connection with claim when there is controversy regarding the service performed.

Rule 5.—Damage to fruits or vegetables caused by frost or freezing shall be investigated, and when it is found that such damage is due to unreasonable delay, failure to comply with shipper's instructions, or other negligence of the carriers, claims for damage due to such causes shall be paid.

Rule 6.—When the service and protection afforded by the carriers is in accordance with shipper's instructions, as provided in current tariff publications, and there is no evidence of negligence, unusual handling, or unreasonable delay, claims for damage shall not be paid. When carrier's handling is not in accordance with such instructions, and as a consequence loss or damage has occurred, or there is evidence of negligence, unusual handling, or unreasonable delay, and damage results therefrom, claim for loss occasioned by such causes shall be paid.

Board of Adjustment No. 3

Membership of Board of Adjustment No. 3 created in accordance with the director general's General Order No. 53 to adjust controversies growing out of the interpretation of application of wage schedules applying to telegraphers, switchmen, clerks and maintenance of way employees, will be as follows: H. A. Kennedy, terminal manager, Twin Cities, chairman; S. N. Harrison, receiver, Wisconsin & Michigan; F. Hartenstein, superintendent, Washington Terminal; E. A. Gould, general superintendent, Missouri Pacific, representing the railroads, and George E. Kipp, Order of Railroad Telegraphers; W. A. Titus, Switchmen's Union of North America; Richard P. Dee, Order of Railway Clerks, and T. H. Gerrey, United Brotherhood of Maintenance of Way Employees, vice-chairman, representing the organizations.

Director General Prohibits Christmas Presents

Director General McAdoo has issued a circular, No. 64, directed against the practice formerly common, but which has been considerably reduced in recent years, of giving Christmas presents to railroad men. The circular says:

"A practice has grown up by which officers and employees of railroads have been given Christmas and other holiday presents by shippers, and by business houses who furnish supplies and materials to railroads.

"While in many instances these presents do not represent material value, yet the practice is essentially objectionable, and it is the policy of the Railroad Administration that it should be discontinued entirely."

Santa Fe Contract Signed

Before leaving on his southern trip, Director General McAdoo affixed his signature to the compensation contract with the Atchison, Topeka & Santa Fe, which has since been signed by President Ripley. It provides for an annual rate of compensation of \$42,885,310.80, the amount of the standard return as certified by the Interstate Commerce Commission without any extras. The contract covers also the following subsidiaries: Kansas Southwestern; Gulf, Colorado & Santa Fe; Panhandle & Santa Fe; Rio Grande, El Paso & Southwestern, and the Grand Canyon Railroad.

Railroad Employees Willing to Pay McAdoo Salary

Director General McAdoo has received a telegram from a number of railroad employees at St. Louis saying that the railroad employees of St. Louis have pledged \$2,000 a month toward his salary and that they are opposed to his resignation and heartily in sympathy with his financial straits.

Special Foundation Work for a Railroad Bridge

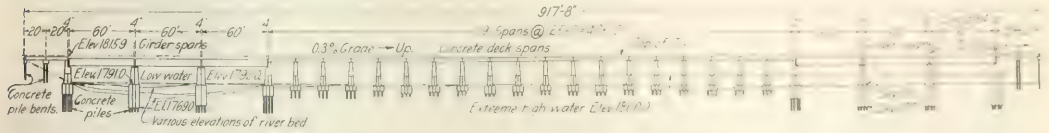
New Burlington Structure Over the Platte River Is Supported Entirely on Concrete Piles

By J. H. Merriam

Resident Engineer, Chicago, Burlington & Quincy, Bridgeport, Neb.

THE CONSTRUCTION of a new bridge over the Platte river, near Grand Island, Neb., on the line of the Chicago, Burlington & Quincy between Lincoln, Neb., and Billings, Mont., involved the crossing of two channels, one near each river bank with a stretch of shallow water between them. This is a characteristic condition in the Platte river for almost its entire length

concrete piers supported on reinforced concrete piles. The total length of the bridge is 917 ft. It is 200 ft. shorter and 12 to 14 ft. higher than the pile trestle which it replaced. This additional height is for the purpose of reducing the grade on the east side of the river, this grade reduction including about five miles of line change with 250,000 cu. yd. of excavation and embankment. The entire change of line,



General Elevation of the Platte River Bridge

and from previous experience it has been found practicable to reduce the width of the river at the point where a permanent bridge is constructed. On the bridge in question the length of the crossing was reduced 200 ft. from that of the existing structure and the consequent deepening of the river bed together with a natural tendency to scour required the

together with the new bridge, will have grades not exceeding 0.3 per cent and will eliminate a 1 per cent grade.

The Platte river has a range at this point of about eight feet between extreme low water and high water. During high water, the bed of the stream scours to a depth of about four times the rise of the water. For instance, if the river raises



Pile Yard Showing Forms

use of deep foundations. These were placed on concrete piles and embodied a special form of construction.

The new bridge consists of three spans of 60-ft. deck girders over each of the channels with 19 spans of 25-ft. reinforced concrete trestle slabs over the shallow portion of the river between them and two approach spans of 20-ft. trestle slabs at each end of the bridge to serve as approaches. Except for two bents of reinforced concrete piles under each of the approaches, the substructure of the bridge consisted of

a foot, the bed of the stream goes down about four feet, and when this flood water goes down, the sand fills back to its normal condition. For this reason, the bridge was designed to take care of scour.

Owing to the heavy traffic over the existing bridge, it was necessary to construct a temporary bridge from which to conduct all construction operations. The new center line crosses the river about 18 ft. down stream from that of the old bridge, and the center line of the temporary or construc-

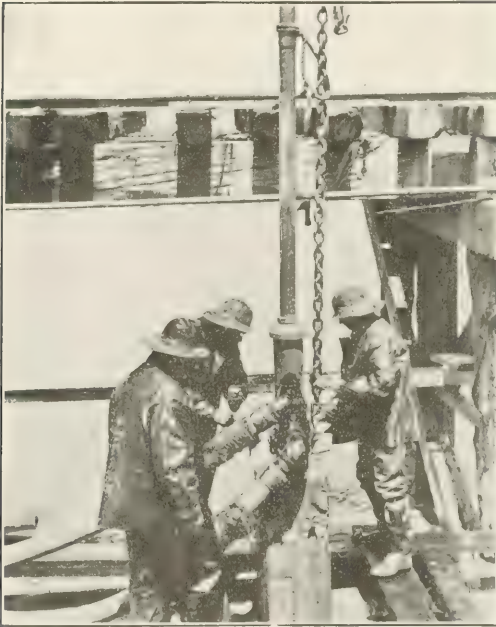
tion bridge was built 15 ft. down stream from the new alignment. The temporary bridge consisted of three-pile bents with six 8-ft. by 16-ft. stringers per span of 15 ft.

The concrete piling used in the foundation is known as the Bignell concrete jet piling, which had not before been used exclusively on a bridge of this size on the Burlington. They are 16 in. by 16 in. in section and 40 ft. long, made of reinforced concrete with a four-inch pipe or opening throughout the entire length. At the point of the pile, this is reduced to a one-inch opening by means of a special casting, but there are five small openings into the pipe from each side through which water may be discharged while sinking, in order to overcome side friction.

The entire 575 piles used on this work were made on the ground at the bridge site. These were made in batteries of six, an average of 18 to 24 being completed per 10-hr. day. The work included setting up the forms, placing the reinforcing and pipe openings, and the concreting. The concrete

and overcome side friction, so that the pile settles by its own weight. No driving is required in sinking the piles. The water pressure for the point of the jet was carried at about 175 lb. per sq. in. and that for the side openings was maintained at 100 to 125 lb.

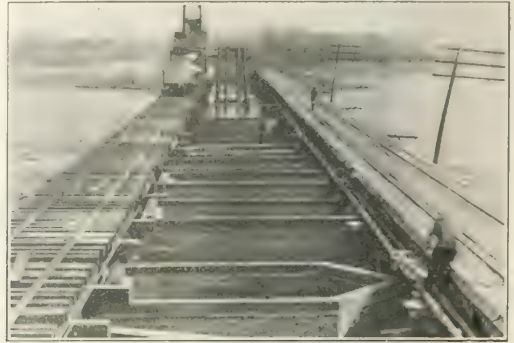
The piles were sunk their entire length through sand in 5 to 15 min. When clay was encountered it sometimes required 50 to 60 min. per pile. In the case of this bridge, a



Hose Attachment on the Top of a File

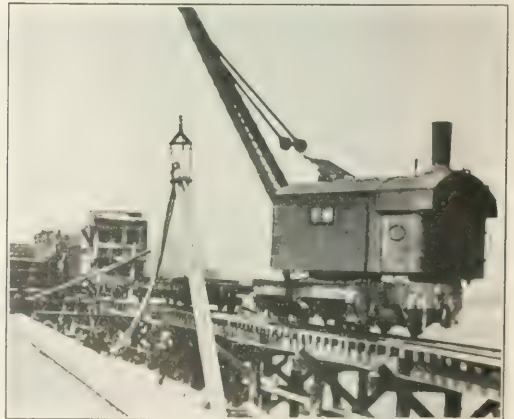
was mixed by a plant erected on a flat car which moved along a track parallel to the forms and was spouted direct into the forms. The side forms were removed in 24 hr. and the piles were allowed to cure from three to seven days before they were removed to a storage yard. In no case were they used earlier than 60 days after concreting.

Before sinking these piles, they were fitted with a two-inch pipe which was placed inside the four-inch pipe and fitted into the nozzle at the lower end. The connection at the top of the pile was made up of standard pipe fittings so as to apply water through two lines of 3½-in. hose, one of which furnishes water inside the two-inch pipe for discharge from the jet at the point of the pile, while the other supplies water to the annular space outside the two-inch pipe and inside the four-inch pipe, which in turn feeds the small opening along the sides of the piling. The jet at the point is for the purpose of digging or loosening the material ahead of the pile while the side openings keep the material moving up



Concrete Coffier Dams in Place Ready for Sinking. Old Bridge on the Right. Temporary Construction Bridge on the Left

stratum of clay was encountered at a depth of 27 ft. which varied from 3 to 13 ft. in thickness. From 6 to 13 piles were sunk per 10-hr. day. The plant and equipment used for sinking the piles consisted of a power plant with two locomotive-type boilers, carrying steam pressure at 160 lb., two Gardner duplex pumps, 20 in. by 12 in. by 10 in., and one Knowles duplex pump 20 in. by 8 in. by 18 in. The two Gardner pumps furnished low pressure water for the



Raising a Pile Preparatory to Sinking

side openings and the Knowles pump furnished high pressure water for the jet at the point. This plant was located on the river bank and water was supplied at the point of sinking through two six-inch pipes which were laid on the old bridge and controlled at the hose connections by suitable valves. A 25-ton bridge derrick was used in handling the piles with the aid of a special device for carrying, up-ending, and sinking them, since they were all sunk from 5 to 18 ft. below

the surface of the water. A special device or wrench was used to disconnect the hose from the top of the pile after the sinking was complete.

The piles were driven inside of concrete boxes* that had been previously constructed and sunk to depths varying from 10 to 20 ft. at the site of each pier, there being from 15 to 24 piles per pier. Since the water was shallow it was found practicable to build up a shoe or cutting edge for these boxes with 12-in. by 12-in. timbers on the river bottom, using enough courses, usually one or more, to bring the top above the surface of the water. The forms were then placed so that the concrete boxes could be built on these timbers. Each box was topped with timbers which were removed after the

Owing to the height of the bridge above the construction track, it was necessary to use a tower installed on a flat car to hoist the concrete mixture to a sufficient elevation to spout it into place.

The girder spans were placed in the usual manner after the completion of the piers. Concrete deck slabs were placed on top of the girder imbedded in a mortar base. The slabs conform to the Burlington standard and are 5 ft. long by 14 ft. wide with a parapet on each side to hold the ballast. The reinforced concrete trestle slab spans were all constructed in place. To make this possible the bases of the piers were provided with footings for false work bents to carry the deck and forms on which the slabs were poured. These slabs are built in sections and provided with lifting stirrups so that they may be taken out and replaced in case this is ever necessary. The falsework under these slab spans was left in place for 30 days to insure complete hardening of concrete.

Work on this bridge was begun in March, 1917, and completed on July 10, 1918, much trouble being experienced with labor shortage during the summer of 1917. All work was handled under the supervision of G. A. Haggander, bridge engineer, Chicago, and F. T. Darrow, assistant chief engineer, Lincoln, Neb., and was done by company forces.

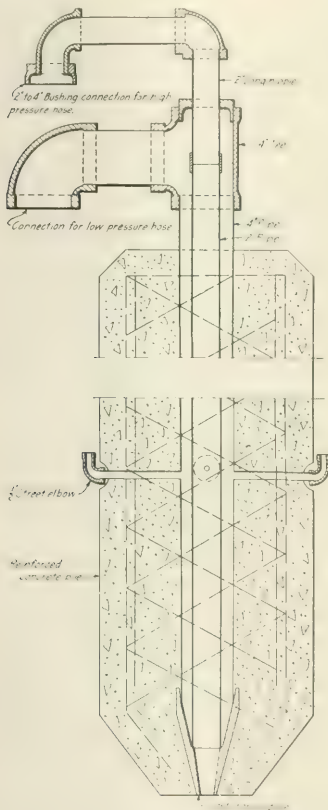
The Railroads and a New Era of Agricultural Development

THE RAILROADS HAVE LONG been foremost in the promotion of agricultural development because of their pecuniary interest in the creation of new traffic. It was feared by some that government control, by destroying competition between individual lines, would wipe out, in a large measure, the development activities of the railroads. Recent events, however, indicate that the contrary will be the case.

Acting upon the request of Hon. Franklin K. Lane, Secretary of the Department of Interior, A. P. Davis, director and chief engineer of the U. S. Reclamation Service, invited federal managers to send competent representatives to the International Farm Congress which took place at Kansas City, Mo., on October 17, to assist in working out a sound land settlement policy, particularly for the benefit of returned veterans of the war. The reclamation service has an appropriation of \$200,000, one-half of which has been set aside for a survey of cut-over and swamp lands and the other half for an investigation of arid lands suitable for irrigation.

Knowing the familiarity of the railroads with such tracts available for development, acquired after years of practical study of agricultural possibilities, Secretary Lane has called upon them to provide the Reclamation Service with all possible information regarding areas of 5,000 acres, or more, adjacent to their lines which are available for successful development. The secretary estimates that more than 15,000,000 acres of irrigable land still remain in the government's hands, that there is a total area of swamp and overflow lands in the country of between seventy and eighty million acres, while cut-over lands suitable for agriculture, approximate two hundred million acres.

All of these lands require an initial investment to put them in suitable condition for cultivation. A resolution passed by the International Farm Congress proposes that this be done jointly by the federal and state governments. The federal government, according to the plan outlined, will provide the money for reclamation and will carry on the work of preparing farms for cultivation. In order to place sufficient responsibility upon the individual states and thereby to eliminate, as far as possible, the danger of injury to the scheme through "pork barrel" politics, the state will be required to provide the lands to be used, whether they have been previ-



Sections of the Top and Bottom of a Bignell Pile Showing the Facilities for Jetting

pier was complete. The top of the concrete was sunk below low water mark. After the piles were in place, the sand inside the boxes was excavated by means of a sand pump until the tops of the piling were uncovered to some depth. A sealing course of concrete was then placed through the water and after this had set sufficiently, the box was unwatered. In no case was the sealing course placed to such a depth as to cover the tops of the piles, consequently, when the box was unwatered, the tops were exposed to view and their location and condition could be noted. The piers were then concreted to completion in the dry.

*An article describing the open concrete caissons used by the Burlington appeared in the *Railway Age* of June 21, 1918, page 1473.

ously in private hands or state-owned. The lands offered by the states will be subject to the approval of the federal government both as to quality and cost. The state will provide facilities for the agricultural training of soldiers lacking experience or knowledge of local conditions, and the cost thereof will be shared equally by the state and federal governments. Provision will also be made for the repayment by the individual settler of the cost of the acquirement and reclamation of the land and the preparation of the farms for cultivation, these payments to be made in small installments extending over long terms at low rates of interest, so as not to prove unduly burdensome on the farmer.

Details of the plan, with the exception of the clauses providing for the co-operative efforts of the federal and state governments, are modeled after those included in the Wright law of California, under which two tracts of about 4,000 acres each were set aside for development and settlement by the state. One of these tracts has already been fully settled and the operation of the law has proved a decided success.

The Chicago, Burlington & Quincy has submitted a map to the Reclamation Service showing all the irrigation tracts in Wyoming set aside under the Carey act of that state. This law provided for the private development of irrigation projects and the regulation by the state of water rates to homesteaders. In these areas about 1,000,000 acres are still available for settlement. Members of the agricultural committee for the Railroad Administration are taking vigorous steps to create a sentiment in various western states favorable to the proposed reclamation scheme. Letters have been received from Governor Capper of Kansas and Governor-elect Carey of Wyoming, which indicate that they will use all their influence to make the project a success. It has also been learned that the governor of New Mexico is favorable to the plan. Under the states defense act he is custodian of the funds of the State Council of Defense, \$500,000 of which remains in his hands unexpended. He is considering seriously urging the use of a portion of this amount in any preliminary work that may be necessary to launch the reclamation movement in his state.

Train Accidents in October¹

THE FOLLOWING IS A LIST of the most notable train accidents that occurred on the railways of the United States in the month of October, 1918:

COLLISIONS

Date	Road	Place	Kind of Accident	Kind of Train	Kill'd	Inj'd
5	Atchison, T. & S. F.	Hackney	bc	P. & F.	3	2
9	Pennsylvania	McVeytown	rc	P. & P.	1	4
11	Long Island	Woodhaven	xc	P. & F.	0	17
13	Pennsylvania	Bush River	rc	P. & P.	2	0

DERAILMENTS

Date	Road	Place	Cause of Derailment	Kind of Train	Kill'd	Inj'd
26	Norfolk & W.	Norfolk	open draw	F.	4	0

The trains in collision near Hackney, Kan., on the morning of the fifth were westbound passenger No. 17 and a westbound freight standing on a side track. One engineman and two firemen were killed, and one passenger and one employee were injured. Following some switching operations by the freight train, a facing point crossover switch had been left open, and the passenger train ran through this

switch and struck the side of the engine of the freight, which fouled the crossover track.

The trains in collision near McVeytown, Pa., on the ninth were westbound express passenger No. 37 and a preceding first-class train No. 53. The collision occurred in a dense fog while the leading train was running about 15 miles an hour and the other one about 25 miles an hour. The engineman of No. 37 was killed and the fireman of 37 and three employees on train 53 were injured. The rear cars of No. 53 were empty. The trains were running on eastbound track No. 2, the westbound tracks being blocked by the derailment of a freight train.

The trains in collision at Woodhaven, L. I., N. Y., on the evening of the 11th were an eastbound passenger train, and a switching engine standing on a side track. The passenger train, made up of electric cars, with the motorman sitting in the front vestibule of the leading car, ran over a facing point switch set for the side track, and collided with the yard engine at about 25 miles an hour. The motorman and 16 passengers were injured. The collision was due to disregard of an automatic block signal.

The trains in collision near Bush River, Md., on the morning of the 13th were northbound passenger trains, both of which had discharged their passengers at the preceding station. The leading train had been stopped because of delay to a freight train ahead, and the following train came on, in a dense fog, and crushed the two rear cars of the standing train. Two trainmen were killed. The second train had passed an automatic block signal set against it, and, considering the fog, was running at excessive speed.

The train derailed at Norfolk, Va., on the night of the 26th, was a yard freight train consisting of 44 cars and two locomotives, the two engines being at the head of the train but moving tender first. The leading engine ran into an open draw and fell into Elizabeth river, about 30 feet deep. One engineman, one fireman, and two brakemen were drowned. The bridge (a lift bridge) had been opened after the train had passed, at about 12 miles an hour, a signal, in the clear position, located 560 ft. west of the draw. (At the speed named the bridge tender would have 31 seconds in which to open the draw after the leading engine had passed the signal.)

Electric Car Accidents.—Of the half-dozen prominent collisions or derailments occurring on electric lines in October, only two were attended by fatal results. These were both on elevated lines in New York City, viz:

In a rear collision of southbound passenger trains on the Interborough Rapid Transit Company's line at Jackson avenue, on the morning of the third, a motorman and one passenger were killed, and about 25 passengers were injured. A local train from 180th street ran into a preceding train which was standing at the station platform, having been detained a few minutes. The colliding train had run past an automatic signal set against it; and also had run over an automatic train stop; but the train-stop was located at the stop signal, not the caution signal, and was not far enough in the rear of the standing train to allow space in which to stop the moving train.

In a rear collision of northbound trains at 187th street and Third avenue, on the evening of the eighth, the motorman was killed and 13 passengers were injured. A Second avenue express train ran into a Third avenue local train, which had been stopped a short distance in the rear of the station at Fordham. The rear part of the last car of the standing train was empty.

The Pennsylvania State College Engineering School at State College, Pa., was destroyed by fire on the night of November 25; estimated loss, including equipment, \$300,000.

¹Abbreviations and marks used in Accident List:

rc, Rear collision—bc, Buffering collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—uns, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc, Abst., Accidental obstruction—malice, Malicious obstruction of track, sabotage—P, or Pass., Passenger train—F, or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

The Valuation Aspect of Abandoned Property

A Rational Analysis of the Problem Leading to Allowance for Replacements Promoting Economies

By Wm. G. Raymond

Dean, College of Applied Science, State University of Iowa, Iowa City, Ia.

THE QUESTION as to how abandoned property should be treated in a valuation has caused much discussion and it can hardly be said to be satisfactorily answered. The present discussion is the result of an attempt to answer it in a particular case, in which the valuing engineer endeavored to reach a conclusion had reasoned as follows:

Abandonments in general come about from five causes, although the fourth and fifth may be called one. The five causes are:

1. The item abandoned is worn out in service and is to be replaced by a new item of like kind or at least by an item designed to perform the service of the worn out item.

2. Inadequacy of the item to perform the necessary service for an increased demand for the product. A small reservoir adequate for the community served when it was built becomes totally inadequate although not worn out when the community served has grown in size and demand.

3. The item becomes obsolete because the demand for its product ceases or is greatly lessened for one reason or another.

4. The item becomes uneconomical to operate because of advances in the art of manufacture which have resulted in the production of an item to perform the service for which the abandoned item was designed at such a reduction in cost, or increased regularity of output, that the operator is forced to dispose of the older item, although not worn out, and to install a more modern item in its place. This has frequently happened during the development of electric power generating apparatus, the telephone, phonograph, etc.

5. Akin to 4 is the abandonment of an item not worn out, and not abandoned out of necessity because of the invention of more economical machines, but abandoned simply because a more economical way of performing the service for which the item was designed has been found and the operator, though not forced to do so, elects to make the change. A common instance of this sort is the abandonment of a piece of railroad line of high grades and perhaps sharp curves, for a newly located and constructed low grade line more economical of operation. Another instance of this sort recently called to attention is the removal of a gas plant from the top of a hill where it was originally built by order of the community, a long way from rail connections for its supplies, to a point on low ground with a rail connection. It is not necessary to move the plant but economy seems to dictate the abandonment of the old site for the new one.

It seems unnecessary to discuss a sixth cause, because the regulating authorities have seemed to recognize the situation and have made provision to cover the loss involved in the change. Such a cause is the change in form of construction to conform to the orders of public bodies, as the placing of telephone and other wires underground at the loss of the overhead construction abandoned.

The treatment of the abandoned property in a valuation will depend on the cause of the abandonments.

1. When an item is worn out in service its cost less the salvage, if any, is credited to capital and the cost of the new item is charged to capital. If the cost of the old item has not been received during the life of the item, or is not received at the time of discarding, the owner loses that sum as he should, unless he has been prevented by some author-

ity from collecting the cost of the item during its life or at the time it is discarded. If it is of that class of small items kept up by charges to maintenance in operating expense, the cost is received presumably during the period of time over which the particular item is spread, a month or a year. If the item is of that class of major items whose costs are too large to carry in operating expense all at one charge, it is proper to collect a capital consumption allowance in the charges for service, distributed over a period approximately equal to the life of the item so that the burden may be distributed and not produce great inequality in operating expense. There is never any question but that the cost of an item discarded because it is worn out in service is to be collected in charges for service, either distributed over a period of years or in a single charge as the case may be. Abandonment for this cause, then, gives no trouble except as a question may arise as to which method should be adopted for charging the cost. The cost is recognized as a proper charge. It will not concern us further now.

2. Inadequacy reached at some time is a trifle more troublesome although it seems that it should not be. If in the beginning it has been recognized that sooner or later the item would become inadequate, and an estimate of the time has been made, and an annual capital consumption allowance calculated to return the cost at the expiration of the useful life of the item has been collected in the rates, and if the estimate of the period of usefulness has been correct, there is no trouble at all. When the retirement takes place, the cost is written off, or credited to capital, and there is in hand in cash or other property a sum equal to the cost of the item; a sum that has been collected in bits through the years, and perhaps invested in new property items if not held as cash in bank. It is immaterial what has been done with the accumulations, the owner spent so much for an item of property which has served its usefulness and he has received back the same sum in his charges for service. He may use this sum, if it is in cash or convertible securities, and additional money if necessary, for the creation of the larger property now required. If the sum is in other property not convertible, he finds the new money necessary from some other source. When the new property is to be valued at a later date, the old property is ignored, it was created and used, and has been paid for by those served.

If, however, the estimate of time has not been just right, it will have been too short or too long. If the former the cost will have been collected before the item is retired; if the latter, something still will be due when the property is retired. This that still is due might then be amortized over a few years if too large to charge in one year's expense, and if this is completed before a valuation of the new property occurs, no question will arise. If, however, the old item remains partly unpaid for when the valuation occurs, the valuing agency should take into account the amount uncollected, and in general, perhaps, would do so if the matter could be presented properly. It seems clear that this would be right.

But let it be supposed that the first item has been thought to be an everlasting item and no collection of amortization allowance ever has been made. When the new item must

be purchased or created new capital must be forthcoming and the owner will have invested capital equal to the cost of the retired item and the cost of the new item. Shall he be allowed in a later valuation to collect a return on the entire sum? He will doubtless have realized by now that nothing is everlasting and will desire to collect a capital consumption allowance. Shall he have this on the discarded property as well as that existing? If he has not been prevented from reimbursing himself in the past by rates fixed too low by public authority it would seem that he should stand in the same position as the manufacturer of any article of commerce who does not charge enough for his output to cover the depreciation of his plant as well as interest on the cost. Such a manufacturer would have to stand his loss when his outgrown machinery must be discarded or he would have to increase his price so that future purchasers of his product would pay for the plant used in the service of past purchasers. Whether or not he could do this would depend on the market and his competition. He certainly would do it if he could. And while it might seem unfair to the later purchasers, it is probable that any man who had made such a mistake in ordinary business would be expected to recoup himself later if he could. However, the man serving the public and subject to public control, who had lost by his own error, could hardly claim the right of reimbursement, and hence it would seem that he must expect to have his property valued as it stands on the date of valuation without the inclusion of his discarded items. Of course, in general only major items, too large in cost to be handled in current operating expense, are being considered.

3. So far as can be recalled at this writing few privately owned public utilities are likely to have abandoned property questions arise due to the cessation of the demand for their product although it is conceivable that in some quarters gas properties may become obsolete owing to the introduction of cheap electric current. This would mean the loss of the whole property and a question of valuation could not arise. The third cause for abandonment of property will be passed over as not likely to arise soon as a question of valuation.

4. When an item becomes uneconomical to operate because the advancing art has developed newer types operating much more cheaply, or with much greater satisfaction to consumers, it is discarded for the newer type. This case is somewhat similar to the second. The owner should have recognized the fact of advancing art and should have collected in his charges a sum sufficient to cover an early retirement of an unworn out item. If he has done so a valuation subsequent to the replacement will raise no question. If he has not covered the cost by the time the item is retired, a question may arise. So long as there is no competition he may go on using the old item, perhaps until it is worn out or he has recovered its cost in his charges for service and it is to be presumed that he will not make the change unless the service of the new item will be so much of an improvement on that of the old that he may hope to earn enough to pay

1. return and retirement allowance on the new item, and
2. return and retirement allowance during a short period on the unamortized sum remaining in the old item.

But if a question of rates arises before he has recovered this unamortized sum, a public valuing body is likely to value only what it finds and the owner is likely to lose whatever sum remains invested in the old item. In this case upon proper proof of the situation being produced it would seem fair, so long, at least, as rates have not been raised to pay for the old item, to permit the rates to remain sufficiently high for a sufficient time to reimburse the owner for his complete outlay still remaining in the old item. If he had not expected this to be allowed, probably he would not have made the change so soon and the public would not so soon

have had the advantage of the better service and the lessened cost. In such a case fair treatment would seem to mean a value including the investment remaining in the old item, and operating expenses sufficient to include a sum for its early amortization. Sometimes this is done by considering the old item as legitimately retained emergency equipment. Here should be no subterfuge.

5. The fifth cause has produced perhaps the most serious questions that have arisen, and it is not clear that they have always been settled rightly. These are questions right now of immense importance to the railroads of the United States under valuation by the Interstate Commerce Commission. To try to reason clearly a special case will be considered.

Let a railroad from A to B, 100 miles long, be built at a cost of \$5,000,000, or \$50,000 a mile. Let it be operated for some 10 years and in that time let it build up a good business. Let it appear that there are three relatively bad parts of the line each about 10 miles long with much heavier grades than any other portion, over which the trains operated over the rest of the road by single engines must be helped by pushers. Let it also appear that so much pusher service is less economical than the operation of lighter and consequently more trains over the entire line, trains that can be hauled over the heavy grades with single engines underloaded on the better portions of the line. There comes a time when it appears desirable to reduce the grades over the three bad places, and the engineering department is asked to show how this can be done to best advantage, what it will cost, and whether it will pay. The department reports that two of the bad places may be improved best by cutting down the hills and filling the hollows deeper, doing some really heroic surgery on mother earth at an expense of about \$500,000 in each place, and that the third place may be improved best by a relocation on a reduced grade at an expense of \$1,000,000. The department also reports that the saving in operating costs, brought about by these improvements will amount to \$150,000 annually or $7\frac{1}{2}$ per cent on the cost of the improvements. The improvement seems to be warranted, is made, and operation on the improved line is begun. The line is the same as before except for the 10 miles of abandoned line, the two ends of which are connected by the relocation.

Just after operation begins a general rate question arises, and a valuation of the property is ordered with a determination of operating expense. Just before the improvement was made a valuation based on actual costs would have shown \$5,000,000 for the roadbed, right of way, track, and permanent buildings and fixtures, and an annual operating expense of \$1,460,000. Forgetting equipment and retirement allowances, there would seem to be a call for a gross income of say, $7\frac{1}{2}$ per cent on \$5,000,000, plus \$1,460,000.

Just after the improvement is made, if the property is valued just as it is found, and as before on the basis of actual cost, there would seem to be a value of \$5,000,000 less \$500,000 for the ten miles abandoned, and plus \$2,000,000 for the improvements; and an operating expense of \$1,460,000 less \$150,000 or \$1,310,000. The gross income to cover operation and $7\frac{1}{2}$ per cent on the cost of the permanent way before the improvement is \$375,000 for return and \$1,460,000 operating expense or \$1,835,000. The gross income to cover operation and $7\frac{1}{2}$ per cent on the cost of the permanent way after the improvement is \$507,500 for return and \$1,310,000 operating expense or \$1,817,500. There is no return on or amortization of the abandoned 10 miles costing \$500,000. But the owner went into this improvement under the hope that his gross income would be maintained so that he could continue to pay a return on what he had invested already and also, by the saving made possible, could pay a return on the cost of the improvement; and perhaps could amortize the cost of the abandoned line

by future growth of business at the then prevailing rates. If allowed to maintain the rates he was charging before the improvement he would almost certainly be able to do this. No increase in rates would be necessary. But the regulating body steps in and says—if it does—You cannot have included as property that which you have abandoned. We shall allow you to earn $7\frac{1}{2}$ per cent on that which you have, and your operating expense.

The owner has been to great expense to reduce operating costs, looking to the future to reimburse him for his loss of investment in so doing. Should the public then take advantage of him and say, "You have reduced operating costs and we shall pay you only your reduced costs and a return on what we find you have of property in service"? Or should the public say, "You have made a fine improvement that has reduced operating costs; we shall pay you the same rates on which you counted, that with the growth of your business you may amortize your discarded investment, and with the expectation that when you have so done you will give us the benefit of your lower operating costs"?

Doesn't the answer seem obvious? Will improvements of this sort be made, if the owner cannot reasonably hope to have his abandoned investment amortized? The improvement, costing the public nothing, and eventually benefiting it, is desirable from the public viewpoint as well as from that of the owner; indeed, under a regulation that limits the return to operating costs plus a fixed rate of return on investment there is no inducement to the owner to make such improvements as have been considered. Indeed, he must have reasonable assurance that he will receive not only what

he abandons, but a share in the profit that results eventually from the improvement.

What will happen if the public owns the enterprise? If it decides to make such an improvement as has been considered, it will still have to pay a return on the money represented by the abandoned property until the debt in that sum has been discharged. And the public cannot do this unless it charges enough to those whom it serves to pay the return and amortize the debt. Shall it demand less charges of the private owner?

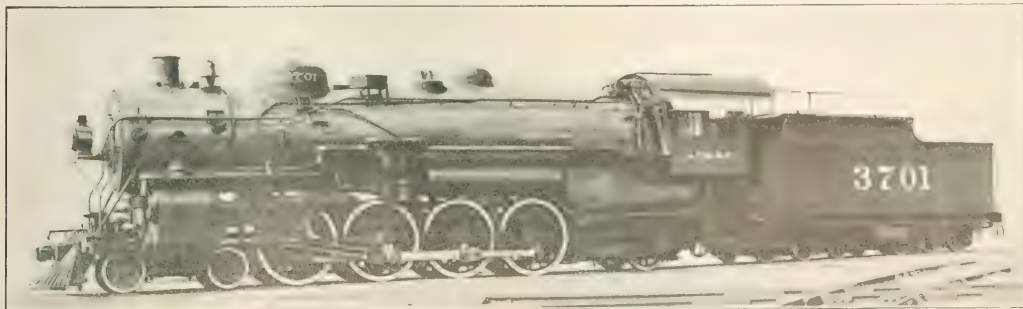
Now, after the lapse of a good many years, the case may be different. It will be pertinent then to inquire whether the cost of the abandoned property has been amortized. Properly kept books should show this. But properly kept books are rare. An estimate may be made, and if it seems that the company owner has been fully reimbursed for the abandoned property, it may be written off, or ignored in a valuation. If it could have been written off, but has not, although earnings have been sufficient, but have been applied to other uses, it would seem to be fair to ignore such abandoned property. There is some question as to what a court would do. The law is less elastic than commission procedure. It seems likely that the courts would require the finding of value only for that which is in existence at any time of valuation. While a commission with power quite properly might inquire into what would seem to do justice in each particular case and could direct the procedure accordingly, should not that which is fair prevail. Has the Interstate Commerce Commission adopted the fair procedure in each case?

First Mountain Type Locomotives for the Santa Fe

Two of Similar Design Differing in Details, for Comparative Trial; Heaviest 4-8-2 Type Yet Built

IN JUNE, 1918, the Atchison, Topeka & Santa Fe received from the Baldwin Locomotive Works, two Mountain type locomotives for use in passenger service, which are designed to develop 54,100 lb. tractive effort. These engines bear the road numbers 3700 and 3701, and although they are generally similar in design there are a number of differences in the details. Engine 3700 is fitted for coal

favorably with any of the same type which have been built heretofore. They are the heaviest of the type thus far built and with one exception have not been exceeded in tractive effort by any 4-8-2 type locomotives having driving wheels of equal or greater diameter. The locomotives built by the Norfolk & Western in 1916, with drivers and cylinders each one inch larger in diameter than the Santa Fe engines,



One of the Two Mountain Type Locomotives Recently Built for the Atchison, Topeka & Santa Fe

burning service and has the Baker valve gear, while engine 3701 burns oil and is equipped with the Walschaert valve gear. There are several other differences to which reference will be made later.

The proportions of these locomotives as a whole, compare

develop a tractive effort of 57,200 lb. A comparison of the more important dimensions of the Santa Fe locomotives with those of several other notable 4-8-2 type locomotives is presented in the table on the following page.

Using Cole's ratios as a basis of comparison, the Santa Fe

Firebox plates, thickness.....Sides, back and crown, 3/4 in.; tube, — in.	
Firebox, water space.....Front and sides, 5 in.; back, 4 1/2 in.	
Tubes, number and outside diameter.....253—2 1/4 in.	
Flues, number and outside diameter.....43—3 1/2 in.	
Tubes and flues, length.....21 ft.	
Heating surface, tubes and flues.....4,416 sq. ft.	
Heating surface, firebox, including arch tubes.....374 sq. ft.	
Heating surface, total.....4,790 sq. ft.	
Superheater heating surface.....1,086 sq. ft.	
Equivalent heating surface*.....6,419 sq. ft.	
Grate area.....71.5 sq. ft.	

Tank.....	Water bottom
Frame.....	Cast steel
Weight.....	233,700 lb.
Wheels, diameter.....	33 in.
Journals, diameter and length.....	5 1/2 in. by 10 in.
Water capacity.....	12,000 gal.
Oil capacity.....	4,000 gal.

*Equivalent heating surface of total superheater heating surface.....1.5 times the superheating surface.

Organization and Work of Fuel Conservation Section

The Measures Taken to Secure Economy in the Use of Fuel with an Estimate of the Savings Effected

THE WESTERN RAILWAY CLUB met at the Hotel Sherman, Chicago, on November 18. Major E. C. Schmidt, assistant manager of the Fuel Conservation Section, United States Railroad Administration, presented a paper on the work of that department, which was discussed by representatives of the Fuel Administration and of the railroads' fuel organizations. Abstracts of both the paper and the discussion follow:

As implied in the circular announcing the formation of the Fuel Conservation Section of the U. S. Railroad Administration, the purposes of this department are:

(a) To effect economies in the fuel consumed by locomotives.

(b) To effect economies in the fuel consumed at railway power and heating plants, pumping stations and the like.

(c) To bring about an improvement in the quality of the coal mined for railway purposes. It may be worth while, briefly, to state here the conditions existing last spring and to review the considerations which have shaped the general policies of this section, and which have determined the points where its effort is being most vigorously applied. Most large railroads have had for years some special organization for overseeing the use of fuel and for educating enginemen and others in its proper handling. Much effort has been expended in defining proper methods and practice and, in general, these methods are well understood by those concerned. In view of these facts our task was, therefore, one of enlisting individual interest and effort in order to insure the constant application of well-known methods, rather than one of educating men as to how fuel should be conserved. An exception to this statement lies in the presence nowadays of an unusual number of new firemen on locomotives; but this condition has not been overlooked.

The transportation department, by the quick movement of trains, by the avoidance of stops and train delays, and by better co-ordinated handling of locomotives at terminals, can influence coal consumption almost, if not quite, as fundamentally as the motive power department. Indeed there are very few individuals in the operating departments of railways whose daily work does not affect, whether directly or indirectly, the consumption of fuel. Eugene McAuliffe, director of the Fuel Conservation Section, in an address at the last convention of the Traveling Engineers' Association, well stated the scope of fuel economy as follows: "The conservation of railway fuel, beginning at the mine, goes thence over the track scales on to the coaling station through the breaker bars into the pockets, thence to the tender and the furnace door; not, however, to end at the stack mouth, but to begin again at the drawbar, and, sweeping back from there, to involve the trainmen, dispatchers, yardmasters, signal men, men in charge of air brake maintenance, men in charge of lubrication, and maintenance of way men—in fact, everyone from chief engineer to track men, and from superintendent to train-

men." These considerations have led us—not to ignore enginemen and shopmen—but to appeal to superintendents, trainmasters and dispatchers, as they had not been appealed to thus far, and to emphasize in all possible ways the influence of their work on fuel conservation.

The shortage of labor and the difficulty in obtaining material made it clear at the outset that we ought not to insist upon widespread changes in equipment; and the stress of readjustment which the roads were undergoing, as well as the shortage of men, also made it desirable that we should not at once insist upon the application of new methods, nor upon extensive changes in the personnel or type of organization of the railway fuel departments.

About 90 per cent of railway fuel is used for locomotives; the remaining tenth is used in stationary power and heating plants, pumping and coaling stations, and in similar situations. The majority of these plants are small, and so situated as to make adequate supervision difficult. In the main they are wasteful, and they use in the aggregate an amount of coal which demands effort at conservation; by their very wastefulness they offer an excellent opportunity to make savings.

Since the beginning of the war there has been a serious deterioration in the quality of coal, due to the pressure for increased production and the subsequent falling off in methods of cleaning and also to the reopening of mines which produce inherently inferior coal. The Fuel Administration has for months been at work on this problem, spurring on the miners and mine operators to greater care in the preparation of coal; and improvements have been made under their effort. Notwithstanding this progress, the situation, as far as railway fuel is concerned, seemed to demand more radical treatment because improvement in the quality of coal is so fundamental to our whole conservation program.

GENERAL POLICIES OF THE SECTION

The general policies of the section have been determined by the considerations thus briefly reviewed. They may be summarized as follows:

1. To exercise merely supervisory and stimulating influence in their work of supervising and stimulating the effort of firemen, enginemen, roundhousemen and shopmen; rather than to attempt to deal directly with the individual.

2. To strengthen the organization of these railway fuel departments, to magnify the importance of their work, to increase their authority where necessary, and to cause the establishment of such organizations on roads where they do not exist.

3. To cull the best practices of these organizations and to bring about their general adoption.

4. To lay particular stress upon the opportunities for conservation in railway transportation departments, emphasizing the opportunities for economy open to superintendents, trainmasters, dispatchers, and trainmen in their daily work.

5. Avoid rigidly any widespread changes in equipment, either on locomotives or in stationary plants, seeking, however, to get the best possible results out of existing equipment.

6. To avoid foisting upon the railroads new methods, trying rather to enlist the co-operation and interest of everyone concerned toward greater individual effort in the daily application of well-known practice.

7. To lay especial emphasis upon the necessity for improvement in the stationary power and heating plants located at terminals, shops and round-houses, and in pumping plants, coaling stations and similar situations.

8. In co-operation with the United States Fuel Administration to do everything possible to bring about an improvement in the quality of coal supplied for railway use.

Our total supervising force consists at present of 11 men. For the purpose of investigating in special cases the preparation of coal at the mines we have one man in the field. At the time that these supervisors were installed in office, we called in each region a meeting of the officials of the roads in that territory to explain to them our purposes and plans, and to make to them specific suggestions concerning improvements. Responsible operating officials have never been reached so authoritatively nor in such large numbers in connection with the conservation of fuel. The meeting held on August 1 in Chicago, for example, was attended by 550 officials occupying positions of such authority and influence as to make their interest and opinion immediately effective on their roads. Following these meetings our supervisors have at once begun their inspection of each road, observing the opportunities for improvement and making directly to chief operating officials their request for changes.

ORGANIZATION OF RAILWAY FUEL DEPARTMENT

In this connection we have been making the following tentative recommendations concerning the organization of railway fuel departments. We have suggested that the head of this department be relieved of all duties except the responsibility for the conservation of fuel. We have recommended that we have as assistants men of the experience and capacity of the usual first-class traveling engineer, and that there be one such assistant for every 75 locomotives. We have suggested that in addition skilled firemen be detailed as instructors in sufficient number to give each new fireman adequate training before beginning his road service; and that these fireman instructors have charge of the fire-cleaning forces at terminals. These men are to give their entire time to fuel economy, and are to be in addition to such traveling engineers as the motive power department may require for other purposes.

In our stationary plant campaign we have sought to remain in constant contact and co-operation with the United States Fuel Administration; and while we have maintained jurisdiction over the railway plants we have kept ourselves informed of the aims and recommendations of the Fuel Administration and, insofar as they are applicable to the railways, we have incorporated them in our own procedure.

Many railroads maintain fuel inspectors to inspect coal at the mines. Since July we have been accumulating information concerning these inspection organizations and we have been perfecting with the Inspection Section of the Bureau of Bituminous Coal of the Fuel Administration arrangements looking toward improvement in the quality of coal by greater care in its preparation and cleaning at the mines. As a result of these arrangements every railroad fuel inspector has now been formally authorized to act for the Fuel Administration in his daily work and in his dealings with mine operators; and he has been provided with credentials showing his authority. In situations demanding improvement he reports to us the facts in detail and also deals directly with the operator in trying to effect improvements in preparation. In cases where, notwithstanding his effort, coal of poor quality is persistently shipped, the inspectors' reports are verified and such mines or parts of mines are being prohibited by the Fuel Administration from making further shipments and the Railroad Administration is withdrawing the car supply from such operations. Supplementing this process, we ourselves have recently been inspecting mines complained of and when we were assured that the product was unfit for locomotive use we have asked the Central Advisory Purchasing Committee of the Railroad Administration to instruct the railroads to cease purchasing or accepting coal from these mines.

While statistics are being accumulated which ultimately

may reflect the results of our efforts, we are not yet able to draw conclusions from them; but evidence of the effectiveness of our campaign comes to us in other forms from many directions. From practically all railroad officials we have had a most hearty response to our appeals, and the interest which they have expressed has translated itself, in almost every instance, into improvements clearly obvious to us and to our supervisors. Fuel departments, have, in many instances, been thoroughly reorganized; in others they have been enlarged in accordance with our suggested tentative standards. In many cases the heads of these departments are now reporting directly to general managers or federal managers and their recommendations are being acted upon with much more authority than has ever been the case. In other instances railroads which had no definite organization for fuel supervision have formed fuel departments and are giving the conservation of fuel adequate attention.

Certain details of equipment and many elements of locomotive maintenance which affect fuel economy are receiving more attention than before. Campaigns for economy in the uses of fuel at stationary plants have been organized on many roads, and definite organizations charged solely with the responsibility in this field have been formed where hitherto such responsibility has been a purely incidental duty of men already overburdened.

In response to the natural question as to how much fuel we expect to save I would conclude by presenting the following estimate. It should be understood as a mere estimate not yet supported by adequate statistics; but it is made with care, is probably conservative, and is based upon a thorough balancing of all the facts stated and implied above.

Present estimates indicate that during the calendar year 1918 United States railroads will use about 175,000,000 tons of coal for all purposes, including both bituminous coal and anthracite. Of this amount about 157,000,000 tons will be consumed in locomotive service and about 18,000,000 tons at stationary power plants and for miscellaneous purposes. In addition, the railroads will use approximately 42,000,000 barrels of fuel oil. Basing our calculations on these totals we estimate that the savings likely to result from our campaign during the period for which it has been under way will be at the following annual rates:

Two per cent saving due to improvement in the quality of coal, or 2 per cent of 175,000,000.....	3,500,000 tons
Three per cent saving on the coal used in locomotive service, or 3 per cent of 157,000,000.....	4,710,000 tons
Ten per cent saving on the coal used at stationary power and heating plants and for miscellaneous purposes, or 10 per cent of 18,000,000.....	1,800,000 tons
Total annual coal savings.....	10,010,000 tons
Two per cent saving on the fuel oil used for all purposes, or 2 per cent of 42,000,000.....	840,000 bbls.

DISCUSSION

Following Major Schmidt's paper, Joseph B. Harrington, administrative engineer of the United States Fuel Administration for the State of Illinois, pointed out that the railroads present a different problem from stationary power plants because they extend over such a large territory. This decentralization makes it necessary to use small units at coaling stations, pumping plants and similar points. These are fundamentally uneconomical, due to the equipment and to the types of men who of necessity are employed to operate them. Mr. Harrington stated that in some instances improvements designed to effect economy in the use of fuel had been withheld because it was impossible to demonstrate the economy that would be effected by the individual factor in the equipment. He pointed out the necessity of considering the fuel saving problem in a broad light. Although the results of the various measures cannot be segregated, when all the necessary equipment has been provided the complete plant will give the desired results. Partial installations, however, are not effective. It is not sufficient to plug some of the leaks; they must all be stopped.

Mr. Harrington stated that in his opinion the ultimate

solution of the fuel problem is to make the fuel department one of the major parts of the railroad organization, dignifying it by making the man in charge a vice-president. Coal is handled in such great quantities that the men working on the railroads do not realize its value. The fuel conservation department of the railroads should be established on a permanent basis, as the preventable fuel losses are serious and enormous. It is not so much a matter of learning what to do, but of getting it done. The widespread opinion that large plants are, in general, economical and small plants wasteful has not been borne out by inspection. Some of the larger plants have proved to be in the poorest condition and some of the smallest were very economically operated. Efficiency is more a matter of personnel than of equipment.

F. P. Roesch, fuel supervisor of the Northwestern Regional District, made a plea for the continuation of the fuel conservation movement. The Fuel Conservation Section made a patriotic appeal and received a patriotic response from the railroad men. Since the signing of the armistice, however, there has been a marked relaxation. This is the wrong attitude, for while the war is over the period of readjustment will be a difficult one and unless wasteful practices are corrected this country will not be able to secure what it has gained. Mr. Roesch quoted a statement of Regional Director Aishton that accurate statistics of the fuel consumed would result in greater savings than any other single factor and went on to point out that while great efforts were made to secure monetary savings, the saving of pounds of coal did not make as strong an appeal. For that reason, fuel statistics should be reduced to a dollar and cents basis. Mr. Roesch cited

a few concrete examples of what had been accomplished in saving fuel through the inspection conducted by the regional fuel supervisors. He called attention to the waste due to heating passenger cars during lay-over periods, gave figures showing the cost of steam and air leaks and showed the results secured by feeding the cleanings from blacksmith forges to stoker fired stationary boilers.

L. R. Pyle, fuel supervisor, Central Western regional district, called attention to the fact that the higher officers of the railroads are showing more interest in fuel economy than ever before and are willing to install the needed equipment where improper conditions are brought to their attention. He spoke of the necessity for being constantly on the watch for wasteful practices, and of making recommendations for improvements in writing so they could not be overlooked. To secure the best results, it is necessary to give the enginemmen locomotives in good condition and then to show them how to operate them economically. It is not sufficient to apply corrective measures and then pay no further attention to the matter. It takes constant following up to maintain good conditions and to make the improvement permanent.

J. G. Crawford, (C. B. & Q.), spoke of the losses due to improper operation of coal chutes and urged that more attention be given to the handling of coal between the mine and the engine tender. He pointed out that the failure to clean chutes periodically resulted in spontaneous combustion, influenced the consumption of coal unfavorably, and sometimes caused failures due to locomotives being loaded with fine coal that had accumulated for a considerable period at the bottom of the chute.

Transverse Fissures and Phosphorus Streaks in Rails*

New Evidences of the Influence of Segregation and of the Advantage of Reheating Blooms

By G. F. Comstock

Physical Testing Laboratory, Titanium Alloy Manufacturing Company, Niagara Falls, N. Y.

THE SUBJECT of transverse fissures in steel rails has been discussed very thoroughly in recent years from various points of view and the final opinions expressed may be roughly classified into two groups:

(1) That these fissures are the result merely of fatigue of the steel and are independent of the quality of the metal.

(2) That the quality of the metal and the mill practice must have something to do with them.

The view that these fissures were due merely to normal fatigue under alternating stresses seemed most reasonable to the writer until quite recently, because, from work done in this laboratory, as well as the work of other investigators of the problem, no structural differences, in the vast majority of cases, were found between metal at the nuclei of transverse fissures and metal at similar positions in the same rails or in other rails that had not developed fissures. Within the last year or two, however, since the method of etching polished sections for the microscope with a cupric chloride solution has been tried systematically on lengthwise sections, passing through the nuclei of transverse fissures, evidence began to accumulate that there was a certain structural peculiarity of the metal associated with these fissures, and very often showing its most distinct development at the nucleus rather than elsewhere in the section examined.

When the use of cupric chloride reagents was discovered and advocated for the detection of phosphorus segregation in steels, and this method began to be applied to longitudinal

sections cut through the nuclei of transverse fissures in rails, it was found in many cases that the most distinct of the streaks shown in this way passed through the nucleus. In some of these rails the streaks were about the same throughout the section examined, but in practically none were they absent or even indistinct. Fig. 1 is a photograph, taken at a magnification of about $2\frac{1}{2}$ diameters, of two polished microscope specimens etched with the aqueous picric acid solution, which darkens the high-phosphorus streaks. The edges of these specimens show parts of transverse fissures, with the polished sections cutting through the nuclei, and in each case it is plainly seen that the nucleus of the fissure is directly in line with the most distinct dark streak on the polished surface. Figs. 2 and 3 are photomicrographs of the polished surfaces of specimens cut, like those in Fig. 1, through the nuclei of transverse fissures in rails, but etched with cupric chloride. Each of these shows the edge of the specimen at the nucleus of the fissure, and the most distinct high-phosphorus streaks are shown in every case passing directly into these nuclei.

Transverse fissures generally have their nuclei a short distance inward from the surface of the rail section, and it has often been noted that the nucleus will occur at the same distance below the top of the head as the topmost distinct high-phosphorus streak. This streak would, of course, have been subjected to a greater bending moment in service than any streak existing nearer the center of the rail, and hence might be expected to crack first.

The cause of the high-phosphorus streaks is the selective

* Abstract of a paper to be presented before the American Institute of Mining Engineers, at New York, in February, 1919.

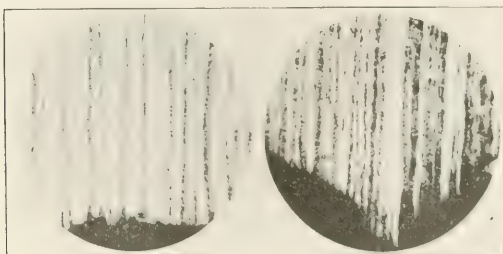
freezing in the ingot, which cannot be avoided by any means now known. The effects of this selective freezing may, however, be remedied or overcome by diffusion in the solid state, which is a very slow process in regard to phosphorus. If longer heating of the solid steel in rail manufacture by allowing more thorough diffusion will decrease the intensity or distinctness of the high-phosphorus streaks, then rails rolled from reheated blooms should show these streaks less distinctly than rails rolled direct from ingots. A more interesting fact in this connection is that out of the few hun-



Fig. 1—Two Polished Specimens for the Microscope Etched with Aqueous Picric Acid, Showing Parts of Transverse Fissures on Their Edges and the Most Distinct Streaks on the Polished Surfaces in Line with the Nuclei

dred rails that have failed from transverse fissures on the New York Central Lines, just two of them had been rolled from reheated blooms. If it could be shown, therefore, that rails rolled from reheated blooms had the high-phosphorus streaks less in evidence than direct-rolled rails, a strong support would be secured for the theory that these streaks had some influence on the origin of the fissures.

To investigate this point, samples of rails were secured, some of which had been rolled direct from ingots, and



Figs. 2 and 3—Photomicrographs of Longitudinal Sections of Rails at the Nuclei of Transverse Fissures, Etched with Cupric Chloride, Showing Distinct Streaks at the Nucleus in Each Case

some of which had been rolled from reheated blooms. These were in all 24 transverse-fissure rails and 12 good service samples. The first thing done to each sample was the making of sulphur prints from a cross-section generally within an inch or two of the transverse fissure, provided it appeared on the sample received. These prints were classified as good, fair, poor, or bad, according to the amount of segregation shown.

Sections for microscopic examination were also cut from the heads of all the samples, longitudinally and upright, that is, parallel to the plane of the web and graded with respect

to the presence of alumina, slag inclusions, and the distribution of sulphides, by examination of the carefully polished sections before etching. Data on the amount of free ferrite and cementite were obtained by examination of the sections after etching with the usual alcoholic solution of picric acid.

The samples were next repolished and etched with Stead's cupric chloride reagent, all as nearly as possible to the same degree, and were classified in the same way as the sulphur prints, according to the quality of the metal judged from the distinctness of the streaks shown. Finally the samples were all repolished again and etched for 15 to 20 sec. with an aqueous picric acid solution and graded as before.

CLASSIFICATION OF SAMPLES

In regard to	Grade	Transverse-fissure rails, per cent	Rails that gave good service, per cent	Rolled direct from ingot, per cent	Rolled from reheated blooms, per cent
Sulphur print	Good	67	58	..	..
	Fair	25	17	..	..
	Poor	8	17	..	..
Presence of alumina	Good	67	92	..	..
	Fair	21	8	..	..
	Bad	12	..	..	..
Presence of slag	Good	75	83	..	..
	Fair	8	12	..	..
	Poor	13	7	..	..
Distribution of sulphides by microscope	Good	4	..	..	..
	Fair	21	25	..	..
	Poor	29	33	..	..
Amount of free ferrite	None	38	..	..	..
	Traces	37	..	..	..
	Little	25	38	..	..
Amount of free cementite	Much	..	17	..	..
	None	83	100	..	..
	One streak	13	..	..	..
Cupric chloride etching	Considerable	4	..	..	..
	Good	4	33	..	46
	Fair	8	35	11	27
Aqueous picric acid etching	Good	29	17	26	18
	Fair	59	5	63	9
	Bad	4	25	..	36
	Good	12	33	16	36
	Fair	38	9	32	10
	Bad	46	35	52	18

In the table these results are all averaged for the rails that failed from transverse fissures and for those that endured good service without failure, in order to get the average classification of each kind of rails with respect to the different characteristics that were examined. The classification of direct-rolled rails was practically the same as that for the transverse-fissure rails, and the rails rolled from reheated blooms were also similar to the good-service rails, so that it did not seem desirable to fill out the last two columns of the table except in regard to the high-phosphorus streaks.

The first six of the aspects of the structure considered in the table give, for the two kinds of rails, classifications that are similar in their general indications, showing that none of these peculiarities could be an important cause of transverse fissures. The last two criteria, however, show a decided difference in the classification figures for the two kinds of rails, and indicate that there is here at least some relation between these aspects of the structure and the formation of the fissures. Thus, while 88 per cent of the failed rails were classed as poor or bad in regard to the high-phosphorus streaks shown by the cupric chloride etching, only 42 per cent of the good service rails were so classed; and the aqueous picric acid etching checks these figures in almost the same way. Comparing the direct-rolled rails with the rails rolled from reheated blooms, the figures are more strongly suggestive, becoming 89 and 88 per cent, respectively, for the sum of the poor and bad classes of the direct-rolled rails after the two methods of etching, and only 27 and 28 per cent for the same classes of the rails rolled from reheated blooms. Here is, then, a clear indication that reheating the blooms in rail manufacture will give a product decidedly more free from high-phosphorus streaks than the direct-rolling process will give, and it has also been shown that

rails can be made, and are made, that are practically free from these streaks.

It is not claimed that reheating the blooms is a sure cure and the only cure for transverse fissures in rails, but the evidence here given supports strongly the contention that segregation of phosphorus in abrupt alternate bands of

almost microscopic size, running lengthwise in the rail head, as an important cause of transverse fissures, and that by reheating the metal from which the rails are rolled these bands may be reduced by diffusion and the tendency toward the formation of transverse fissures may be materially lessened.

Shippers Are Hostile to Government Ownership

N. I. T. League Convention Brings Out Frank Expressions
on Future of Railroads; Prouty Speaks

UNDOUBTEDLY THE MOST significant feature of the annual convention of the National Industrial Traffic League, held at Cincinnati, Ohio, on November 20 and 21, was the unanimity of sentiment in opposition to government operation of the railroads. The expression of opinion on this subject had been generally suspended during the period of the war for patriotic reasons, but as the reason for the acquisition of the transportation system by the government has now passed, the first meeting of the League since the conclusion of hostilities was the signal for a frank discussion of federal control and the future of the railroads. It was the sense of the convention that the next year or two will constitute a crucial period in railway history and that the League will have to be on the alert to prevent developments inimical to the interests of shippers and to assist effectively in bringing about a solution of the transportation problem that will prove satisfactory to the public. A resolution offered by the executive committee and unanimously adopted puts the League on record as unqualifiedly opposed to government operation or ownership and provides for the appointment of a special committee to promote legislation necessary to protect the interests of the League if the railroads are returned to their owners. The resolution reads as follows:

WHEREAS, under present legislation the railroads will be returned to private operation within 21 months after the close of the war; and

WHEREAS, the National Industrial Traffic League is on record as opposing government ownership of the railroads of the country; and

WHEREAS, the executive committee is of the opinion that operation of the railroads by their owners is preferable to government operation; and,

WHEREAS, the executive committee is convinced that before the railroads are returned to their owners for operation additional legislation is necessary in their interests, as well as for the protection of the public;

THEREFORE, we recommend that the president of the League appoint a special committee of nine members, to consider such additional legislation and measures as may be deemed necessary to carry out the spirit and purpose of this recommendation; said committee to report to the executive committee at an early date.

Judge Prouty Speaks

Next to passing the resolution, the most important part of the proceedings was an address by Judge Charles A. Prouty, director of the Division of Public Service and Accounting of the Railroad Administration. The judge was very enthusiastically received despite the fact that he voiced opinions which were obviously contrary to those held by the members of the League. He stated that the railways had broken down as carriers of war traffic and that the Railroad Administration had been established in order to give the war and navy departments and the War Industries Board the service required to insure the winning of the war. Since the first few months of government operation that service has been rendered, and while the public had to suffer many inconveniences and privations during that period it has not been the duty and business of the Railroad Administration to satisfy shippers and travelers. Now conditions have changed; the pressing need for giving preference to the movement of war materials is past—in fact the emergency on account of which the railroads were taken over by the government is gone.

There are strong arguments in favor of returning the carriers to their owners immediately. In his opinion, however,

certain legislation will be necessary before that event takes place. In view of the existence of a Republican congress and a Democratic administration, there is little prospect of the return of the rail lines before the expiration of 21 months after the signing of peace.

Many governments have tried government operation of railroads and up to date no government which has done it has gone back to private control. There has been considerable complaint regarding government service, but at the same time no disposition to return to private operation. Government ownership achieved a high degree of success in Germany, but what was possible through the autocratic processes in force in that country might not be successful here. The judge stated that he had never been an advocate of government ownership and operation, but had often been curious as to just how it would work out in actual practice. Due to our conditions the experiment of government operation is with us. In order to settle the question of its merits as compared with private operation, it should be given a fair trial under normal peace conditions. A fair trial means a co-operative spirit on the part of shippers and the general public and the absence of obstructive and unsympathetic activities. Up to the present time the duty of the Railroad Administration has been to do things necessary to win the war. From now on the test of government operation will be to serve the public more cheaply and efficiently than the private companies can.

Judge Prouty said that shippers should form their judgments on the basis of services which are legitimate functions of common carriers. In the past shippers have enjoyed a great many privileges which they had no right to enjoy. He cited as an example daily telegraphic reports on the location of cars which were formerly furnished traders who insisted on them. Luxuries of this kind had to be paid for by somebody and naturally would, in the end, come out of the shippers' pockets. Some services, however, which were temporarily suspended on account of the war, will now be resumed. The informative work formerly performed by off-line traffic offices should be done. The Railroad Administration solicits the co-operation of the National Industrial Traffic League in devising a definite plan under which these services may be rendered.

Judge Prouty believes the present committee method of adjusting rates and regulations should be retained as a permanent practice. He favored such a plan some years ago, but the Interstate Commerce Commission was too conservative to take any action in that direction. The plan is now in effect and, he believes, is proving successful. Some criticism has been offered because the shippers' representatives on the various freight traffic committees are not paid for their services. The chief benefits of the scheme are due to the fact that these men are in close touch with the public. If they should receive a respectable compensation for their committee work they would be apt to assume the attitude of bureaucrats and

forget the interests of the shippers. It is hoped that a plan can be devised under which these men need spend only a portion of their time on the committees instead of all, as has recently been the case under the pressure of war conditions.

Judge Prouty concluded his address with a few remarks on specific topics. On the subject of overcharges he said that inasmuch as the Railroad Administration requires the prompt payment of freight charges the least it can do is to repay overcharges promptly. There is no excuse for a delay of months in the payment of overcharges which is common on some roads. If he continues in his work for two years more, the judge says there is one thing that will be done—overcharges will be promptly repaid.

With reference to embargoes, he said that he had always been a believer in handling congestion at the point of origin, but that he thought that the time has arrived to embargo the man who fails to unload promptly and not penalize a whole region on his account. He also said that he believed shippers should be advised promptly of embargoes.

On the subject of revenues, the judge stated that it was likely that the Railroad Administration would face a deficit of about \$200,000,000 at the end of the year. He believed, however, that from now on the operating revenues would commence to increase. He expressed the opinion that if the railroads had not been taken over by the government, every one of them would now be in receivers' hands. There is not a public utility except the railroad companies that has not lost money in the last 10 months.

Report of Freight Claims Committee

J. M. Belleville, general freight agent of the Pittsburgh Plate Glass Co., Pittsburgh, Pa., and chairman of the freight claims committee, read the report of that committee. He said that replies received from the members of the League in response to specific inquiries on the subject, indicated that there has been a general lack of courtesy and promptness in the settlement of claims by the railroads. He stated that he had a conference with J. H. Howard, manager of the Claims and Property Protection Section of the Railroad Administration and that Mr. Howard promised to stir up the railroads and force a settlement of old accounts, if the shippers would send him lists of the claims. Mr. Belleville said that express claims were even in a worse condition than railroad claims and that current express claims especially were accumulating. He stated that, on behalf of the League, he had urged the American Railway Express Company to take some effective action regarding them.

With reference to the standard form for the presentation of freight claims, he stated that Mr. Howard had modified his order making the use of them mandatory, to the extent that the shippers' present supplies of forms may be used until exhausted. At Mr. Belleville's request, C. E. Childe, manager of the traffic bureau of the Commercial Club of Omaha, related the substance of a conversation with Mr. Howard. A part of the standard form provides that the shipper certify that his statements are correct. The Railroad Administration intends to pay claims to responsible shippers on this certification with no checking except a finding that the shipment involved was received in good order and delivered by the road in bad order. With the establishment of this practice, it is expected to pay such claims within 90 days after filing. If it is later found that the representations by the shipper were false, the Railroad Administration will prosecute for fraud.

Regarding the so-called "John Barton Payne" rules covering concealed loss and damage, Mr. Belleville said that they were only tentative and not official. Despite that fact, freight claim agents and particularly those on western lines have been refusing to recognize loss in bulk shipments in connection with which there is no record of bad order in transit. Mr. Belleville called attention to

Circular No. 1 recently issued by Mr. Howard instructing all railroads to settle claims strictly in accordance with their legal liability. This circular, he said, showed conclusively that the Payne rules were not official and that their observance by railroads was illegal and improper.

Mr. Belleville stated that a large number of members of the League had complained that railroads are returning claims to claimants, declining to act upon them because of the expiration of the two-year and one-day period within which suit for recovery should have been brought in accordance with the terms of the bill of lading. This action has been taken, although the claims had been filed with the carrier within the statutory time and their settlement had been delayed by the neglect of the railway freight claim department until the expiration of the two years and one day period. He stated that it was the opinion of the committee that the action of the railroads in availing themselves of this technicality is unjust and unreasonable and that the League should communicate with the director of public service and accounting of the Railroad Administration, asking that all freight claim agents be instructed that claims for loss and damage to freight shall be settled upon the merits of the claims without recourse to a technicality, for the existence of which the carriers themselves are responsible.

The chairman of the committee also called attention to numerous complaints by members regarding the failure of railroads to make reports to shippers of shortages found to exist at the first break bulk point under shippers' seals, and shortages found in ferry cars handled under shippers' seals. Mr. Belleville stated that it was the opinion of the committee that it is the duty of the railroads to report promptly to shippers all shortages found either at break bulk points or at distributing points for ferry car shipments and that the League should instruct a committee to take up the question with the proper authorities of the Railroad Administration.

The report of the freight claims committee was approved and the recommendations it contained were acted on by the passage of appropriate resolutions. A resolution was also passed protesting against the deduction of a two per cent cash discount by carriers in the settlement of claims—a practice initiated through instructions by the general counsel of the Railroad Administration—unless settlement for the claim is made within the discount period observed by the shipper in his transactions.

Report of Committee on Demurrage

The committee on car demurrage and storage, F. B. Montgomery, chairman, reported that the Interstate Commerce Commission has approved a conference ruling agreed upon by the League committee and the Committee on Relations of the American Railway Association, which would make it possible for public elevators, warehouses or compresses to include in their average agreement accounts, cars consigned to or handled by them.

With regard to the proposed establishment of demurrage bureaus throughout the country, the committee reported that it believed the League would be successful in placing shippers' representatives on these bodies.

On the subject of the recodification of demurrage rules, it was reported that the committees had conferences on this question with the Committee on Relations of the American Railway Association and with the Interstate Commerce Commission.

The chairman reported that there is considerable demand by shippers for the application of the average agreement to outbound shipments and for a reduction of the present standard of demurrage rates. The committee has notified the Committee on Relations of the American Railway Association that these two matters will be taken up at the next joint meeting of the two bodies.

In the general discussion of the report it was announced that the American Railway Association has agreed to consider November 11, the date of the peace celebration, as a free-day, thereby cancelling any demurrage charges which may have accrued at that time.

Committee on Rate Construction and Tariffs

Frank E. Williamson, traffic commissioner of the Buffalo (N. Y.) Chamber of Commerce, presented the report of the committee on rate reconstruction and tariffs of which he is chairman. He called attention to the interpretation by the railroads of General Order 28, on the basis of which they are exacting excessive minimum charges on short road hauls and switching. Judge Prouty was later questioned regarding this matter and stated that the order was not intended to cover switching services, and such charges which had been made on the basis of the false interpretation of the meaning of the order, should be promptly refunded as overcharges.

Mr. Williamson also stated that his committee had received a number of complaints from members stating that railroads are refusing to furnish tariffs to shippers free of charge. Luther M. Walter, assistant to the director of the Division of Public Service and Accounting, who was present at the meeting, stated that if shippers failed to secure them after complaining to the district freight traffic committees, he would personally see to it that they received tariffs, provided the applicants were *directly* interested in the issues desired.

Report of Executive Committee

The executive committee reported that a proposed uniform telegraphic code for use by shippers and carriers in tracing freight, etc., thereby effecting economy of time and money as well as telegraphic service, is now being worked out in detail by the Car Service Section of the Railroad Administration.

The proposed withdrawal of exceptions to the various classifications brought out considerable discussion which indicated that the sentiment of the League is that such action will lead to the complication of tariff publications. A resolution was accordingly adopted putting the League on record as having a pronounced preference for exceptions to the classifications in lieu of the commodity rates which are proposed to take their place.

The baggage committee submitted a progress report giving detailed information regarding the steps being taken to establish a joint uniform baggage tariff, and the efforts being made by the American Railway Association to have the national code of weighing rules adopted by the railroads not now using it, namely, the Trunk lines and the New England lines.

The committee on railroad leases and side track agreements reported that it is still endeavoring to have the liability in these contracts modified so that the user of a side track or the lessee of railroad properties will not be responsible for conditions not under his control. It is pointed out that some agreements put the responsibility on the lessee for what is nothing more nor less than the negligence of the carriers themselves. The committee suggested that members refuse to sign contracts which impose unreasonable liabilities upon them.

Report of Express Committee

W. H. Chandler, chairman of the express committee, stated that the proposed increases in express rates would provide the American Railway Express Company with twice as much revenue as it required. He stated that the present unified express service was not good, but admitted that this was probably due to the fact that the government had commandeered a large amount of the express equipment, a large traffic had moved via express which should have moved as freight, and the express company had been required to employ a large number of green men. In response to complaints from members, he recommended that they insist upon pay-

ments of claims up to the value declared. He called attention to Rule 19 of the official express classification which states specifically that express companies are liable up to the value declared.

There was considerable uneasiness evident in the meeting regarding the purpose and effect of the proposed mileage scales for southern and western territories. With reference to this subject, the president of the League stated that he was assured by the director of the Division of Public Service and Accounting that the Interstate Commerce Commission would hold hearings on the scales and that shippers would have every opportunity to present their views regarding them.

R. D. Sangster, chairman of the bill of lading committee, presented a progress report. With reference to the proposed establishment of railway collection bureaus throughout the country, he recited the experience of shippers with the bureau at Kansas City, which has been in existence for a number of years. While there seemed to be general approval of the bureau plan in theory, it has been found that in practice it tends toward delay in the settlement of bills and creates considerable dissatisfaction because of the arbitrary manner in which the bureau performs its work. The subject of collection bureaus was recommended to the committee for further investigation.

Under new business, a motion was offered and passed requesting the officers of the League to urge the various regional directors to put into effect the practice of advising consignees of changes in routing recently adopted in one region, and to extend the practice to the extent of giving the information to shippers also.

A resolution was also adopted requesting the Railroad Administration to establish rates for inland waterway traffic which will bear a proper relation to existing rail rates, and joint rail-and-water rates which will give the shipper served only by a railroad, the opportunity of taking advantage of water service.

Election of Officers

G. M. Freer, president of the National Industrial Traffic League for the past three years, was unanimously re-elected. R. D. Sangster, traffic commissioner of the Commercial Club of Kansas City, Mo., was elected vice-president to succeed W. H. Chandler, and O. F. Bell, traffic manager of the Crane Company, Chicago, was re-elected secretary-treasurer. The following honorary vice-presidents were elected: Paul M. Ripley, traffic manager of the American Sugar Refining Company, New York; H. W. B. Glover, traffic manager of the Southern Cotton Oil Company, Richmond, Va.; W. W. Ingalls, Jr., traffic manager of Penick & Ford, New Orleans, La.; W. H. Chandler, manager of the transportation bureau of the Boston Chamber of Commerce, Boston, Mass.; Seth Mann, attorney and manager of the traffic bureau of the San Francisco (Cal.) Chamber of Commerce; J. A. Morgan, traffic manager of the Houston (Tex.) Chamber of Commerce, and Bruce Terbush, traffic manager of the Stone-Ordean-Wells Company, Duluth, Minn.

The Annual Dinner

Among the speakers at the annual banquet were Luther M. Walter, assistant to the director of public service and accounting; P. F. Finnegan, traffic manager of the Baltimore & Ohio, Western Lines, and until recently assistant to the director of the Division of Traffic of the Railroad Administration; C. W. Galloway, federal manager of the Baltimore & Ohio, Western Lines, and H. C. Barlow, traffic director of the Chicago Association of Commerce. Mr. Walter voiced the opinion that one of the greatest benefits derived from our war experience is the co-operative spirit which actuated carriers and shippers alike in handling the transportation problems. He believes that the solution of the railway question lies in an extension of the co-operative practices of the last ten months.

Mr. Barlow enumerated three important transportation problems, one of which has been solved and two of which are yet unsolved. In ancient times there were no limitations on the movements of men until the institution of private property was created. The blocking of highways through the ownership of land resulted in a clash of interests which was solved by the monarchs of those times by the creation of royal highways accessible to all. Since that time the public highway has been an established institution of society. The two remaining problems concern transportation under modern conditions, both on land and on sea. The freedom of the seas is a question which will require satisfactory settlement to permit the freest development of commerce between nations, while the problem of more immediate and local concern is how to regulate a private institution doing a public service—namely the railroads—to the best interests of all.

Mr. Finnegan stated that many of the complaints directed against the Railroad Administration during the period of the war were unjustified. He cited Pullman service as an example. Previous to the war there were 2,700 Pullman sleepers in operation in the United States. Of these, 2,100 were commandeered by the government, leaving only 600 to serve civilian travellers. It was, therefore, not surprising that many railroad patrons were required to climb into upper berths. He predicted that many practices common under former competitive conditions would never return. He stated that prior to January 1, 1918, he got a lot of pleasure out of sending a carload of freight from Chicago to New Orleans, La., via Columbus, Ohio and Cincinnati, back to Cairo, Ill., and then on to destination. Roundabout routing of that character, he thinks, is a thing of the past. It is estimated that of all l. c. l. traffic, 90 per cent requires two or more transfers between the point of origin and destination. This is a condition which is not conducive to economical operation and will undoubtedly be remedied. He prophesied that the exports in the next five years will be exceptionally large and that if export shipments are to be handled expeditiously and without congestion, shippers must get over the idea that New York is the only port.

Mr. Galloway stated that the patriotic spirit which pervaded not only railroad men but shippers and the general public, greatly aided in solving the transportation problem during the war. As an illustration of the operating achievements of the railroads, he cited the troop movements in and out of Camp Sherman, Ohio. This camp which is on a single track line was filled three times and emptied twice. Each time that troops were moved from the camp, 61 special trains were operated, involving 450 sleeping cars. The trains arrived at camp and were despatched ahead of time until the commanding officer insisted they not be moved until the scheduled time of departure.

Railway Business Association

"THE PROBLEM of what type of customer the furnisher of railway supplies is to deal with in the future," is the general subject announced to be dealt with at the tenth annual meeting of the Railway Business Association at Hotel La Salle, Chicago, on Thursday, January 9, morning, afternoon and evening.

Alba B. Johnson on that occasion will appear for the first time as presiding officer. He is expected to devote his opening address at the first business session to the internal affairs of the organization and at the dinner to deliver an address upon the public aspects of the policies affecting railways which he advocates.

The other speaker scheduled for the dinner is John Barnes of Milwaukee, who was first chairman of the Railroad Commission of Wisconsin, afterward a member of the highest Wisconsin court, and now general counsel of the Northwestern Mutual Life Insurance Company. Judge Barnes's subject will be "Future of Our Railways."

The organization of the Association which resulted from the convention last April is reflected in a more complex program at the business sessions than formerly. The following committees will present reports at the morning session:

Finance and Administration—H. H. Westinghouse.

Government Purchasing Policies—A. L. Humphrey.

Railways After the War—W. W. Salmon.

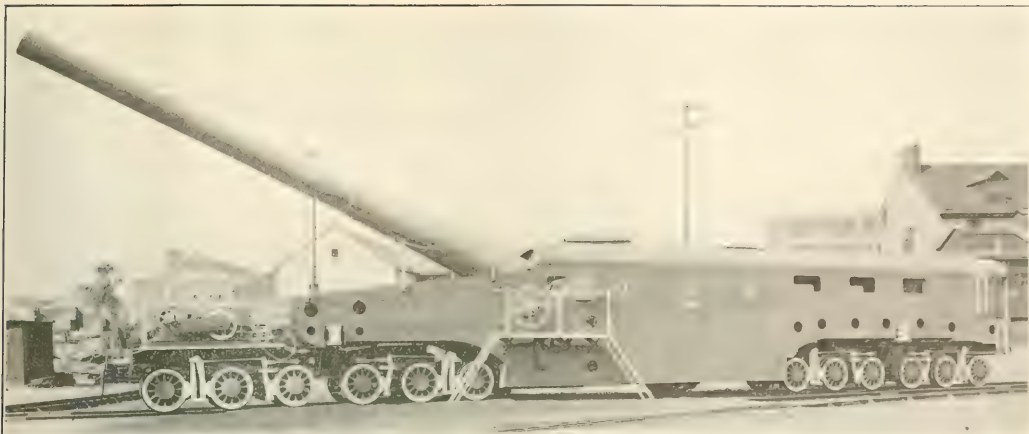
The announcement of the meeting lays stress upon the hope of the general executive committee that members having motions, resolutions and inquiries will where feasible submit them in advance, or at the business sessions, so that they can be considered by standing or convention committees. An opportunity will be given to the sponsors of proposals affecting scope, policy or method to be heard before the convention committee on resolutions.

It is planned to make the attendance distinctively one of railway supply men. Members are urged to invite representatives of non-member companies to attend all the sessions and to be their dinner guests. All those attending will be luncheon guests of the association. Business dress is suggested for the dinner, which will be short and comparatively simple. After careful consideration the general executive committee was convinced that under existing conditions it would not be feasible or appropriate this year to invite railway officers whether they are now serving the United States Railroad Administration or are still officers of their respective corporations; and in order that there may be uniformity in that respect members who in past years have entertained railway officers at association dinners in New York have requested the committee to announce the understanding that all members are to refrain from giving such invitations.



Photo by Central News Photo Service, N. Y.

Type of French Gun Being Used Against Fortresses Guarding the City of Metz



14-Inch Gun on Railway Mount

Railroad Men Man Mobile Battery for Navy

Fourteen-Inch Guns Placed on Railway Mountings Worked
Destruction Back of German Lines

A CONSIDERABLE AMOUNT of publicity has been given to the service of railroad men with our Army abroad, but it is not generally known that a considerable number of railroad men have had an active part in one of the important activities of the Navy. In the *Railway Age* of November 1 there was published a statement by Secretary of the Navy Daniels giving a general description of the batteries of 14-inch naval guns placed on railway mountings in such a way that they can be moved almost anywhere on railways

Naval Training Station. From these same men were drawn the crews which operated and manned the gun trains in France.

It is now possible to publish a more detailed description of these gun batteries, which were completed in time to work considerable destruction back of the German lines before hostilities were brought to a close. Each of the batteries, of which several have been put in service, consists of a 14-inch, 50-caliber naval rifle carried on a special railway mount, together with a locomotive and ammunition and auxiliary cars, which form a complete self-sustaining unit designed to operate either from railway tracks or from a pit foundation, individually or in conjunction with several similar batteries. The gun car shown in the illustration consists of two main longitudinal girders, fabricated of steel plates and structural shapes and provided with suitable transverse stiffeners, mounted on two front and two rear six-wheel trucks. A housing is provided at each end of the girders for the forward and rear jacking beams used when raising the car on its foundation. Somewhat forward of the center of the car is a transom casting against which the transom bedplate bears when the car is jacked up over the foundation. The transom is rigidly fixed to the gun girders and is designed to transmit the stresses incident to firing to the transom bedplate. Secured to the inboard sides of the girder immediately above the transom are two deck lugs which support the gun. The entire mount is covered with armor plate, 1,600 square feet of plate being required. The gas engine connected with an air compressor and a winch for operating the gun mechanism and to draw the car back to its original position when firing are mounted on the forward truck.



Erection Work in France

in France, which have been in action at the front since September. These batteries were constructed in this country, shipped to France and there erected and equipped for service under the immediate direction of Lieutenant-Commander D. C. Buell of the United States Navy Bureau of Ordnance. Mr. Buell is well known to railroad men in this country as director of the Railway Educational Bureau of Omaha, Neb. A force of over 200 former railroad employees was selected by him from among the enlisted men at the Great Lakes

Firing is accomplished from positions on a track laid in the form of a complete circle of a radius not less than 500 feet. This arrangement provides unrestricted latitude for training the gun and is used for elevation of the gun up to 15 degrees, which gives a range up to 24,000 yards. If greater range and elevation are desired it is necessary to set the car on a foundation over a pit. The rails and ties are taken up for the distance required to construct the pit and foundation and

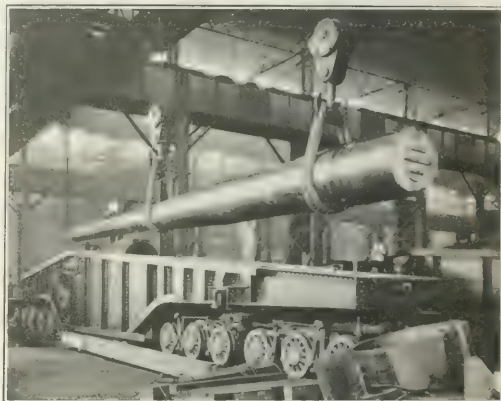
the recoil is taken into the pit. When firing from the track the recoil is absorbed by the car as it travels backward against the resistance of the tightened brakes. The gun may be fired at any angle from 10 degrees to 43 degrees. Each battery unit is provided with supplies and repair parts, augmented by stores and equipment carried on a staff train. A single unit consists of one locomotive, one gun car, two ammunition cars, one construction car, one construction car with crane, one sand and log car, one fuel car, one battery kitchen car, three berthing cars, one battery headquarters car, one battery headquarters kitchen car, and one workshop car. The locomotives, as well as the cars, although specially built for the Navy, are of the standard types used by the American Expeditionary Forces, designed to conform with the requirements of the French railways, and the fittings for the most part are standard naval fittings.

The gun car is usually attached to the end of the train, which is made up so that cars may be dropped off in the most convenient order in the vicinity of the gun's position. If pit firing is necessary the construction cars are brought to the site selected, where they are used to handle the timbers and steel framework employed in the foundation. The gun car is pushed over the completed foundation, the truck wheels are locked by brakes and the weight of the car is transferred to the foundation by means of jacks and lifting screws. During action the ammunition car is brought to the rear of the gun car. Shells are conveyed to the breach by a monorail crane in the ammunition car and a shell tray mounted on a truck in the gun car.

In addition to the officers and crew necessary to the operation of the guns, additional medical and engineer officers and a crew detailed to transportation work that may be allocated

a flat car with portable sides and ends forming a bin for erection material. A 10-ton pillar crane is mounted at one end over the truck. The fuel car is a standard box car divided into compartments by partitions. One-half of the space is used to carry fuel and the other for cement and wood for building a foundation. The workshop car is a box car with one end partitioned off for a storage room for oil. The berthing cars are box cars fitted with seven tiers of folding berths, three berths in a tier. Battery headquarters car is a standard box car suitably partitioned and equipped, as is the kitchen car.

The advantage of this type of battery consists of its freedom from the difficulties associated with auxiliary power-driven accessories and from dependence on a supply base.



Gun Ready to Be Placed in Slide of Railway Mount



Lowering the Girder Onto the Trucks

among the various batteries as circumstances require is accommodated on a staff train. The staff train consists of one locomotive, one staff headquarters car, one staff kitchen and dispensary car, one spare parts car, one staff construction car, one staff workshop car, one staff auxiliary car, and one staff berthing car.

The locomotive used is of the Consolidation type used for the American Expeditionary Forces and was built by the Baldwin Locomotive Works. The various gondolas, flat cars and box cars were built by the Standard Steel Car Company in accordance with American car construction practice and designed to conform to the operating standards of the French railways. The ammunition car is a standard steel frame box car covered with bullet-proof steel. The construction car is

Except the air compressor and winch, the mechanical functions of the battery are performed solely by hand power. The guns used throw a heavier projectile and have a greater muzzle velocity than any previously placed on a mobile shore mounting. The removal of the gun from over the pit foundation and its restoration to complete mobility represents the work of but a few minutes.

The plan of utilizing 14-inch guns by placing them on railway mountings for land service was recommended to Secretary Daniels by Rear Admiral Earle, chief of the Navy Bureau of Ordnance, on December 26, 1917. The plans and specifications for the gun were prepared under the supervision of Capt. A. L. Willard and Commander H. Delano at the Naval Gun Factory, Washington, and the construction was under the direction of Capt. T. A. Kearney and Lieutenant-Commander L. B. Bye of the bureau. It was considered that the success or failure of the plan hinged upon speedy delivery and the results represent an important record in the achievements of the Navy. When Mr. Buell was in Washington last February to offer his services in connection with the railway fuel conservation campaign he happened to meet the assistant chief of the Navy Bureau of Ordnance, who told him that a railroad man was needed to supervise the construction and later the erection of the gun batteries and asked him to volunteer his services. Before the day was over he had been enrolled in the Navy as a lieutenant. He was allowed four days in which to arrange his business affairs at Omaha before reporting at the plant of the Baldwin Locomotive Works at Philadelphia as naval inspector of ordnance in full charge of the construction work of the expedition. He was later promoted to lieutenant-commander in recognition of his services in expediting the work.

Designs had been completed on January 25, bids were

opened on February 6, and rejected on account of delivery dates, new bids were called for and opened on February 13, and the contract was signed the same day. The Baldwin company's contract called for delivery on June 15. The first gun was completed and moved to the Sandy Hook proving ground on April 25, only 72 days from the date of the opening of bids. The last gun was finished and delivered May 25, 21 days ahead of Baldwin's schedule, and all cars and special equipment were delivered by the Standard Steel Car Company for shipment on June 1, 100 days from the date that bids were opened and 155 days from the time that the project was first considered. There was practically no change in designs during the construction and the material was obtained and fabricated without interference with other projects, largely as a result of the personal interest and co-operation of S. M. Vauclain, vice-president of the Baldwin Locomotive Works.

While the entire expedition was ready for shipment by June 1, the beginning of the German drive caused some uncertainty as to the port in France to be used, and the first ship left on June 20, arriving at the port in France on July 8. Other ships carrying the material arrived later in the month. The locomotive and car erection in France was done at the shops and yards operated by the Nineteenth Engineers (Rail-

way), and although carried on under considerable difficulties was greatly assisted by the co-operation extended by the railroad forces attached to the army, particularly by General Atterbury and by Major McDonough of the Nineteenth Engineers. There were many interesting experiences connected with the work of erection in France. The first gun train was completed and ready to leave for the front on August 11, 12 days after the gun girder had been unloaded, and the last train was completed and left for the front on September 21. The first gun was fired against the Germans on September 5, less than 250 days from the time the project was first thought of.

The men who were to work and man the batteries had been assigned to the various manufacturing plants in the United States during the construction in order that they might be familiar with the equipment and it was necessary to accomplish the entire erection without blue prints, which failed to arrive on time. The railroad crews for each gun train consisted of an engineer, fireman, engine switchman, conductor, brakeman and flagman, machinists and machinists' helpers, boilermaker and boilermakers' helper, and a car man and car man's helper. The railroad crew on the staff train was similarly organized, but in addition included a roundhouse and emergency gang of 20 men.

Press Comments on McAdoo's Retirement

In General There Is Appreciation of His Work But Not Agreement on Reasons for Resigning

[NEW YORK HERALD.]

THE UNSCRAMBLING of the big eggs—the restoration of the gigantic railway system of the country to private control is now in order. * * * If the problem of restoring the roads to their owners with earning power and efficiency unimpaired can be successfully solved, the country will be spared the enormous additions to the national debt, the owners of the roads will be happy—notwithstanding the government's temporary guarantee of earnings will terminate—shippers will be pleased to return to the old order of things and the public mind will be relieved of the fear of government ownership, with all the danger political and social this would imply.

[KANSAS CITY STAR.]

Secretary McAdoo has impressed the country as an executive of remarkable ability. * * *

In assuming the direction of the railroads while at the same time acting as head of the treasury, he undertook more than it was possible for any one man to do. As one of his friends expressed it in conversation last spring, he was necessarily in the hands of his subordinates. He was in no position to give independent judgments on puzzling questions of policy.

In view of the overwhelming task that was put up to the railroads it is difficult to appraise the success of the Railroad Administration at this time. Evidently many hampering restrictions were swept away, and the situation was gradually cleaned up. Mr. McAdoo dealt with the questions vigorously and with no lack of courage.

[NEW YORK WORLD.]

The resignation of William G. McAdoo from the offices of secretary of the treasury and director general of railroads ought to find a sufficient explanation in impaired health and strength. * * *

That Mr. McAdoo has filled them with great and grow-

ing ability will hardly be questioned anywhere, and it is doubtless not going away from the truth to say that he has found them beyond his strength. The President's characterization of his service in both posts as "distinguished, disinterested and altogether admirable" will be generally accepted as no more than merited.

[NEW YORK TRIBUNE.]

The country will unanimously regret the retirement of William Gibbs McAdoo, secretary of the treasury and director general of railroads. * * *

His going is a catastrophe for the Wilson administration.

[BOSTON TRANSCRIPT.]

In the event that Mr. Wilson does not demand a third term in 1920 Mr. McAdoo might well be his chosen successor as the Democratic nominee. By leaving the treasury and relinquishing his other responsibilities as director general of railroads at this time Mr. McAdoo is spared the necessity of floating additional war loans, collecting additional revenue and prolonging governmental operations of transportation facilities in the difficult days ahead.

[BOSTON HERALD.]

He has always had a passion for playing with big figures. Never in the history of the world did a man fall into an opportunity to do just that to the extent which became his when the United States undertook the financing of the allies and the raising of its own colossal war revenues. Much the same has been true of his management of the railroads. He has dealt in large units. He has spent money lavishly. He has moved toward large things.

Such men invariably find the task easier with an incoming tide than with an outgoing one. They inevitably make the job a little harder for their successors than it has been for them. They usually reach a stage where they like to turn the entailments over to somebody else. In saying that we

have no purpose to disparage Mr. McAdoo. To him the country owes a great debt of gratitude.

[NEW YORK TIMES.]

To these herculean tasks [as secretary of the treasury] of war-time there was added the direction of all the railway systems of the country, and again his great abilities, his sagacity in the choice of assistants, and his marvelous industry and untiring devotion to duty were manifested.

[ALBANY JOURNAL.]

But the administration had in mind only to make an attractive showing of results of government control. As means to that end were employed a salaryless director general, reduction of salaries of railroad officials, and increase of charges for the services of the railroads.

Now, as soon as he can decently do so, the director general "gets out from under," right after control of the express companies has been added to the duties of the position. The expert railroad officials whose salaries have been cut are sticking to their work.

[HARTFORD COURANT.]

In lifting the railroads to a higher degree of efficiency, Mr. McAdoo has had two powerful levers that the managers of the roads under the old condition were unable to use. He has boosted freight and passenger rates to unheard of figures and he has consolidated them in a way that would have horrified the Interstate Commerce Commission and the trust "busters" in the days before the war. Even with these powerful and most useful instruments in his hand, it is doubtful if Mr. McAdoo has increased the country's railroad efficiency except in respect to the government business, and he has failed to make them pay. There is some fear when he and his successor are through with them, if they do get through, the roads will be in worse physical condition than when he took hold.

[RALEIGH NEWS AND OBSERVER.]

Equally as great, and if anything greater, has been the work of Secretary McAdoo as head of the Railroad Administration. In this capacity there was displayed the same genius for organization and co-ordination that has been characteristic of the retiring secretary in all of the high and responsible duties which in the course of a comparatively short but exceedingly strenuous career he has been called upon to perform. There was opposition to government control of railroads and secret efforts undoubtedly were made to make it odious and unsuccessful. But under McAdoo's wise and forceful leadership this new venture in governmental policy was made to serve the purpose for which it was adopted—the utilization of the nation's transportation facilities for the prosecution of the war—and despite increased passenger and freight rates the policy is now so firmly entrenched that it is certain the country will not go back to private control without widespread opposition.

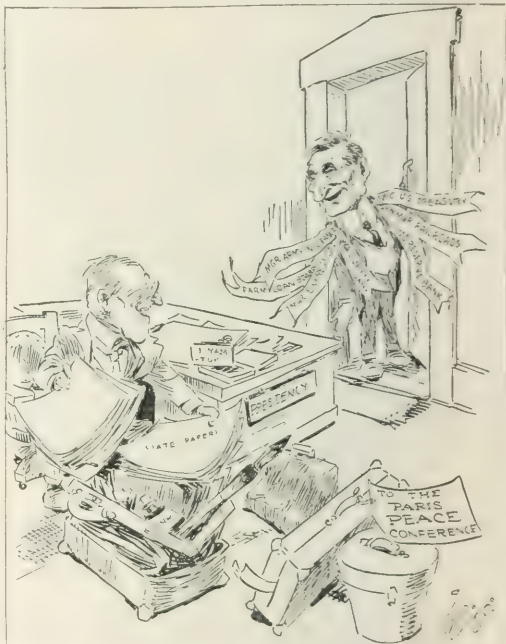
[NEW YORK TIMES.]

It is time for the people of the United States to take serious note of this evident drift toward government ownership at Washington and to determine whether they want it to go further. The question is not new, it has been under discussion for many decades. Examples of government operation of railroads in other lands have been cited both by those who approve and those who oppose the principle, the latter having much the better of the argument so far as the cost and quality of the service are concerned. The people of the United States have for some months had experience of government operation of the railroads. While it would not be fair to base conclusions wholly upon a demonstration carried on under the unusual conditions of war, the people do know that under government control accommodation has been

restricted, the cost of service has been greater; and while charges have been raised, the taxpayers must make up deficits that have nevertheless accrued.

[NEW YORK COMMERCIAL.]

As director general of transportation, Mr. McAdoo displayed the courage of his convictions. His first act was to treat the Sherman law and the Interstate Commerce Act as scraps of paper. He pooled traffic and raised freight rates to cover cost of maintenance and operation. He had the backbone to tell the truth and the wisdom to put the transpor-



Ding in the New York Tribune

Leaving a Job Or So

tation systems of the country on a business basis. It would be interesting to hear what he really thinks of government control and operation of railroads and other public utilities.

[NEW YORK EVENING POST.]

(By David Lawrence.)

President Wilson is himself so strong an advocate of frankness in public business and politics that he will not mistake the sincerity of purpose and disinterestedness of his many friends who believe that he is face to face with a crisis in his own career both as the leader of the democratic party and the representative of America at the peace conference. * * *

Fourth, they believe that Mr. Wilson's Cabinet is superannuated, and in a rut, and that the resignation of William Gibbs McAdoo deprives the administration of one of its most efficient public servants, and that the President should have never permitted him to resign until after reconstruction was well under way, or at least Mr. Wilson had returned from Europe. * * *

The revolt inside the democratic party is not of recent origin but has been growing for several months, and may explain the lukewarm activity of many democratic national

committeemen in the recent election, many of whom felt a large part of the republican criticism of the record of the democratic congress was absolutely true, and that it was useless to try to make the people think otherwise.

[NEW YORK SUN.]

It cannot be said that a rounded achievement marks the present moment as the appropriate time for retirement. The war is virtually over, but much of the financing of the war, the success of which up to date has been due in so large a degree to Mr. McAdoo's sagacity and energy, is by no means over. Some of its hardest problems are ahead. The same thing is true with regard to the immeasurably difficult and complex questions involved in government control of transportation, an experiment in which the director general of railroads has so often expressed his surpassing interest and for the undertaking of which he may properly be considered as largely if not chiefly responsible. The test of that momentous experiment and the problems of its continuance are ahead, not behind him as he takes leave of it and relinquishes the vast power his office gives him to determine and shape its future course.

[PHILADELPHIA PUBLIC LEDGER.]

It is therefore proper and timely for the owners to take the initiative, as they are preparing to do, to ask the federal government for an early announcement of its policy. Does it

the roads. Changes have been made in the direction of greater efficiency of operation, in the elimination of duplicated service and waste, etc., which the public will be unwilling to see undone.

[WALL STREET JOURNAL.]

There are stormy days ahead for the administration. Mr. McAdoo passes the menacing railroad labor problem to others for solution. Washington has demanded power unprecedented in our history, but has not always seen that responsibility of the gravest kind goes with it. How strict an accountability can be exacted by the people of what is still a democracy remains to be seen. It is at least some comfort in the difficult days before us that the present Congress has only three more months to live. Mr. McAdoo will have an admirable strategic position on the outside, looking in.

[SPRINGFIELD REPUBLICAN.]

The future of the railroads, like the future of the wire systems, must be determined with the larger public interest in view. The Association of Owners of Railroad Securities, which has just announced an aggressive policy, backed by a formidable array of counsel, to force the early return of the railroads to their owners, seems to be wholly reactionary in its spirit. * * *

But even pocket interests do not run together consistently. The early restoration of pre-war conditions of competition and of rate making by the Interstate Commerce Commission might not prove favorable to railroad dividends in the cases of all companies. There would still be strong roads and weak roads affected alike by blanket decrees of the rate-making power. And roads would be required to compete although possessed of no power to fix the price of what they had to sell. It is not surprising that some railroad security holders today prefer, in their own interest, indefinite operation by the government with a guaranteed compensation.

[PROVIDENCE JOURNAL.]

(Special Despatch.)

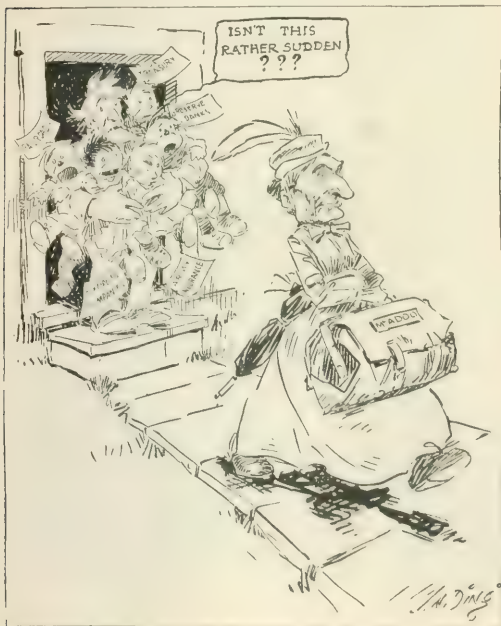
The basic reason for the withdrawal of William G. McAdoo from the cabinet is not, as stated for public consumption, the fact that the secretary of the treasury found it impossible to live in Washington on his official salary, but that he found himself in total disagreement with what he considers the President's set purpose to impose government ownership or government control of all public utilities of this country. He was determined to remain no longer a member of a cabinet which was fast drifting into that policy. * * *

Mr. McAdoo has insisted from the start that the roads be returned to their owners at the earliest possible moment after the close of the war, consistent with the public safety, and on the stipulation of certain changes regarding co-operation of movement and reduction of unnecessary competition. His ideas have been bitterly opposed. With the signing of the armistice and the bringing up of the entire question of transportation readjustment, the situation became so acute that he was compelled to make his choice between resignation as a member of the President's official family, or remaining in office and helping to formulate a policy entirely distasteful to him.

[NEW YORK EVENING POST.]

(Special Correspondence.)

If the government is to retain control of the railroads, this will be demanded; if there is a maintenance of rates and wages on war-time basis, with Western products falling in price, the West will resent it. The opinion of the average citizen in the interior has undergone considerable modification on government ownership in the past ten months, resulting from the experiences with accommodation and rates in railway management; and often the wish is heard that



Ding in the New York Tribune

That Wage Problem Again

still regard the war emergency requires a retention of control, or does it intend to maintain that control as long as possible to demonstrate a theory of government ownership? If the latter, the federal authorities cannot be too often or too insistently reminded that they have as yet no mandate from the people for such a policy. And they must realize that the problems involved in relinquishing control are going to be far more difficult than any encountered in the taking over of

were back to the "good old days" when the public was courted instead of being ordered.

[PHILADELPHIA PUBLIC LEDGER.]

Perhaps his greatest service of all was his administration of the railroads at a most critical period. The war had put a burden upon them which was more than existing conditions permitted them to bear. Mr. McAdoo brought order out of chaos, remedied the conditions which hampered transportation and brought to the greatest efficiency possible in the circumstances a system which had long been hampered by business rivalries and government restrictions. He had able lieutenants in this work, to be sure; but the main responsibility rested upon his shoulders, and the main credit belongs to him.

[KNOXVILLE SENTINEL.]

The resignation of Secretary of the Treasury William G. McAdoo comes as a bombshell to the public. * * *

The impelling reason that Mr. McAdoo gives for his resignation is sufficiently convincing. * * *

The future disposition of the railroads and conduct of the transportation system of the country itself is going to constitute one of the most disturbing issues of the immediate future and is going to bring on a battle royal between the conservative or reactionary forces, as they will be called, and the progressive elements, as they will style themselves. Labor and capital, in all likelihood, will lock horns on this issue and the operative hosts of these arteries of traffic and commerce through which flow the very life blood of the nation may be perilously implicated in the struggle.

[INDIANAPOLIS NEWS.]

The business of the treasury has, in these trying times, been well managed. As to the railroads not so much can be said. The question is not so much as to Mr. McAdoo's administration, but rather as to whether government and political management under any one can be efficient.

[NEW YORK EVENING POST.]

Selection of Mr. McAdoo's successor as head of the treasury is in some respects of less immediate importance than selection of his successor, as director general of railways.

[YOUNGSTOWN VINDICATOR.]

As director general of the railroads Mr. McAdoo has managed so well that a few months have to a large extent retrieved the harm done by years of mismanagement, questionable finance, and mistaken government policy. The railroads are now for the first time in American history being put on a solid business basis, and if they continue to be as well managed as they have been this year, their prosperity is assured. The leading railroad men of the country are unanimous in giving Mr. McAdoo credit for this remarkable achievement.

[NEW YORK SUN.]

(Special Despatch.)

With nothing definite yet disclosed at the White House regarding Secretary McAdoo's successor as Director General of Railroads there was increased evidence to-day that the resignation of Mr. McAdoo had focussed attention on the question of government ownership of the railroads and had led to much uncertainty.

For this uncertainty as to the administration's probable attitude on this occasion, however, there appears to be little if any ground. The resignation of Mr. McAdoo, it can be stated flatly and positively, had nothing to do with government ownership.

[CLEVELAND PLAIN DEALER.]

There can be no criticism of Mr. McAdoo's decision. There can be only regret that the nation is to lose an official who has so abundantly proved his capacity, his ability and his patriotism.

Solid Express Train

SINCE THE MERGING of the express companies, solid trains of express are becoming very frequent. The photograph shows one of the largest straight express trains sent out of Kansas City in August. It is made up of 15 cars of refrigerated fruit destined to Eastern points. This is one example of the saving of manpower and equipment brought



A Fifteen-Car Solid Express Train Leaving Kansas City

* * * The mention of men like Secretary Lane, formerly of the Interstate Commerce Commission, of Mr. Walker D. Hines, now of the Railway Administration Board, gives assurance that experience and practical judgment will be considered in the candidacies.

[BUFFALO COURIER.]

Financiers of the highest rank and railroad officials of the widest experience have joined in praising his work in both branches almost to a man. Hardly a word of protest or criticism has come in either direction.

about by the consolidation. One engine, one train crew, and one express employee are used for this train, whereas formerly, with this business divided up between three or four companies, this manpower and equipment might have been doubled, if not trebled.

At a meeting at Chicago on Tuesday of the members of the Order of Railroad Telegraphers of the Chicago district, it was voted to strike unless the recent wage award to the telegraphers is modified in a manner which is satisfactory to the men.

Orders of Regional Directors

REDUCED FARES FOR OFFICERS, SOLDIERS, ETC., DISCHARGED FROM DUTY.—The Eastern regional director, file 1600-2-7A263, quotes from a wire from Edward Chambers, from which the following is extracted:

Reduced fares for officers and soldiers are accorded from camps, all applicable to officers, enlisted men, nurses and enlisted women of U. S. army, navy and marine corps from all places of discharge wherever located, including camps, receiving ships, naval stations, navy yards, mobilization points, concentration points and cities and towns where recruiting headquarters are located. All agents should be furnished with reduced fares tickets at reduced fares on presentation of discharge certificates. Reduced fares will apply from place of discharge or from any intermediate point between point of discharge and destination. Tickets to be sold at two-thirds one way coach fare via route of ticket, with full collection additional passage charge and sleeping and porter en route. No reductions to be made where cash fares are collected on trains. War tax must be collected in all cases. Where a body of men is moved from any place to a point of demobilization on transportation requests discharge certificates will be honored from demobilization point to place of enlistment, and tickets will not be issued on such discharge certificates by agents at place where transportation request is honored. Reduction applies where holders of discharge certificates pay their own fares, but does not apply to U. S. government requests, settlement for which will be made on usual basis. Tickets must be sold only between points on federal controlled railroads, not steamship lines, but you should at once ascertain from non-federal controlled roads, including Canadian lines if they desire to participate, and when this information is received there will be supplemented or revised. No understanding has been reached as to distribution of traffic, which should be routed via reasonably direct routes, and so regulated as to avoid congestion. Military meals at 75 cents each to be furnished discharged soldiers, etc., under conditions previously authorized. This traffic should be excluded from all trains from which holders of furlough fare certificates are excluded.

Taxation of Material and Supplies on Hand.—Order 2002-4A262 of the Eastern regional director calls attention to the fact that *material and supplies* on hand are the property of the United States government and therefore not subject to taxation. Where tax reports heretofore have been prepared listing such items, the notation "none subject to tax" should be inserted, with any further explanation deemed necessary.

Two Days off Per Month for Yardmasters.—The Eastern regional director, file 1200-4-56A257, in referring to rates which were recently authorized, effective June 1, 1918, for general yardmasters, assistant general yardmasters, yardmasters and assistant yardmasters, states that the provision for allowing two days off per month should be made effective as of June 1, 1918, the date the rates were placed into effect. In the event that the various classes of yardmasters have not had two days off per month since June 1 arrangements should be made to compensate them for the days they have not been relieved.

Uniform Semi-Monthly Paydays on all Railroads.—The Eastern regional director, file 1500-1-3-20A266, states that it is desired that all payrolls, including those containing the names of officers, shall be paid not less frequently than semi-monthly.

Report of Express Car Loading.—The Eastern regional director, file 1801-96A267, states that a recent check of express loading on one of the lines showed that on some days if cars had been loaded solid an entire car could have been saved. This is a very important matter when a long haul is considered and relatively so for shorter hauls. In the nature of the business, much express matter at large terminals is loaded hurriedly, and with the class of labor now employed undoubtedly some of it is improperly loaded and less put in cars than could be. It would therefore seem necessary for a check to be made of express loading and to this end, inspectors should be assigned, where necessary, especially upon trunk lines handling a large volume of business in carloads and in train loads to see that as far as possible the desired end is attained. If bad stowing or light loading of express cars is found at points where cars are being loaded, the matter should be called to the attention of the local express officials by the inspector, for correction, and report should be sent to the federal manager so that he may take the matter up with the proper executive official.

Where bad loading is discovered along the line or when

cars reach destination, these instances should be reported for similar handling. A very careful check might show that in some instances mail and express could be loaded in the same car and save cars. On a line where loading is heavier in one direction than in the other, and cars have to return in some instances, deadhead, this inspection would not be required in the light direction.

Extending Railroad Facilities to Freight Forwarders.—The Eastern regional director, file 600-84A268, states that there is a practice more or less general of so-called forwarding companies consolidating less than carload shipments and forwarding as carloads in name of one shipper, consigned to one consignee and one destination; also distributing from such cars in small lots. In the receipt and delivery of such traffic the carriers must not furnish labor nor permit the use of their facilities to a greater extent than for other traffic. Any tariffs now at variance with these instructions should be amended through regularly authorized procedure.

Wage Schedules Governing Railroad Employees.—The Eastern regional director, file 1200-220A269, asks for information with regard to the agreements in force between the various railroads and their employees. It is appreciated that a good many of the crafts and classes of employees have no printed agreements with some of the railroads, and that the wages and working conditions of these employees are governed by blue print or typewritten instructions. The statement should include list of such instructions.

Embargo on Movement of Hogs.—In Circular 209 the Central Western regional director outlines a permit system, similar to that in effect on grain traffic, to regulate the movement of hogs from all points to various market centers and stockyards under the embargo issued by the Car Service Section on November 15.

Grain Embargo; Primary Markets.—Supplement 4 to Circular 161 of the Central Western Regional director announced that, effective November 22, grain consigned to points in the Chicago switching district will not be accepted without a proper permit from the grain control committee at Chicago. The grain embargo on primary markets placed September 18, as applied to Chicago, has been extended to apply to grain billed to all points in the Chicago switching district.

Loading and Unloading Tank Cars.—In Order 123 the Southwestern regional director calls attention to a resolution passed by the advisory committee on tank cars of the National Petroleum War Service Committee which requests loaders and receivers of petroleum and its products to utilize Sundays, holidays and Saturday afternoons for the unloading and loading of tank cars, with the view of conserving tank car equipment. The Oil Division of the Fuel Administration has asked the Railroad Administration to co-operate with shippers and receivers of petroleum in so far as necessary to provide any switching service required on those days. The regional director wishes it understood by all concerned that everything possible must be done to reduce detention of tank car equipment to the minimum.

Sheltering Guards Who Accompany Shipments.—In Order 121 the Southwestern regional director recommends that arrangements be made for sheltering guards who accompany shipments during the coming winter season. In cases where it is not feasible to leave a caboose with the guarded cars for the guard's accommodation, the cars should, when practicable, be placed near a yard office or other shelter while waiting for trains to be made up. When shipments have a sufficient number of guards in charge to require an extra caboose for their accommodation, an extra caboose should be left with the cars.

Consolidation of L. C. L. Freight via Forwarding Companies.—In Order 120 the Southwestern regional director states that railroads will take no action to interfere with the legitimate operation of forwarding companies who consoli-

date l. c. l. shipments and forward them at carload rates, as well as receive such shipments and distribute them in small lots. The railroads, however, must not participate in the receiving or distribution of such freight either by furnishing labor or permitting the use of their facilities. If any tariffs are at variance with these instructions, correction should be made as early as possible.

Association Membership.—In Supplement 1 to Circular 105, the Central Western regional director announces that the following associations have been approved under the director general's order No. 6 and payments for their support may be made and charged to operating expenses: Western Association of Short Line Railroads, Local Freight Agents' Association of Houston, Tex.; Local Freight Agents' Association of Cincinnati, Ohio, and Local Freight Agents' Association of Toledo, Ohio.

Facilities for American Railway Express Company.—In Order 119 the Southwestern regional director outlines the practice that is to be observed in determining the rental for present and additional facilities required by the American Railway Express Company.

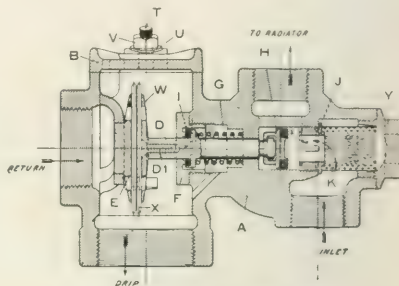
Gold Inside Connected Vapor Valve

IN THE APPLICATION of the vapor heating system to passenger cars the usual practice has been to place the vapor regulating valve underneath the car. To overcome the objections arising from the inaccessibility of this location and the extreme exposure to which the valve is subjected, the Gold Car Heating & Lighting Company, New York, has placed on the market an inside connected vapor valve which is designated as No. 1112.

The construction and operation of the valve is simple and may readily be grasped from an inspection of the sectional

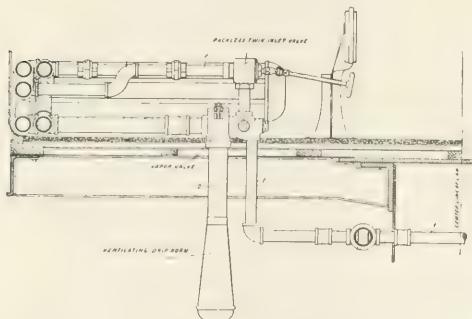
by two swing bolts *T*. The joint between the cover and the casing is steam tight without the use of a gasket. By removing this cover the diaphragm may quickly be removed, if necessary, while the system is in operation, to accomplish which it is only necessary to turn off the steam temporarily.

The admission valve disk slides into place on the end of the main stem, and may be removed by first removing the plugs in the opposite sides of the admission valve chamber.



Section Through the Valve Body

One of the illustrations shows the position of the vapor valve with relation to the rest of the system. With the valve inside the car, in order that the temperature in the diaphragm chamber may be sensitive to outside conditions, a ventilating drip horn is used. This is divided into two parts by a vertical diaphragm, the lower end of which extends below the bottom of the horn, placed at right angles to the longitudinal center line of the car. With the car in motion, or with a wind blowing, a draft is created up one side of the ventilat-



Location of the No. 1112 Vapor Valve in the Heating System

view. At the right are the branch pipe and radiator admission connections, the steam passing from the former to the latter through the diaphragm controlled admission valve *H*. The operation of the admission valve is controlled by an expansion diaphragm of a design which provides sufficient flexibility to obviate the necessity of the use of an adjusting screw within the range of the working pressure encountered in passenger train heating practice. The movement of the diaphragm is transmitted to the valve by a single straight stem which is normally held in position against the diaphragm by the coil spring *G*. The valve is thus always open except when closed under the action of the expansion of the diaphragm. The sensitiveness of the valve is not impaired by the use of packing on the stem.

All working parts of the valve are readily accessible. The diaphragm chamber is closed by a flat cover *B*, held in place



Gold No. 1112 Inside Connected Vapor Valve

ing horn and down the other, which ventilates the diaphragm chamber and maintains the sensitiveness of the operation of the valve. On the basis of service tests it is claimed that the valve will maintain practically a constant temperature at the return of 210 deg. F. On the other hand, with the radiators turned off, the compactness of the valve case and the directness of the operating connection between the valve and the diaphragm insures that all these parts will be sufficiently warmed by direct conduction to prevent freezing. The valve complete, with the ventilating drip horn, weighs only 16 lb.

General News Department

The demonstration farm of the Nashville, Chattanooga & St. Louis, at Tullahoma, Tenn., about 1,000 acres, has been sold. The land was divided into a number of separate tracts and sold at auction, and the total sum realized is said to have been \$43,050. The improvements which have been made by the railroad company have increased the value of the land four-fold, or more.

Thanksgiving Day having, this year, unusual significance, Director General McAdoo, calling attention to the extraordinary reasons why the American people should give thanks to Almighty God for the unusual blessing they have received, issued a call, addressed to all regional directors, to the effect that they should see that all work not absolutely necessary, on government controlled railroads, be suspended on Thanksgiving Day.

The position-light signal introduced on the Pennsylvania Railroad three years ago by Signal Engineer A. H. Rudd, and now extensively used there, is being tried on the Metropolitan Railway at Willesden Green (London), England. A picture of the signal is shown in the Railway Gazette (London), for October 18. The editor of the Railway Gazette inspected the signal on a bright sunny day in July, and found the lights very distinctly visible at a distance of about half a mile, in spite of the fact that "a decided haze was rising from the metals."

The World's Greatest Chance-Taker, is the title of the colored calendar which has been prepared by the National Safety Council, W. H. Cameron, general manager, Chicago, for use by manufacturers and others in preaching safety first to employees during 1919. This calendar, of which 150,000 copies were distributed for 1918, is furnished at the same prices as last year, ranging from 25 cents each for single copies to 12 cents each for lots of over 500. The usual safety admonitions to avoid stepping on nails, to keep fingers away from buzz saws, to be careful with matches, etc., are enforced by striking colored pictures, one for each month, in which the late Kaiser Wilhelm holds the center of the stage.

Senator Lewis, of Illinois, has introduced a resolution declaring it to be the opinion of the United States Senate that the policy of the United States government for the future should be that of government ownership of interstate railroads, telegraphs and telephones, and also national lines of communication necessary to complete postal and telegraphic service to the citizens of the nation; also that the government should possess and own all natural agencies for utilizing fuel produced and created from the land and produced and created as the result of natural agencies, and to construct and own ships and agencies of water transportation necessary for merchant marine. The resolution also provides that the method of the operation of these agencies is a subject to be regulated and adjusted in each instance according to the demands and circumstances surrounding the operation of that particular agency at the particular time of demand for the use of that agency.

Meeting of Engineering Committee

The engineering representatives of the seven regions held their second meeting at Washington on Tuesday, with C. A. Morse, assistant director of operation in charge of engineering and maintenance. There was a complete discussion of the subject of data required to keep a record of the amount of maintenance work during the period of federal control as compared with that for the three-year test period, as well as comparative prices of labor and material. The reports were received from the sub-committees of each region but no definite conclusion was reached.

Conference of Safety Specialists

Regional representatives of the safety section of the Railroad Administration will hold a meeting at Chicago on December 3 with the safety representatives of the various railroads to discuss the safety first program. A. W. Duffy, assistant manager of the safety section, will preside.

Hours of Service Violations

The Interstate Commerce Commission has issued its annual statistical analysis by the Bureau of Safety of the carriers monthly hours of service reports, showing a total of 263,322 instances of employees continuing on duty for a longer period than that allowed by law in the fiscal year ending June 30, 1918, as compared with 134,000 in 1917, 97,000 in 1916, 70,000 in 1915 and 162,000 in 1914.

Canadian Government Railways

Following the policy announced when the Canadian government took direct control of the Canadian Northern Railway, the lines which already were owned by the government are to be consolidated, for purposes of operation, with the "C. N. R."; and officers of the latter have had their authority extended as indicated below. At the same time the board of directors of the Canadian Northern has been enlarged by the addition of Thomas Cantley of New Glasgow, N. S.; A. P. Barnhill of St. John, N. B., and Sir Hormisdas Laporte of Montreal.

The government railway system now aggregates about 14,000 miles, extending from Sydney, N. S., to Vancouver, B. C. The roads included are the Canadian Northern, the Intercolonial, the National Transcontinental and the Prince Edward Island.

S. J. Hungerford, formerly general manager of the Canadian Northern, Eastern Lines, has been appointed assistant vice-president, with headquarters at Toronto.

W. A. Kingsland, heretofore general superintendent of the Canadian Northern lines in the Province of Quebec, is appointed assistant general manager of Eastern Lines, with headquarters at Montreal.

E. Langham, general purchasing agent for the Canadian Northern, will have his authority extended to cover the entire system.

Louis Lavoie, purchasing agent for the department of Railways and Canals at Ottawa, has been appointed assistant general purchasing agent for the system.

Burning Electric Locomotive Ties Up Four-Track Line

On November 20 an electric locomotive on one of the lines running out of New York caught fire a short distance outside of the city, completely tying up a four-track railroad for about two hours. The fire was caused by a breakdown in the insulation of a 640-volt lead to one of the motors, which formed a ground and set the insulation of the cables on fire. The engine crew, which had just started the fire under the heater for the car heating system, mistook the smoke of the burning insulation for the smoke from the heater, with the result that the fire from the burning insulation and the wood-work on the locomotive gained such headway before it was observed that they were unable to control it; although it is said that had the means at hand been properly used at the inception of the fire, no serious trouble would have occurred. Local fire apparatus was called and the power was shut off from the portion of the line in the vicinity of the fire. By the time the fire apparatus had arrived the fire had developed throughout the entire locomotive and had assumed such proportions that it was impossible to get at it effectively, and

it was a case of leaving the fire to burn itself out. It was surprising to those witnessing the spectacle that an electric locomotive had so much combustible material in it, as these are ordinarily considered fireproof machines.

I. C. C. Statistics for 1916

The printing of the twenty-ninth annual report on the Statistics of Railways in the United States for the year ended June 30, 1916, which circumstances have unavoidably delayed, has just been completed. This report fills 755 pages, and is similar to the corresponding report for 1915, with the omission of details for individual roads of outstanding capitalization and of investment in securities, etc., and with fewer details for steam railway companies of Class III and for switching and terminal companies. Copies may be had of the Superintendent of Documents, Government Printing Office, Washington, for one dollar each. The text (99 pages), without the tables, cost 20 cents.

Recent Changes in the M. C. B. and M. M. Associations

F. McManamy, assistant director of the division of operation, U. S. R. A., in charge of the mechanical department, has been made an honorary member of both the Master Car Builders' and the Master Mechanics' associations. George Laughlin, superintendent of car department, Armour Car Lines, has been appointed a member of the arbitration committee of the M. C. B. Association. J. J. Burch, district car inspector, Norfolk & Western, has been appointed chairman of the Loading Rules Committee of the M. C. B. Association, succeeding A. Kearney, resigned, and J. E. Mehan, assistant master car builder of the Chicago, Milwaukee & St. Paul, has been appointed a member of this committee, increasing the number of members to eight. The following changes in committees have been made to fill the vacancies caused by the resignation of C. D. Young, who has entered active military service: H. E. Smith, of the division of operation, inspection and tests section, has been appointed a member of the M. C. B. committee on Specifications and Tests for Material. B. J. Burns, superintendent of rolling stock of the Michigan Central, has been made chairman of the M. C. B. committee on Brake Shoe and Brake Beam Equipment, and F. Waring, engineer of tests, Pennsylvania Railroad, has been made a member of the committee. F. Waring has been appointed chairman of the committee on Specifications and Tests for Materials of the M. M. Association, and J. C. Ramage, superintendent of tests on the Southern Railway, has been made a member of the committee. A. R. Ayers, superintendent of motive power, New York, Chicago & St. Louis, has been made a member of the committee on Specifications and Recommended Practice of the M. M. Association.

The revised specifications for tank cars are now ready for delivery and prices are given in Circular No. 22. Another recent circular announces an increase in the price of Pintsch gas from \$1.10 to \$1.45 per receiver.

Chicago Banker Favors Government Ownership

In an interview published in the Chicago Tribune on November 26, John J. Mitchell, president of the Illinois Trust & Savings Bank, Chicago, expresses his conviction that government ownership or operation of the railroads furnishes the only adequate solution of the railroad and utility situation as it now exists. He said in part: "Events which have transpired since the period of the war have led me to completely change my views toward government control or ownership of railroads and transportation utilities. . . . Under present conditions it would mean almost bankruptcy for a number of lines to be given back to their original owners. Their credit has been destroyed. Under the heavy expenses which they are now operating they would not be able to borrow money and they would not be able to maintain rates or cause a readjustment of wages without serious difficulties. These things the government can do."

"The roads have spent millions in establishing agencies, not only in this country, but in different countries abroad, to

They have built up good will, made their roads known, and established avenues of traffic. All these results have been dissipated through the present government control, which has completely changed the course of traffic and undone all the special work by which each road established its identity and earning power.

"The government with its credit behind the properties could borrow money at 4½ per cent, against the present charge of 6 per cent. The government alone can regulate wages and raise or lower rates in accordance with what it may deem fair dealing. The roads tried for years to advance rates to a point adequate to meet increasing expenses, but were unable to do so, and only the taking over of the properties last year and the government's increase in freight and passenger rates saved the roads from bankruptcy.

"The government has substantially nullified the Sherman law and through its pooling arrangements, or what amounts to the same thing, can save expenditures that the private corporation could not under existing laws. The government can economize in the use of terminals, the routing of freight and passengers, and secure the best economic results, if those who direct the policies are willing and competent to do so. Private owners could not do these things.

"In the end, if expenses run beyond income after guaranteeing bond interest and reasonable return to investors in the properties, appropriations can be made to meet the deficits and the excess charges be raised through taxes. In this way the well-to-do will carry the burden instead of it being distributed among the small taxpayers. There is in the air a spirit bred by the war and special events in Europe that cannot be ignored and it points toward government and municipal ownership or control."

Tie Producers' Meeting Postponed

The meeting of Railroad Cross Tie Producers, which was originally scheduled to be held in St. Louis on November 19 and 20, was postponed to December 3 and 4 because of the epidemic of Spanish influenza. The meeting will be called to order at the Planters' Hotel, St. Louis, at 10 a. m., on December 3. Representatives from all the large tie producing sections of the country are expected to be present and to discuss the problems in that industry. Information will be presented showing the comparative number of cross ties now being produced in the different districts in comparison with the output of previous years; the effect of the new specifications on tie production, both as to the number of ties produced and the grades now being made; the cost of standing timber and of its manufacture into ties; labor conditions; the disposition and method of conservation of the smaller timber which has heretofore gone into the manufacture of ties and the problems of financing the manufacture of ties from the tree to the right of way, etc.

This is the first movement of a national character which has ever been initiated to deal with the problems of cross tie manufacture. Its purpose is to establish a basis of co-operation with the United States Railroad Administration in order to increase the output of ties and relieve the present acute shortage.

Passenger Traffic Officers

The annual meeting of the American Association of passenger traffic officers is to be held on Wednesday and Thursday, January 22 and 23, 1919. The opening session will be held at the New Willard Hotel, Washington, D. C., at 10 o'clock Wednesday morning, and the order of exercises includes an address by the director general of railroads; while the afternoon session, and the sessions of the following day are to be held at the Southern Hotel, Baltimore, Md.

Associations Approved

The Toledo Local Freight Agents' Association and the Western Association of Short Line Railroads have been added to the list of associations which have been approved by the Railroad Administration and whose members, therefore, have leave from Washington to charge their due bills railroad operating expenses.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF SEPTEMBER, 1918

REVENUES AND EXPENSES OF RAILWAYS

NINE MONTHS OF CALENDAR YEAR 1912 (CONTINUED)

REVENUES AND EXPENSES OF RAILWAYS

NINE MONTHS OF CALENDAR YEAR 1918--CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues.			Operating expenses.			Total.	Operating ratio.	Net railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.	
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equipment.	Traffic.							Trans-shipment.
St. Louis, Ironsmtl. & M. & St. L.	548	2,097,444	687,351	\$3,199,899	\$473,582	\$608,437	\$601,966	\$9,572,111	\$119,078	\$2,220,326	66.8	\$950,500	\$888,979	—\$65,521
St. Louis, Mo. & Bridge Terminal.	470	1,376,488	1,376,488	2,752,976	7,908,053	11,548,322	401,488	\$9,572,111	\$119,078	\$2,220,326	66.8	\$950,500	\$888,979	—\$65,521
St. Louis, Mo. & St. L.	134	801,618	115,490	\$917,108	7,908,053	11,548,322	401,488	\$9,572,111	\$119,078	\$2,220,326	66.8	\$950,500	\$888,979	—\$65,521
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Traffic News

The Boston & Portland line of the Eastern Steamship Company has suspended its trips for the winter or longer. This line of boats has been running regularly, summer and winter, for 74 years.

Rates on coal to points in New England "are clearly unjust and a grievous burden." This is the main point in a telegram which the Public Service Commission of Massachusetts sent to the director-general at Washington last week. The telegram says that the people of New England have been trying for five months to get the Administration to carry out its promise to readjust the rates; and if Director Chambers is not at once instructed to make a reduction, the commissioners desire to have a hearing before the director general.

Additional Passenger Charge Abolished

Director General McAdoo has announced that, effective December 1, the additional passage charge of 16½ per cent of the normal one-way fare now required from passengers traveling in standard sleeping cars and parlor cars, and 8¼ per cent of the normal one-way fare required from passengers traveling in tourist sleeping cars, will be abolished. This means a reduction of one-half cent per mile in the fare of passengers using standard sleeping or parlor cars, and one-fourth cent a mile in the fare of those using tourist sleeping cars. The charge in question has served a useful purpose in conserving sleeping car equipment and its cancellation, it is estimated, will cause a reduction of passenger revenues at the rate of \$57,000,000 per year.

Coal Zone Restrictions Modified

Because of congested conditions on the Chesapeake & Ohio, the Fuel Administration has announced modifications in the restrictions heretofore governing parts of Zones L and M. The producing districts affected are those known as the K and M; the Kanawha district on the C. & O.; the Guyan Valley, and the Logan districts on the C. & O.; and the Kenova-Thacker districts on the Norfolk & Western, all in West Virginia; and the Sandy Valley and Elkhorn districts, in Kentucky. Producers in those districts are now permitted to ship coal into a portion of Indiana and into an increased portion of Ohio. Shipments into Indiana, however, must be confined to coal for industrial plants.

Coal Loading to November 10

The weekly report of the Car Service Section of the Railroad Administration on the quantity of coal of all kinds loaded by roads for week ended November 9, as compared with the same period of 1917, shows the following:

	1918	1917
Total cars Bituminous	172,836	157,883
Total cars Anthracite	8,873	28,871
Total cars Lignite	3,183	4,000
Grand Total	184,892	190,754

The decrease in loading has been due to influenza among the miners and railroad workers. The total increase in 1918 up to and including the week ending November 16, over the same period in 1917 has been 645,831 cars.

Improvement in the influenza situation in the producing fields was expected to bring about an increase in coal production during the week of November 16, but the celebration attending the signing of the armistice offset whatever increase might have been so derived. The output is estimated at 9,707,000 net tons, a decrease of 14 per cent compared with the week of November 16. The percentage of full time output lost on account of car shortage during the week of November 9 is reported as 2.6 per cent. The output of anthracite during the week ending November 16 decreased 11½ per cent.

Commission and Court News

Interstate Commerce Commission

The American Railway Express Company has filed with the Interstate Commerce Commission a fifteenth section application for permission to file tariffs increasing express rates as authorized by General Order No. 56 of the Director General of Railroads.

Court News

Obstruction of Drainage

Where the drainage of land is obstructed by a railroad embankment, the Mississippi Supreme Court holds that the owner is not entitled to recover damages sustained by his tenants and share croppers as well as by himself. Where the obstruction can be obviated at moderate expense by the construction of culverts, damages cannot be assessed on the theory that the cause thereof will permanently continue. The owner must bring successive actions for damages to his crops as they accrue.—Yazoo & Mississippi Valley (Miss.), 79 So. 65. Decided May 13, 1918.

Duty to Alighting Passenger

The Alabama Supreme Court holds that if the proper physical facilities are provided for alighting, no duty rests on the railroad in ordinary cases to render manual assistance to passengers alighting from a train, even though requested to do so. Further, it is held that when the lowest car step is not higher above the ground than is usual for other vehicles from which people safely alight without a footstool, no stool need be provided. But where the distance from the step to the ground is three feet or thereabouts, a footstool or some other convenient means must be furnished.—Atlantic Coast Line v. Farmer (Ala.), 79 So. 35. Decided April 18, 1918.

Value of Shipment Lost—"Place of Shipment"

Action was brought for the value of a shipment of a bag of potatoes consigned from New York City to Lakewood, N. J., and lost in transit. The bill of lading provided that the value of the property should be taken at the place and time of shipment. The New Jersey Supreme Court holds that the charge for carting the goods from the place where the plaintiff bought them, in New York City, to the railroad's freight station there, did not constitute a part of the value of the shipment within the meaning of the bill of lading. The words "place of shipment" therein mean the city, town, or locality where the shipment originates as contradistinguished from the place of destination, and cannot be construed to mean the actual street or station from which the goods are shipped.—Blessing v. Central of New Jersey. New Jersey Supreme Court, 103 Atl., 1045.

Recovery of Freight Undercharges

Carloads of fruit were shipped in interstate commerce to a commission merchant, which, as to one of the cars, as to which no bill of lading was sent the consignee, told the terminal carrier that it was acting as a commission merchant, and was not owner, and that it would not accept the goods until informed on what terms they would be released. The terminal carrier understated the freight charges, which were paid. As to the other cars the consignee made no such statement to the carrier. The Massachusetts Supreme Judicial Court holds that although the consignee would not be liable for the undercharges on the first car, the carrier was not estopped as matter of law to claim from the consignee undercharges on the shipments as to which the latter did not state it was not owner, the carrier having misstated these also.—New York Central & H. R. (Mass.), 119 N. E. 855. Decided May 25, 1918.

Waiver of Written Notice of Loss

A contract for the intrastate shipment of live stock provided that the shipper should give written notice of loss within 10 days after unloading. In an action for damages the California Court of Appeal holds that where parties contract for such a written notice, the right to notice is waived by the carrier, if, after receiving less formal notice, it proceeds to investigate the damage suffered and makes suggestions or gives directions as to the care or disposition of the damaged property. It also holds that the notice need not be given within the time limited in a case in which the extent or character of the damage suffered cannot be ascertained within that time. The contention of the railroad was that a carrier has no power to waive such a provision in a shipment contract, and several decisions of the federal courts were cited in support of that view. The court said that all these cases except one, *Clegg v. St. Louis & S. F.*, 203 Fed. 971, 122 C. C. A. 273, derived their force and effect from the fact that the provisions in question were contained in a statute or in a form of bill of lading prescribed by statute, and which was in general use by railroads engaged in interstate commerce, and the damage in each case resulted to property in transit in such commerce. *Bliss v. Southern Pacific (Cal.)*, 172 Pac. 760. Decided May 17, 1918.

Division of Through Freight

Rates in the State of Colorado

The Denver & Salt Lake brought an action to review an order of the Colorado Public Utilities Commission fixing a division of through rates on coal from the Oak Hills districts, on the plaintiff's road, to points in the eastern part of the state on the roads of the C. B. & Q., the Union Pacific and the Rock Island. The Colorado Supreme Court makes the following rulings: A division of freight rates between railroads by a Public Utilities Commission that gives far less than the average ton-mile rate on the through haul to the railroad which has necessarily the highest ton-mile cost, is unjust and unreasonable. In making the division the commission could not consider for any purpose local freight rates not offered in evidence. When a reduction is made in a through freight rate it does not follow that the commission may base a division of such new rate between roads upon a former apportionment, regardless of its inequalities. A division of through freight rates between connecting roads, made by the commission without any regard to mileage basis as an element, is an error of law, reviewable by the Supreme Court on appeal. A prior division of freight rates, based on agreement, does not prove its reasonableness after the commission has reduced the through rate. Because a railroad is located where coal of superior quality is mined, which will come into competition with coal on which connecting carriers get a longer haul, is no reason for discrimination against such railroad by the commission in adjusting division of through rate. An order for division of rates, based in part on the comparison with what has been agreed to between roads carrying from other coal fields with a less costly haul, is erroneous. It is held that the defendant railroads cannot complain of an adjustment of through rates from different coal fields which requires them to haul coal between the same stations at different rates dependent on the field from which the coal comes, as unlawful discrimination, and seek to justify the same condition operating in their favor affecting the plaintiff railroad. The consideration of the relative number of cars furnished on through hauls of coal by the respective carriers in fixing a division of rates is error; that being a separate matter for adjustment, either by the commission or the railroads. Since the power to make rates and fix division of rates has been lodged in commissions, both state and federal, carriers cannot retire from a rate or division so fixed, leaving shippers on their lines without opportunity to compete; their remedy lies in appeal to the commission and courts. Section 32 of the Colorado Public Utilities Commission act, providing that "upon hearing, the Supreme Court shall enter judgment, either affirming, setting aside, or modifying the order of decision of the commission," does not authorize such court to modify an order of the commission by fixing a division of rates between carriers; that power belonging to the commission.—*Denver & Salt Lake (Colo.)*, 171 Pac. 74. Decided February 4, 1918.

Equipment and Supplies

Standard Cars and Locomotives Delivered

A total of 1,052 of the new standard cars were delivered by the car builders during the week ending November 16, as follows:

				Total accepted for
Rock Island	146	50	T. Comp. Gond...Haskell & Barker...	146
A. C. & O.	73	30	T. S. Hopper...Press. Steel C. Co.	250
C. C. & O.	76	55	T. S. Hopper...Std. Steel Car Co.	76
C. C. & N. W.	1			1,065
C. C. & N. W.	1			157
C. C. & N. W.	16	50	T. Comp. Gond...Haskell & Barker...	500
C. C. & St. L.	7	55	T. S. Hopper...A. C. & F. Co.	186
C. C. & St. L.	186	55	T. S. Hopper...Pullman Car Co.	300
C. C. & St. L.	1	55	T. S. Hopper...Railton Car Co.	200
C. C. & St. L.	1	55	T. S. Hopper...Std. Steel Car Co.	198
N. Y. C.	1		Comp. Gond...Press. Steel C. Co.	35
N. Y. C.	1	50	T. Comp. Gond...A. C. & F. Co.	

Total 1,052

Locomotives delivered during the week to railroads under federal control totaled 38, as follows:

Works	Road	Number	Type	Individual
M. Cent.	Cent.	14	USRA Mikado	7
N. Y. C.	N. Y. C.	8	USRA A	436
Eric	Eric	1	USRA Mikado	220-4
Webb	Webb	3	USRA Mikado	390
E. P. & S. W.	E. P. & S. W.	1	USRA Mikado	7011 & 7030
Penna. L. W.	Penna. L. W.	2	USRA A	102-3
C. of N. J.	C. of N. J.	2	USRA 6-W	220
Virginian	Virginian	1	Mallet	
Hock. Valley	Hock. Valley	1	Mallet	
Total				
N. Y. C.	N. Y. C.	1	Mallet	51
N. Y. C.	N. Y. C.	1	USRA Mikado	61-14
Total				
S. Pac.	S. Pac.	1	Mallet	
C. C. & St. L.	C. C. & St. L.	1	USRA Mikado	
Total				
Grand total		38		

The latest available figures indicate that a total of 514 of the United States Railroad Administration's order of 1,430 standard locomotives have been completed, consisting of 93 out of 570 from the Baldwin Locomotive Works, 409 out of 800 from the American Locomotive Company, and 12 out of 60 from the Lima Locomotive Works. These figures do not include the recent order of 500 locomotives to American Locomotive and 100 to Lima.

Pershing Car and Locomotive Orders Held Up

A despatch from Tours, France, the headquarters of the Railway Service Expeditionary Forces, announces that 43 construction projects, including a deepwater dock for 20 ships, terminals, warehouse and railroads have been cancelled, and orders for 2,000 locomotives, 61,000 freight cars and hundreds of cranes, tugs, barges and derricks have been recalled, while orders for cars and locomotives are recalled as far as the Expeditionary Forces are concerned. Only the recent order for 40,000 freight cars divided between 17 car building companies in the United States, reported in the *Railway Age* of November 1, and orders for 1,500 locomotives placed with Baldwin have been definitely cancelled as yet as it is hoped some arrangement can be made for the disposition of the remaining outstanding orders to the French government or the French railways.

The locomotive and car orders for the forces overseas totaled 2,510 and 70,000, respectively. In the case of the locomotives, 500 were ordered in July and the Baldwin Locomotive Works left off producing United States standard locomotives to work on "Pershing" locomotives exclusively. The order was soon supplemented by 10 more for replacements and then by 500, making a total of 1,010, of which some 750 have now been delivered. The 1,500 which are cancelled were covered in two orders placed in September. Similarly as to the cars, two orders were placed in July for 10,000 and 20,000 respectively followed by 40,000 more in September. The latter 40,000 are the ones mentioned as cancelled.

Supply Trade News

The Grip Nut Company, Railway Exchange building, Chicago, announces its removal to 943 Peoples Gas building.

J. D. Appgar, formerly with Vanduyck Churchill Company, in New York territory, is now associated with the Machine Tool Engineering Company, New York City.

The Union Switch & Signal Company announces that on and after December 1 its New York office will be located on the 21st floor of the City Investing building, 165 Broadway.

The Q and C Company of Canada, Limited, has been incorporated with Charles F. Quincy, president, and Frank F. Kister, secretary and treasurer. This company will manufacture and sell in Canada railway devices controlled by the Q and C Company.

Charles S. Chadwick, secretary and treasurer of the Eppinger & Russell Company, has been appointed general manager, with office at New York, to succeed Jesse Eppinger, deceased. Mr. Eppinger, who died on October 24, had been with the firm for over 35 years, and for a number of years had held the position of general manager.

The American Manganese Steel Company, San Francisco, Cal., has let a contract to H. P. Hoyt & Co., San Francisco, for the construction of a new plant at Oakland, which will be of structural steel construction, 240 ft. by 180 ft., with an 80-ft. crane span and 50-ft. side bays. The approximate cost of the main building, without equipment, is \$100,000.

Trade Publications

TANKS.—A list of the storage, pressure, car tanks, etc., for sale by the Walter A. Zelnicker Supply Company, St. Louis, Mo., with the dimensions and weight of each, is published in bulletin No. 252.

DISCOUNT GUIDE.—George B. Carpenter & Co., Chicago, Ill., have issued a 66-page discount guide to catalogue No. 110, dated September, 1918. This constitutes a complete statement of discounts and price revisions, tabulated by page numbers of the general catalogue and covers the complete line of railroad and construction equipment handled by that company.

TOOL HOLDERS.—Tool holders manufactured by the Gisholt Machine Company, Madison, Wis., for use in turret and engine lathes equipped with turret tool posts, are illustrated and described in a six-page folder issued by that company. Complete dimensions, sizes and prices are given. These holders were designed to make possible the use of worn down tools to the last inch or so, a fact which is of importance with the prevailing price of tool steel.

LOCOMOTIVE CONDULETS.—The Crouse-Hinds Company, Syracuse, N. Y., has designed several new condulets for use in electric headlight wiring on steam locomotives, which are listed and illustrated in bulletin No. 1000-1. A plan view and side elevation of a locomotive and tender wired with conduit and condulets, and sectional views of the installation are shown in the catalogue, with a list of the materials required. These drawings are complete insofar as it is possible to make them and they should be of value to anyone charged with the work of installing electric headlights.

FEEDWATER FILTER.—A multiple filtration feedwater filter and grease extractor designed for power plant work and manufactured by the Lagonda Manufacturing Company, Springfield, Ill., is described in some detail in Catalogue R, issued by that company. This is a compact, self-contained unit and the multiple filtration assures thorough cleaning by filtering and refiltering the water. The filtering element may be easily cleaned and used repeatedly. The catalogue contains a number of illustrations showing the construction of the filter and several installations, as well as a table of dimensions.

Financial and Construction

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC.—Judge Julius M. Mayer, of the U. S. District Court, has made an order approving the final administration accounts of Walter C. Noyes, who was appointed on January 18, 1915, receiver of this company in litigation instituted by the Central Trust Company of New York as trustee. Judge Mayer directs that the receiver be discharged after he has distributed a balance of \$51,783.15 in his possession. Some small claims are to be settled and what is left will be applied toward the deficiency judgment held by the Central Union Trust Company of New York for \$68,273,372, and will be distributed among the holders of bonds of the par value of \$71,353,000.

CINCINNATI, FINDLAY & FORT WAYNE.—This road was sold at foreclosure on November 18 to the bondholders' committee for the upset price of \$200,000.

STOCKTON TERMINAL & EASTERN.—This property has been sold at foreclosure to E. F. Davis, president of the First National Bank of Oakdale, for \$65,000. The company, operating 19 miles of line between Stockton, Cal., and Bellota, has been in the hands of receivers since June 11, 1917.

Railway Construction

PERE MARQUETTE.—This company is building a new yard at New Buffalo, Mich., the plans for which include about 19 miles of track; a 16-stall enginehouse, with a 90-ft. turntable; a machine shop building, and a 250-ton Roberts & Schaefer coaling station.

UNION PACIFIC.—Work is in progress on a one-story addition which this company is making to its present machine shop at Omaha, Neb. The building will be used by the motive power department for assembling and erecting. The estimated cost, including additional machinery, is \$500,000.

Court Order Restrains Acceptance of Standard Cars

A temporary restraining order was issued Monday in the United States District Court, at Toledo, against William G. McAdoo, as Director General of Railroads, instructing the receiver of the Toledo, St. Louis & Western Railroad not to accept cars, sign contracts or to do anything that would jeopardize or compromise the interests of the stockholders of the road. A hearing on the injunction was set for December 16.

The case in question is one in which the stockholders' protective committee of the Toledo, St. Louis & Western seeks to prevent Mr. McAdoo from compelling the road to accept 1,250 freight cars, which the committee asserts the road does not now need and for which the committee declares the road would have to pay an exorbitant price.

FRANCE PROJECTS AERIAL LINES.—The French Government is contemplating the creation of about twenty aerial lines connecting Paris with the chief towns of France and the great foreign centers.

ECONOMIC PROGRAM IN SPAIN.—In connection with the renewal of the charter of the Bank of Spain, which expires in 1921, a commission has been appointed by the Spanish Ministry of Finance to draft a new bill and at the same time to work out a comprehensive economic program, which includes (1) the purchase of the railroads and their operation by the State; (2) the utilization of the waterfalls for motive power; (3) a special mining law providing for the participation of the State in "extra profits"; (4) the creation of a national industrial bank; and (5) the rebuilding of the nation's industries.—*Commerce Reports.*

Railway Officers

Railroad Administration

Central

H. G. Jordan has been appointed general inspector of the Fire, Loss and Protection Section of the Railroad Administration, with jurisdiction over the Northwestern and Central Western regions, with headquarters at Chicago.

The Division of Public Service and Accounting has appointed seven supervising cost accountants, assigned to seven districts as follows: New York, **J. J. Decent**; Pittsburgh, Pa., **E. L. Staats**; Columbus, O., **E. J. Huston**; Chicago, **C. C. Pfeffer**; Chicago, **W. J. Babcock**; St. Louis, Mo., **G. O. Baird**, Seattle, Wash., **M. H. Reasoner**.

Regional

John E. Mahaney has been appointed supervisor of stores of the Northwestern region, with headquarters at Chicago.

Edmund K. Fleming has been appointed supervisor loss and damage for the Central Western Region, with headquarters at Chicago.

J. L. Haugh, engineer of capital expenditures in the office of the Northwestern regional director, has been appointed engineering assistant to the regional director, with headquarters at Chicago, to succeed **Ralph Budd**. Mr. Haugh has been discharging the duties of engineering assistant since Mr. Budd's resignation some months ago, to become chairman of the board of directors of the Chicago, Burlington & Quincy. **C. E. Cox**, of the valuation department of the Chicago, Milwaukee & St. Paul, has been appointed engineer of capital expenditures in the office of the engineering assistant, to succeed Mr. Haugh.

Federal and General Managers

The authority of **D. C. Douglass**, federal manager of the Maine Central, with office at Portland, Maine, has been extended over the Portland Terminal Company.

The Rock Island-Frisco Terminal at St. Louis, Mo., has been placed under federal control and assigned to the jurisdiction of Federal Manager **L. Kramer**, St. Louis.

A. G. Whittington, general manager of the Texas & Pacific, the St. Louis Southwestern of Texas, the International & Great Northern (excluding the line from Spring to Ft. Worth and the Madisonville branch), the Trinity branch of the Missouri, Kansas & Texas, of Texas, the Beaumont & Great Northern, the Galveston, Houston & Henderson, the Houston & Brazos Valley, the Trans-Mississippi Terminal and the Weatherford, Mineral Wells & Northwestern, with headquarters at Houston, Tex., has had the Dallas Terminal Railroad & Union Depot included in his jurisdiction.

Operating

Ralph G. Richardson has been appointed superintendent of station service on the Long Island, with office at Jamaica, N. Y., vice **R. W. Farrell**, who has been assigned to duty on another road in the Allegheny Region.

W. M. Thurber, trainmaster of the Chicago, Milwaukee & St. Paul, with office at Dubuque, Ia., has been promoted to superintendent of the Dubuque division, succeeding **M. J. Flanagan**, transferred to the Hastings and Dakota division, with headquarters at Montevideo, Minn., vice **F. M. Melin**, resigned; **C. H. Buford**, superintendent of the Wisconsin Valley division, with headquarters at Wausau, Wis., has been transferred to the Superior division, with headquarters at Greenbay, Wis., succeeding **W. E. Tyler**, assigned to other duties; **P. H. Nee**, trainmaster, at Montevideo, Minn., has been promoted to superintendent, with office at Wausau, Wis., succeeding Mr. Buford. **H. L. Riggs**, assistant super-

intendent of the Superior division, has been appointed trainmaster to succeed Mr. Nee, and **H. A. Hargraves** has been appointed trainmaster with office at Dubuque, succeeding Mr. Thurber.

Financial, Legal and Accounting

H. F. Smith, local treasurer of the San Antonio, Uvalde & Gulf, has been appointed acting federal treasurer, with headquarters at San Antonio, Texas, succeeding **H. P. McMillan**, resigned.

Charles S. Smith, assistant auditor of the Virginian Railroad, with offices at Norfolk, Va., has been appointed acting federal auditor, vice **W. C. Everett**, resigned to accept service with the corporate company.

Guy V. Shoup has been appointed general solicitor of the Southern Pacific, lines south of Ashland, the Western Pacific, the Tidewater Southern and the Deep Creek Railroad, with headquarters at San Francisco, Cal.

J. H. Reddy has been appointed auditor of disbursements of the Delaware & Hudson; the Greenwich & Johnsonville; the Schoharie Valley; the Wilkes-Barre Connecting; the Champlain Transportation Line, and the Lake George Steamboat Line, with office at Albany, N. Y., vice **A. J. Gies**, resigned to accept service elsewhere.

M. E. McKirahan has been appointed freight claim agent, having general charge of loss and damage freight claims and the prevention of causes of such claims, of the Southern Pacific (lines south of Ashland, Ore.), the Western Pacific, the Tidewater Southern and the Deep Creek, with headquarters at San Francisco, Cal. **R. G. Fagan** and **W. F. Whiteman** have been appointed assistant freight claim agents of the same roads, with office at San Francisco.

D. R. Sessions has been appointed claims attorney, **D. V. Cowden**, tax attorney, and **Wm. M. Singer**, contract attorney, of the Southern Pacific (lines south of Ashland), the Western Pacific, the Tidewater Southern and the Deep Creek, all with headquarters at San Francisco, Cal. **Bagley & Ashton** have been appointed local counsel for roads of this jurisdiction within the state of Utah, with headquarters at Salt Lake City, Utah. All other local counsel will, unless otherwise arranged, continue to act for their respective roads as heretofore, reporting to General Solicitor **Guy V. Shoup**.

Traffic

J. W. Hunter has been appointed division freight agent of the Southern Railroad Lines, with office at Mobile, Ala., vice **J. H. Andrews**, transferred.

T. D. Guthrie has been appointed assistant general freight agent of the Georgia Southern & Florida and the Hawkinsville & Florida Southern, with headquarters at Macon, Ga., vice **G. H. Wilcox**, resigned.

L. P. Green has been appointed superintendent of safety of the Minneapolis, St. Paul & Sault Ste. Marie; the Duluth, South Shore & Atlantic; the Mineral Range; the Lake Superior Terminal & Transfer, and the Copper Range Railroad, with headquarters at Minneapolis, Minn.

Engineering and Rolling Stock

F. H. Clark, general superintendent maintenance of equipment of the Baltimore & Ohio, with office at Baltimore, Md., has resigned.

A. J. Lewis, general foreman of the Missouri, Kansas & Texas, of Texas, has been appointed shop superintendent at Denison, Texas.

A. Kearney, assistant superintendent of motive power of the Norfolk & Western, with office at Roanoke, Va., has been appointed superintendent of motive power, with office at Roanoke, vice **W. H. Lewis**, retired.

R. W. Burnett, shop superintendent of the Missouri, Kansas & Texas Railway of Texas, at Denison, Texas, has been appointed mechanical superintendent of the Missouri, Kansas & Texas and the other roads under the jurisdiction

of J. S. Pycatt as federal manager. His headquarters are at Denison.

The authority of **H. F. Greenwood**, superintendent of shops of the Norfolk & Western, with office at Roanoke, Va., has been extended to include all departments at East Roanoke shops, and **J. J. Barry**, master mechanic, at Portsmouth, O., has been appointed general master mechanic, with office at Roanoke, Va.

Harry C. Oviatt, who has been appointed superintendent of motive power of the New York, New Haven & Hartford, the Central New England, the New York Connecting, the Wood River Branch, the Union Freight Railroad and the Narragansett Pier Railroad, with headquarters at New Haven, Conn., as has already been announced in these columns, was born in Milford, Conn., on December 5, 1871, and received his education in the grammar schools. His entire railroad career has been with the New York, New Haven & Hartford, he having entered its employ as a fireman in May, 1889, later being made an engineman. In 1900 he was transferred to the mechanical department as an air brake inspector. Three years later he was appointed foreman of engines, and in August, 1904, was promoted to master mechanic. He subsequently served as general inspector of the mechanical department, and in May, 1913, was appointed assistant mechanical superintendent. The following September, he was appointed superintendent of the Old Colony division, and in November, 1914, was selected to organize and supervise the bureau of fuel economy on the same road, with the title of assistant mechanical superintendent. He subsequently served as superintendent, first of the Shore Line division, and later of the New Haven division, until May, 1917, when he was appointed general superintendent, of the lines west. From September, 1917, to May, 1918, he was temporarily in the employ of the International Shipbuilding Corporation, engaged in government work at Hog Island as transportation manager, and from May, 1918, until his recent appointment as superintendent of motive power, he was superintendent on the New Haven with office at Danbury.

Purchasing

The authority of **J. A. Turner**, purchasing agent of the Mobile & Ohio, at Mobile, Ala., has been extended to include the Gulf, Mobile & Northern, and **H. G. Reiser**, purchasing agent and superintendent of telegraph of the Gulf, Mobile & Northern, with office at Mobile, Ala., has been appointed assistant purchasing agent.

Corporate

Executive, Financial, Legal and Accounting

A. L. Ungewitter, assistant to the receiver of the Toledo, St. Louis & Western, has been appointed treasurer and assistant to president and receiver of that road; assistant to the president of the Detroit & Toledo Shore Line, and assistant to president and treasurer of the Toledo Terminal, with office at Toledo, Ohio. **C. S. Sikes**, vice-president of the Pere Marquette, with office at Detroit, Mich., also has been appointed vice-president of the Toledo Terminal Railroad. **Bryan Thomas**, heretofore federal auditor of the Toledo Terminal, has been appointed auditor and secretary of that road, and auditor and assistant secretary of the

Toledo, St. Louis & Western and the Detroit & Toledo Shore Line, with headquarters at Toledo.

Operating

H. C. Taylor has been appointed car service agent of the Ontario district of the Canadian Pacific, with office at Toronto, Ont., in place of **G. T. Coleman**, transferred.

William Allan Mather, whose appointment as general superintendent of the Saskatchewan district of the Canadian Pacific, with headquarters at Moose Jaw, Sask., has already been announced in these columns, was born as Oshwa, Ont., on September 12, 1885. He graduated from the McGill University in 1908 and entered railway service in the construction department of the Canadian Pacific in May, 1903. From January, 1911, to March, 1912, he was resident engineer at Winnipeg, and from the latter date to January, 1915, he was superintendent at Kenora, Ont. He was then transferred to Medicine Hat, Alt., as superintendent, where he remained for six months, when he was promoted to assistant general superintendent of the British Columbia district at Vancouver, B. C. He held the latter position until his recent appointment as general superintendent of the Saskatchewan district.

Obituary

W. A. Cowan, general superintendent, Western Lines, of the Canadian Government Railways, with office at Cochrane, Ont., died on November 17.

John McManamy, general supervisor of equipment of the mechanical department of the Railroad Administration, and a brother of Frank McManamy, assistant director, Division of Operation, died suddenly at his home at Grand Rapids, Mich., on November 13, of pneumonia.

Charles John Augustus Morris, of the firm of Morris, Shepard & Dougherty, railroad contractors, at St. Paul, Minn., died in that city on October 27, aged 68 years. From May, 1898, to 1900, Mr. Morris was chief engineer of the St. Paul & Duluth, now a part of the Northern Pacific. His first engineering work was with the St. Paul & Pacific on the location and construction of that line from Barnesville, Minn., to St. Vincent in 1871, and the construction of the railroad bridge over the Mississippi river at St. Cloud, Minn., in the same year.

Charles R. Van Hise

President Charles R. Van Hise, of the University of Wisconsin, died at a hospital in Milwaukee, Wis., on November 19, from pneumonia meningitis following treatment for a nasal infection. Dr. Van Hise was born in Fulton, Wis., on May 29, 1857. Following his graduation from the University of Wisconsin in 1879, he joined its staff as an instructor of mineralogy and geology. He became professor in these sciences in 1886, and in 1903 was elected president of the University. Although the greater part of his working life was passed at Madison in connection with his university work, Dr. Van Hise found time, especially during the summer vacations, to perform much valuable work for the government, and as his reputation and authority grew he was able also to accept commissions from large mining interests for investigation into mining fields in many parts of the world.

His special work for his state and government was performed mainly as a member of the Wisconsin Geological and Natural History Survey, the United States Geological Survey and the Wisconsin Forestry Board.

As a political economist, Dr. Van Hise took great interest in controversies between capital and labor. In 1912 he was appointed chairman of the board of arbitration in the wage controversy between the Eastern Railroads and the Brotherhood of Locomotive Engineers.

Two years later he was sent by the government to Panama to report on the earth slides that had so greatly impeded the work of canal construction. At the entrance of this country into the war in 1917, he was appointed by President Wilson a member of the Advisory Board to assist Herbert Hoover.



H. C. Oviatt

EDITORIAL

Railway Age

EDITORIAL

Important for Subscribers

In the interest of the conservation of paper, the RAILWAY AGE will print at the end of the present volume only a sufficient number of indexes to meet direct requests from its subscribers. Those desiring indexes should, therefore, immediately advise the New York office, 2201 Woolworth Building.

In the collision at Birdsell, Nebraska, September 10 last, killing eleven persons, the railroad management has a

A Novel Collision Record

half dozen kinds of well-known bad practices to account for, and in addition one kind that has never before appeared in the records—the mistake of a work-train engineman who carried a watch fitted with two hour-hands and who thought he was working under Mountain time when in reality he was in the section where Central time was the standard. To the “man in the street” the use of such a watch would seem to invite disaster; and the statement in the report, which is abstracted in another column, that enginemen had made such mistakes (though without causing any collision) several times before, would seem to be sufficient to convert railroad officers to the same view. And yet this practice seems to be one of long standing! The conductor of this work-train was jointly responsible; he simply “forgot”; the passenger engineman seems to have been dreaming (when he could have avoided the collision by keeping a good lookout); his fireman had the stock excuse—engaged in shoveling coal—and three or four other men combined ignorance, dullness and inexperience. Columns might be filled with discussion of ways of improving the discipline and the training so as to forestall the disasters which result from these varied kinds of negligence. The one comprehensive remedy for such collisions is the block system, for the non-use of which there is no excuse. Further, Mr. Borland’s report indicates that in this case the manual block system was ostensibly in use, but was suspended under slipshod conditions.

The heart of the resolutions adopted Wednesday by representatives of 90 per cent of the railroad mileage of the United

Railway Executives’ Committee

States lies in the definition of desirable government regulation as that which “* * * will provide uniformity of regulation in essential matters, insure business treatment of the vast interests involved, attract adequate capital and assure the commercial, manufacturing and agricultural interests of the country transportation facilities which shall keep pace with their growing interests and deal equitably with questions affecting wages and the working conditions of railroad employees.” With the exception of Newman Erb, who is a buyer and seller of more or less financially crippled railroads, the meeting was unanimous in its stand against government ownership. It is obvious, however, that the resolutions adopted are a statement of underlying, fundamental principles only. These principles might be made effective

in various ways and probably even members of the permanent committee differ as to which of these ways is most desirable, most feasible and most practicable. The establishment of credit, especially, is one which must be viewed by executives of different roads in a different light. It is generally conceded by all that a road like the New York Central ought to finance its needs of the next few years by the issue of stock rather than bonds, but the practical question then arises as to whether the company could sell stock if it had only its individual credit to rely on. Roads like the Union Pacific face no such serious problem. The present railroad situation is a crisis in the economic affairs of this country and there should be the closest co-operation between the railway executives whose lives have been spent building up this great railroad system, the present Railroad Administration, with its experience of a year’s unified and regional operation, and Congress which, according to President Wilson’s solemn warning, must tackle the required legislation.

Prior to 1917, maintenance of equipment expenses on the majority of the larger roads varied from 10 to 15 per cent of total operating revenues. The

Ratio of Equipment Repair Expenses

ratio of maintenance of way expenses to total operating revenues varied from 9 to 12 per cent. The ratio of transportation expenses to total operating revenues varied from 25 to 35 per cent. It has been a rather interesting fact that especially in the last year, the ratio of maintenance of equipment expenses has increased much more than the ratio of maintenance of way expenses. This is because rail renewal was next to impossible and because of the scarcity of labor, on the one hand, and, on the other, the high price of maintenance of equipment material and the necessity of buying and applying it, regardless of material and labor costs. In September, the maintenance of equipment figures look peculiarly out of line. For instance, the Atchison, Topeka & Santa Fe spent \$5,923,000 on maintenance of equipment as against \$5,398,000 on transportation, and \$1,865,000 on maintenance of way; but this road was one of a few exceptions. The Chicago & North Western spent \$2,967,000 on equipment, \$5,328,000 on transportation and \$1,795,000 on maintenance of way; the New York Central \$5,575,000 on maintenance of equipment, \$10,154,000 on transportation, \$3,207,000 on maintenance of way, and so on. The point about the September figures is that, in many instances, the roads charged into this month a part or all of the retroactive increases in the employees’ wages in the mechanical department. The fact is that maintenance of equipment expenses have been running up abnormally as compared with maintenance of way expenses and, in many instances, even as compared with transportation expenses, and it might be well worth while for any general manager to make an analysis of his own company’s expenditures in order to determine in his own mind whether maintenance of way was not now way below what it ought to be and will be of necessity within a year or so, and whether the expenditures for heavier equipment made on the justification of holding down transportation expenses did not entail a maintenance charge which would

eat up the savings which should have resulted from lower transportation expenses.

Recovering Lost Ground

NOW THAT THE WAR IS OVER, the Railroad Administration is confronted with the problem of restoring the railroads to the condition they were in when taken over on December 28, 1917. Conditions have been such during the past season that it has been neither possible nor advisable to do more than the most essential work, and that which could be discontinued safely has been put off in order to concentrate all of the labor and materials possible on those factors contributing most directly to the winning of the war. With the passing of this crisis the situation has changed and the Railroad Administration can now properly consider those suggestions necessary to the rehabilitation of the roads.

The law under which the properties of the carriers were taken over stipulate that "every such agreement shall also contain adequate and appropriate provisions for the maintenance, repair, renewals and depreciation of property, for the creation of any reserves or reserve funds found necessary in connection therewith, and for such accounting and adjustments of charges and payments, both during and at the end of federal control, as may be requisite in order that the property of each carrier may be returned to it in substantially as good repair and in substantially as complete equipment as it was in at the beginning of federal control."

The existence of this accumulation of improvement and maintenance work and recognition that it must be made up directly or by cash payments, has led to the suggestion that the Railroad Administration place large orders for equipment and other materials now to aid the industries in tiding over the transition from wartime to peace conditions. Partially as an answer to these suggestions, the director general issued a statement a few days ago to the effect that the expenditures for equipment and for improvements chargeable to capital account (and therefore to be paid for by the corporations), authorized but not yet completed on the properties under federal control, together with the additions and betterments, which it is estimated must be authorized for next year, will constitute a program of capital expenditures for 1919 estimated to amount to \$909,000,000. This refers only to additions and betterments work chargeable to capital account and indicates the great need for improved facilities.

There is, in addition, a very large amount of work to be done not included in the above figures. This includes work chargeable to operating rather than capital account. It is work of this character to which particular reference is made in the section of the law quoted above, since this is current repair work. We have referred previously in these columns to the fact that the rail renewals this year are only about 40 per cent of the normal amount. The renewal of ties has been almost equally curtailed. These are largely typical of conditions in the entire maintenance-of-way field.

It is true that the cost of any work done now will be considerably greater than normal. This increased cost accounts in large measure for the large total of work authorized, chargeable to capital account, as noted above.

No one should advocate that either the government or the private owners of railways should spend money unnecessarily during times of high prices for labor and for material. However, the government took over the railways as a war measure in times of excessive costs of operation and it owes it to the owners of the properties to maintain them in as nearly normal condition as possible from year to year, and in times of high and low cost alike.

It is fortunately true that the physical properties of a railroad can be under-maintained for certain periods without

showing the full adverse effects. However, this cannot continue indefinitely or for any considerable period. Furthermore, when the effects do become evident, the deterioration proceeds so rapidly that it requires far more work and materials to return the properties to their original condition, than it would have done to maintain them in that condition from year to year. It is to be hoped and expected that the Railroad Administration will proceed with the development of plans to overcome the deterioration which has taken place this year and bring the properties back as soon as possible to the condition in which they were a year ago.

President Wilson on the Railroad Question

PRESIDENT WILSON'S DISCUSSION of the railroad problem, in his address before Congress on Monday, was not such a strong pronouncement as is usually expected of him, but the opinions he expressed are eminently sound and fair. The President rather surprised some of his friends who had expected him to advocate a plan of government ownership of railroads, as well as some others who feared that he was becoming imbued with socialistic tendencies, when he announced that it will "presently" become his duty to relinquish control of the railroads, even before the expiration of the statutory period of 21 months after the proclamation of peace, "unless there should appear some clear prospect in the mean time of a legislative solution." He admitted frankly that he had no answer ready to the question of the policy to be adopted towards the railroads permanently but he was perfectly clear as to what should be done in the near future unless some acceptable plan is speedily forthcoming.

"The only thing that is perfectly clear to me," he said, "is that it is not fair either to the public or to the owners of the railroads to leave the question unanswered." This means that he is not in accord with the idea of taking advantage of a temporary control of the railroads, undertaken to serve a purpose that now has been attained, to retain control of the roads for the purpose of working out an experiment in the hope that it would prove so popular that the statutory time limit would eventually be removed. It may perhaps be suggested that the President might have been more definite in his ideas as to a permanent railroad policy if the country had not recently elected a Republican Congress, but his language certainly does not display any enthusiasm for government ownership. He merely mentions it in passing as a possibility, as the opposite extreme to going back to the old conditions of private management, unrestricted competition and "multiform regulation," which he says would be "a disservice alike to the country and to the owners of the railroads."

Some significance will undoubtedly be attached to the particularity with which he describes a third possibility, "an intermediate course of modified private control, under a more unified and affirmative public regulation and under such alterations of the law as will permit wasteful competition to be avoided and a considerable degree of unification of administration to be effected, as for example, by regional corporations under which the railways of definable areas would be in effect combined in single systems." This is in accord in many respects with suggestions that have recently been made by President Ripley of the Atchison, Topeka & Santa Fe, Chairman Daniels of the Interstate Commerce Commission, and others, who, while opposed to government ownership, wish to preserve under a plan of private management some of the advantages which have been demonstrated under the unified control of the government.

The president also stated more definitely some of the ideas which railroad men have urged for several years and which

formed an important feature of their presentation before the Newlands Committee last year. The one conclusion that he was ready to state with confidence was that "it would be a disservice alike to the country and to the owners of the railroads to return to the old conditions unmodified. Those," he said, "are conditions of restraint without development. There is nothing affirmative or helpful about them." This language does not refer to any shortcomings on the part of the railroad managers. It does not attribute to them the responsibility for what many are pleased to call their "break-down" last winter. What the President had in mind had been definitely stated earlier in his message when he said: "Exceptional circumstances and exceptional methods of administration were not needed to convince us that the railroads were not equal to the immense tasks of transportation imposed upon them by the rapid and continuous development of the industries of the country. We knew that already. And we knew that they were unequal to it partly because their full co-operation was rendered impossible by law and their competition made obligatory, so that it has been impossible to assign to them severally the traffic which could best be carried by their respective lines in the interest of expedition and national economy."

Some new element of policy he declared to be absolutely necessary, for the service of the public, for the release of credit to those who are administering the railways, and for the protection of their security holders, and he hoped that Congress would have an impartial study of the whole problem instituted at once and prosecuted as rapidly as possible.

Congress can find a large amount of useful material on this subject in the records of the Newlands joint committee on interstate commerce, which, if brought up to date and supplemented with some of the experience of the past year, might prove an excellent foundation for early action, but it will probably be found desirable to appoint a new committee.

Politician or Economist?

THERE ARE NOT A FEW who have studied President Wilson's actions critically who feel that first and foremost he is inclined to approach and decide problems on the basis of politics rather than from the viewpoint of an economist. It is not unnatural, therefore, that these men should suggest that it is for purely political reasons that President Wilson has turned the railroad problem over to Congress without any specific recommendations. Only a few weeks ago the President was considered by many as an advocate of state socialism, and was believed to be fully in accord with the government ownership of railroads and public utilities. The Railroad Administration was industriously at work completing its plans for the complete unification of the railroads and frankly announced that it intended, during the interval between the declaration of peace and the turning back of the railroads to their owners, to conduct an experiment on a large scale to demonstrate the advantages of complete unification and government control.

The whole situation has changed since election day and the signing of the armistice. If the President were actuated by political motives, the logical thing, under present conditions, would be for him to shift the railroad problem on to other shoulders at the earliest possible opportunity. With a Republican Congress, peace conditions, and a complicated labor situation, the problem of operating the railroads and effecting a final solution of the railroad problem would be no easy task from the White House. Indeed, it has been intimated that even under present conditions, the President was carrying a red hot coal stove in his hands which he was exceedingly desirous of unloading as quickly as possible.

It is likely, however, that if the President had been trying to solve the difficulty from the standpoint of an econo-

mist he would have handled the situation as he actually did. The reconstruction and the railroad problems cannot be solved on the basis of pure theory. The President was right when he stated in his message last Monday that "it is surprising how fast the process of return to a peace footing has moved in the three weeks since the fighting stopped. It promises to outrun any inquiry that may be instituted and any aid that may be offered. It will not be easy to direct it any better than it will direct itself. The American business man has a quick initiative." The business men and those who have a thorough understanding of business and transportation must solve the problems, and in the words of the President again, "All that we can do as their legislative and executive servants is to mediate the process of change here, there and elsewhere as we may."

In thus discussing the reconstruction problem the President must have had in mind the various reconstruction conferences that are now being held throughout the land, and particularly the War Emergency and Reconstruction Conference which is being held at Atlantic City this week under the auspices of the Chamber of Commerce of the United States. It was necessary during the war for the War Industries Board to have closely associated with it an advisory capacity more than 350 war service committees, each representing different crafts that it was necessary to deal with in order to secure the greatest possible co-ordination from all of the industries in helping to win the war. It is now proposed to use these war service committees of business men to determine the solution and adjustment of the problems of the reconstruction period. It is expected that the results of this conference will be far reaching and immediate, particularly if Congress will co-operate with the business interests by promoting such legislation as may be necessary in order to make possible a speedy readjustment of the industries.

The solution of the railroad problem is, of course, much more difficult than the readjustment of industries to peace conditions. The railroads were forced into a most unfortunate situation because of the peculiar laws and regulations under which they have had to operate and because of the fact that they have had to submit to regulation by state as well as federal authorities. It will be absolutely necessary that certain legislation be wiped off the statute books and that new legislation be enacted which will hold the railroads strictly accountable to the public and yet will be broad enough to allow them to develop and perfect their facilities. It will be necessary for Congress to take up the question, but in effecting a solution it should be guided by those who understand the transportation problem thoroughly. The Railway Executives Advisory Committee has studied the question for a long time and its suggestions should be listened to carefully. It is noteworthy that the Railroad Administration was able to improve operation by adopting the very measures that these practical executives had long advocated, but were prevented from using because of restrictive regulations and laws.

The Chamber of Commerce of the United States is planning for a series of conferences of men of wide experience and observation in various phases of the transportation problem. Undoubtedly these conferences will result in practical recommendations that will be presented to the business interests of the country.

It is evident that the advocates of government ownership are comparatively few in number; on the other hand, as the President has indicated, it is impossible for the railroads to go back to private ownership under the impossible conditions that existed before we entered the war. The problem, then, is to so modify these conditions that the roads can operate to advantage and so that investors will have an incentive for buying railway securities.

Congress has a big job on its hands, and because the President has handed it a red hot coal stove, the job must be handled quickly and settled once and for all.

Letters to the Editor

Express Company the Agent of the Railroad

NEW YORK, N. Y.

TO THE EDITOR:

I have read the article in your issue of November 1, covering the report of the Interstate Commerce Commission to the director general regarding proposed increase in express rates, and assume that the language used is substantially that of the commission.

While the commission's criticism of the usual form of express contract may be well grounded, its reference to payments by the express company "for the service which the railroad performs" appears to lose sight of the fundamentals of the relationship, namely, that it is the railroad company which is hiring the express company and which is paying the express company for the service which the latter performs.

Further on it suggests that the basis of charges "by the railroad company to the express company" be similar to that charged by the railroad to the government for transporting the mails. Mail service is something on which the government has a monopoly and the government therefore assumes the position of employer in its relations with the railroad. Express service, however, is really a transportation duty of the carrier and the carrier stands in the position of employer when it arranges with an express company to perform the service.

In the particular situation discussed by the commission this distinction would very likely make no difference, but it might become very important in other instances, and, as one of the underlying conditions, a mistaken conception of it ought not to go unchallenged. A true conception is very well illustrated in the director general's contract with the American Railway Express Company, wherein it is clearly set forth that the "Director General employs the express company."

EXPRESS.

Three-Cylinder Freight Locomotives

FOREST HILLS, N. Y.

TO THE EDITOR:

When in June, 1917, you illustrated and described the new Pennsylvania Decapod freight locomotive, I addressed you on the subject of this engine (see *Railway Age Gazette*, June 29, 1917) and suggested that it might have been better if it had been fitted with three cylinders instead of two.

It may be of interest to point out that there has lately been completed at the Doncaster Works of the Great Northern Railway, England, a powerful freight engine of the 2-8-0 type, having three cylinders arranged on the lines suggested in my communication. This engine is in general similar in appearance and design to the one illustrated in my article on British Goods Locomotives in the *Railway Mechanical Engineer*, December, 1916, page 621. The chief differences are that this engine has three 18 by 26 in. cylinders, instead of two 21 in. by 28 in., and that the second pair of coupled wheels are those to which the main rods connect. The third cylinder is between the frames and the second coupled axle is cranked. Thus all three pistons drive on one axle, the cranks on which are 120 deg. apart.

Walschaert valve motion is applied to the outside cylinders and by an ingenious arrangement of levers, the arrangement of which is the subject of a patent granted to H. M. Gresley, locomotive engineer of the Great Northern, the combined action of the right and left-hand motions operates the valve

for the inside cylinder. Piston valves are used for each cylinder. The cross-head guides are of the three-bar type, not unlike those used by the Pennsylvania on its 4-4-2 and 4-6-2 type passenger locomotives.

This is the first three-cylinder locomotive having cranks at 120 deg. to be designed for main line freight traffic in England. There are on the North Eastern a large number of three-cylinder Atlantic type express locomotives, and three-cylinder tank locomotives both for passenger and freight traffic.

E. CECIL FOULTNEY.

Women As Railroad Clerks

CINCINNATI, Ohio

TO THE EDITOR:

Your edition of September 6 contains a letter under the caption of "Women as Railroad Clerks," which seems to call for a reply.

I do not in any way underestimate the importance of the railroad clerical positions. The conclusions contained in the letter referred to do not seem to be borne out by the actual conditions. As a general proposition it may be stated that the large proportion of positions, not only in local freight offices, but in general offices, may be creditably filled by women. Who will say that women do not make better abstract and accounting clerks than men? The full utilization of accounting machines for abstracting and statistical work demonstrates clearly that there is a broad field for women in railroad service. Women may be used entirely for expense and bill clerks. They may be used as cashiers, and counter clerks and they handle the public very efficiently. Women are now being used successfully as ticket clerks; also for information bureaus, car record clerks, etc. In these positions they are releasing men for more essential work.

The chief trouble is that enough attention has not been paid to the education of the woman clerk. Her activity in the railroad office has been confined to certain lines, largely stenographic. But it has been developed that where work of clerical importance recently has been placed upon the female clerk, good results have been obtained. Women undoubtedly can handle claims, and at least make investigations which are limited to the records, as well as men.

The objection to women, based on the fact that they get married after being educated, is somewhat specious. Surely experience has shown us that there is no greater difficulty in this respect than there is in the constant change and turnover of the male employees due to their seeking better positions and broadening the field of their experience. I will agree that there are certain classes of male railroad clerks who seem to be indispensable, but I am not at all certain that even in some of these capacities women are not competent if given the proper training. It cannot all happen in a day but it is surely a fact that the opportunity for the woman clerk in the railroad organization is becoming greater.

If railroad offices are handicapped because of the employment of women, the responsibility evidently rests, in some degree, with the supervising force, who are failing to instruct properly the female assistants. It cannot be stated that a lack of proper clerical knowledge is alone limited to women clerks. New male clerks are being hired daily in all railroad offices who are inexperienced. Instructions must be given to these clerks; the same effort of course would only have to be directed to inexperienced female clerks.

In view of the great need of men in railroad organizations in directions where we will admit that women are not fitted for activity, does it not behoove those charged with the immediate responsibility to make every effort possible to utilize such material as is available from the ranks of young women?

HUGH MCVEAGH.

Executive Assistant to District Director, Ohio-Indiana District, Eastern Region, U. S. Railroad Administration.

President Proposes to Relinquish Railroads

Urges Congressional Study of the Problem But Opposes Prolonging Period of Uncertainty

EARLY RELINQUISHMENT of the railroads from the present form of control by the government, unless Congress shall be able to formulate within a reasonable time a definite and acceptable plan for the future policy towards the roads, was forecast by President Wilson in his address before a joint session of the two Houses of Congress on Monday. He declared that while he had no answer ready to the question of the permanent policy to be adopted towards the railroads and would welcome a Congressional solution of the problem, the one thing perfectly clear to him is that it is not fair either to the public or to the owners of the railroads to leave the question unanswered and that it will "presently become his duty to relinquish the roads, even before the expiration of the statutory period, unless there should appear some clear prospect in the meantime of a legislative solution." But as he also said later, "the one conclusion I am ready to state with confidence is that it would be a disservice alike to the country and to the owners of the railroads to return to the old conditions unmodified," there appears some doubt as to whether the suggestion of relinquishment should be construed as in the nature of a promise or as a threat.

Plans for the creation of a joint congressional committee to take up a study of the question were at once discussed by Senate leaders. The President expressed a hope that Congress will have a complete and impartial study of the whole problem instituted at once and prosecuted as rapidly as possible. This suggests a continuation of the investigation undertaken by the Newlands committee, which was interrupted when the government took over the roads last December. But unless Congress can agree within a reasonable time on a definite railroad policy for the future he stands "ready and anxious to release the roads from the present control" and "must do so at a very early date" unless some plan is advanced which would avoid "prolonging the period of doubt and uncertainty."

How long a period the President thinks he should allow for the determination of a railroad policy he did not say, but his words certainly do not indicate any intention of proceeding with the "scrambling" policy indefinitely in the hope that the people will like it so well they will vote to make it permanent at the election in November, 1920. In this respect the President's declaration seems somewhat at variance with the purposes semi-officially ascribed to the Railroad Administration shortly before the announcement of Mr. McAdoo's resignation. As the nearest approach to a crystallization of opinion on this subject thus far manifested in Congress is a strong sentiment in favor of the return of the roads to their owners, the President's statement would seem to indicate an early termination of the affairs of the Railroad Administration and the activities of the latter may now be expected to be directed rather in the direction of a settlement of the complicated relations with the railroad companies rather than toward more complete unification.

The position assumed by the President came as somewhat of a surprise to some of his friends, who had expected a pronouncement in favor of government ownership. While he referred to such a policy as a possibility, if necessary as an accompaniment of complete government control, he merely mentioned it in passing as the opposite extreme to simply releasing the roads and going back to old conditions. He placed far more emphasis on the third possibility—"an intermediate course of modified private control."

The text of that portion of the President's address which refers to the railroad question is as follows:

The President's Address

"The question which causes me the greatest concern is the question of the policy to be adopted towards the railroads. I frankly turn to you for counsel upon it. I have no confident judgment of my own. I do not see how any thoughtful man can have who knows anything of the complexity of the problem. It is a problem which must be studied, studied immediately, and studied without bias or prejudice. Nothing can be gained by becoming partisans of any particular plan of settlement.

"It was necessary that the administration of the railways should be taken over by the government so long as the war lasted. It would have been impossible otherwise to establish and carry through under a single direction the necessary priorities of shipment. It would have been impossible otherwise to combine maximum production at the factories and mines and farms with the maximum possible car supply to take the products to the ports and markets: impossible to route troop shipments and freight shipments without regard to the advantage or disadvantage of the roads employed; impossible to subordinate, when necessary, all questions of convenience to the public necessity; impossible to give the necessary financial support to the roads from the public treasury. But all these necessities have now been served, and the question is, what is best for the railroads and for the public in the future.

"Exceptional circumstances and exceptional methods of administration were not needed to convince us that the railroads were not equal to the immense tasks of transportation imposed upon them by the rapid and continuous development of the industries of the country. We knew that already. And we knew that they were unequal to it partly because their full co-operation was rendered impossible by law and their competition made obligatory, so that it has been impossible to assign to them severally the traffic which could best be carried by their respective lines in the interest of expedition and national economy.

"We may hope, I believe, for the formal conclusion of the war by treaty by the time spring has come. The twenty-one months to which the present control of the railways is limited after formal proclamation of peace shall have been made will run at the farthest, I take it for granted, only to the January of 1921. The full equipment of the railways which the federal administration had planned could not be completed within any such period. The present law does not permit the use of the revenues of the several roads for the execution of such plans except by formal contract with their directors, some of whom will consent while some will not, and therefore does not afford sufficient authority to undertake improvements upon the scale upon which it would be necessary to undertake them. Every approach to this difficult subject-matter of decision brings us face to face, therefore, with this unanswered question: What is it right that we should do with the railroads, in the interest of the public and in fairness to their owners?

"Let me say at once that I have no answer ready. The only thing that is perfectly clear to me is that it is not fair either to the public or to the owners of the railroads to leave the question unanswered and that it will presently become my duty to relinquish control of the roads, even before the

expiration of the statutory period, unless there should appear some clear prospect in the mean time of a legislative solution. Their release would at least produce one element of a solution, namely certainty and a quick stimulation of private initiative.

"I believe that it will be serviceable for me to set forth as explicitly as possible the alternative courses that lie open to our choice. We can simply release the roads and go back to the old conditions of private management, unrestricted competition, and multiform regulation by both state and federal authorities; or we can go to the opposite extreme and establish complete government control, accompanied, if necessary, by actual government ownership; or we can adopt an intermediate course of modified private control, under a more unified and affirmative public regulation and under such alterations of the law as will permit wasteful competition to be avoided and a considerable degree of unification of administration to be effected, as, for example, by regional corporations under which the railways of definable areas would be in effect combined in single systems.

"The one conclusion that I am ready to state with confidence is that it would be a disservice alike to the country and to the owners of the railroads to return to the old conditions unmodified. Those are conditions of restraint without development. There is nothing affirmative or helpful about them. What the country chiefly needs is that all its means of transportation should be developed, its railways, its waterways, its highways, and its countryside roads. Some new element of policy, therefore, is absolutely necessary—necessary for the service of the public, necessary for the release of credit to those who are administering the railways, necessary for the protection of their security holders.

"The old policy may be changed much or little, but surely it cannot wisely be left as it was. I hope that the Congress will have a complete and impartial study of the whole problem instituted at once and prosecuted as rapidly as possible. I stand ready and anxious to release the roads from the present control and I must do so at a very early date if by waiting until the statutory limit of time is reached I shall be merely prolonging the period of doubt and uncertainty which is hurtful to every interest concerned."

Congressmen Express Themselves

Any Congressional committee which might be created to take up an investigation of the railroad question would virtually take up the work undertaken by the old Newlands committee, and it is expected that the work of this committee will be revived. A number of prominent members of Congress expressed interest in undertaking such an investigation, although there was some doubt expressed as to whether anything could be accomplished at the present short session of Congress.

Senator Smith of South Carolina, chairman of the Senate Committee on Interstate Commerce and of the Joint Committee on Interstate Commerce, said that the last of the three alternatives mentioned by President Wilson is the one that will more nearly meet the necessities of the case and in his opinion would be the most generally approved by the public. Senator Cummins of Iowa expressed hearty agreement with the President that the railroads should not be returned under the former system of regulation and that Congress should go forward immediately with an exhaustive inquiry into the whole problem. Senator Underwood of Alabama declared it is physically impossible for there to be any legislation at the present session and that the President's attitude will obviously result in throwing the problem into the lap of the next Congress, which the Republicans will control.

Representative Sims, chairman of the House Committee on Interstate and Foreign Commerce, declared that return of

the railroads without legislation to preserve the benefits which government operation has conferred would be the strongest possible force operating for the creation of conditions that could be remedied only by the government taking over the railroads. He was satisfied Congress would not accede to the proposal to abolish state regulation. Representative Esch of Wisconsin, who is expected to be the next chairman of the House committee, agreed with the President's suggestion of an immediate inquiry and suggested that the present joint committee, which has already taken more than 7,000 pages of testimony, should undertake it.

Senator Watson of Indiana agreed that the railroads should not be returned without a modification of the old conditions, saying he did not believe they will ever be permitted to return to the competitive system. Senator Kellogg of Minnesota urged immediate study of the question and a strong government control over the issues of securities and over service. He declared that further legislation should be had before the roads are returned. Senator Penrose of Pennsylvania commented on the fact that the President had invited the opinion of Congress and declared that he would undoubtedly hear from the American people after a committee has had an opportunity to investigate the present plan, under which, he said, "the railroad system of the country has been nearly ruined and certainly demoralized."

It was apparent that an effort was being made to have the present Democratic Congress deal with the question. Chairman Smith of the Senate committee said on Tuesday that he would at once hold conferences with Chairman Sims of the House committee and with Railroad Administration officials with a view to taking up a study of the railroad situation in an effort to obtain legislation at this session. The chairmen of both committees have received letters from S. Davies Warfield, president of the National Association of Owners of Railroad Securities, asking that representatives of the association be given a hearing.

The first bill on the railroad question called forth by the President's address was introduced by Senator Thomas on December 3. The bill was prepared by W. W. Cook, general counsel of the Mackay Companies, providing for the creation of five regional railroad corporations for the New England, Central, Southern, Northwestern and Central Pacific districts, and also for the creation of a federal railroad board of six members to supervise the organization of a federal railroad company in each district to operate the railroads. The federal railroad board would consist of six members, one a new cabinet officer known as the Secretary of Railroads and five members to be appointed by the President with the advice and consent of the Senate. Under the plan the government would guarantee the payments of 3 per cent dividends on the stock of the federal railroad companies and the federal board would be given the power to fix and determine interstate rates and service, and also such intrastate rates and service as Congress has the power to regulate under the Constitution. This plan has long been advocated by Mr. Cook. It was referred to the Committee on Interstate Commerce.

Senator Hoke Smith of Georgia introduced a bill on Wednesday to repeal Section 10 of the federal control act, which prohibits the Interstate Commerce Commission from suspending President-made rates.

Daniel Willard, president of the Baltimore & Ohio, who was commissioned a colonel of engineers last month and ordered to sail for France, has been honorably discharged from the service. He had made all necessary arrangements for the trip to Europe, but the necessity for his service in France has become less pressing, and he now takes up the duties of the presidency of his road, unfettered by other assignments.

Railway Executives Begin Work on Reconstruction Plan

REPRESENTATIVES of the member roads of the Railway Executives Advisory Committee, at a meeting held December 4 at New York, adopted the following resolutions:

1. That private initiative, enterprise and responsibility in the creation, extension, improvement and operation of the American railways should, as a matter of national policy, be fostered and preserved, and that government ownership and operation of these facilities is not conducive to the highest economic efficiency of the country.

2. That the principle of reasonable, responsible and adequate governmental regulation of these facilities is recognized and accepted, but such regulation should provide for encouragement, protection and upbuilding of the railways as well as for the correction and check of any abuses.

3. That in view of the termination of the war emergency, which caused the taking over of the railroads and their operation by the federal government, the remaining period of federal control should be characterized by a policy of restoration of the integrity of individual properties and of preparation for their return to their respective owners in the highest possible state of efficiency to serve the country.

4. That a system of governmental regulation or control to be applicable when the properties are returned, should be provided by Congress, which, while safeguarding the public, will provide uniformity of regulation in essential matters, insure a business treatment of the vast interests involved, attract adequate capital and assure the commercial, manufacturing and agricultural interests of the country of transportation facilities, which shall keep pace with their growing necessities and deal equitably with questions affecting wages and working conditions of railroad employees.

5. That the standing committee, with the advice and assistance of the law committee, be requested to consider and report back to an adjourned meeting of member roads proposals to accomplish the foregoing results and plans and methods to be favored in connection with the return of the railroad properties to their respective owners.

6. That in their consideration of the subject the committee invite the co-operation and assistance of advisers fairly representative of the best and soundest thought and experience of the country.

7. That assurance be given to the director general of railroads and his associates of our earnest desire to co-operate with them in the performance of their important and difficult trust and in the adoption of plans for the return of these properties to private management and operation, which plans shall be just alike to the public, to the owners of the properties and to the employees engaged thereon.

In summing up the accomplishments of the Railway Executives Advisory Committee in its negotiations with the Railroad Administration over questions relating to proper allowances for purchase of new equipment under war conditions, depreciation of old equipment bought before the war, retirement of equipment and salvage items, A. P. Thom, counsel for the committee, stated that the roads had been allowed approximately \$175,000,000 in the way of concessions. Mr. Thom said that he expected the majority of government contracts would be signed by the time William G. McAdoo had relinquished his duties as director general of railroads.

Charles Hayden, a director of the Chicago, Rock Island & Pacific; S. M. Felton, president of the Chicago, Great Western; William Church Osborn, general counsel for the El Paso & Southwestern and the Texas & Pacific; Henry Ruhlender, chairman of the St. Louis & San Francisco; L. E. Johnson, president of the Norfolk & Western; E. E. Loomis,

president of the Lehigh Valley; W. R. Cole, president of the Nashville, Chattanooga & St. Louis, and Bird M. Robinson, president of the American Short Line Association, were elected additional members of the permanent committee of the Railway Executives Advisory Committee.

The Fourth Liberty Loan in the Southern Region

B. L. WINCHELL, Southern regional director, has recently issued a detailed report showing the subscriptions to the Fourth Liberty Loan by employees on the Southern railroads. The total subscription was \$16,898,550. Of the total number of employees, 80.1 per cent subscribed, and the average subscription was \$89.60. The detail figures follow:

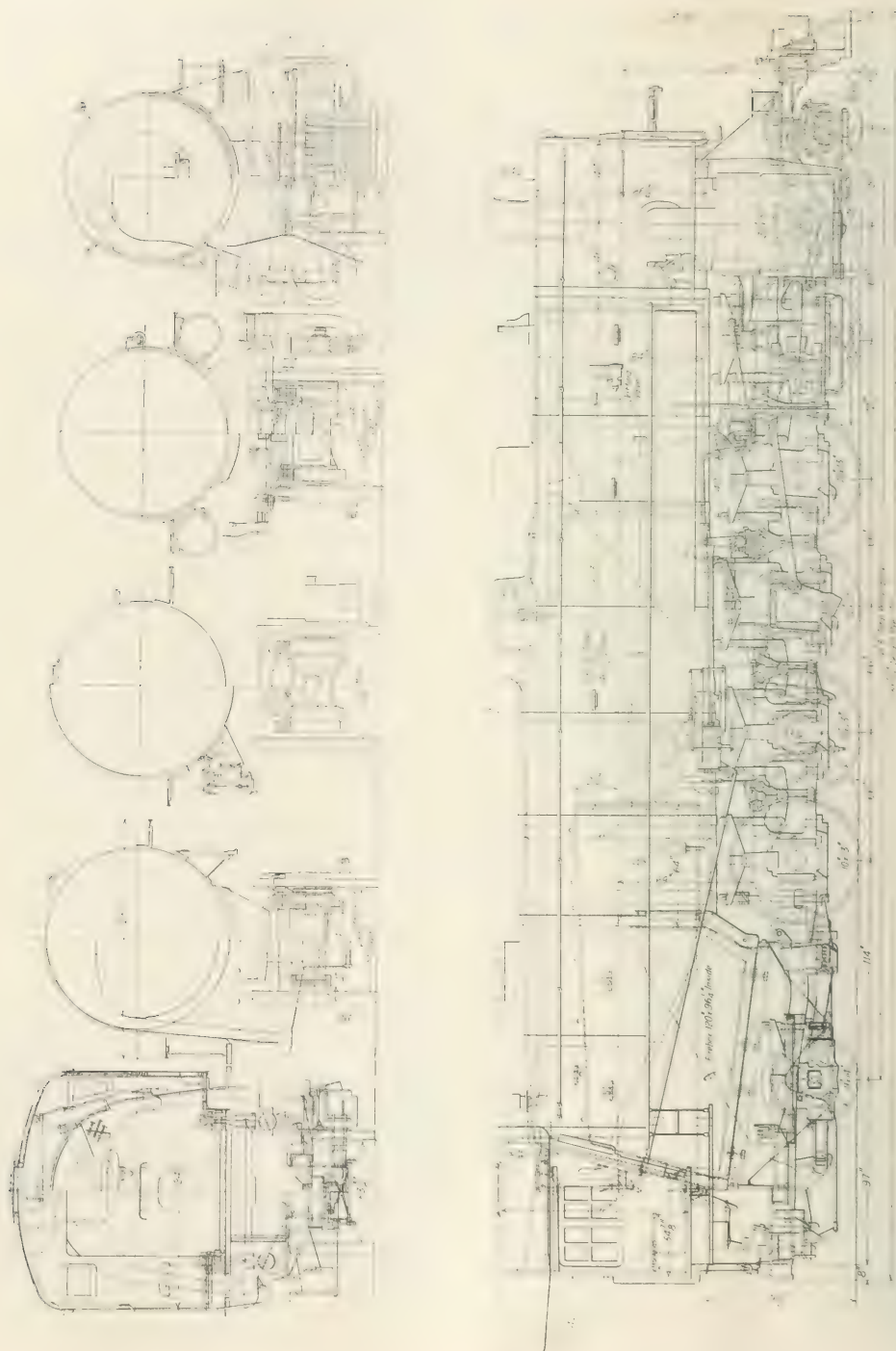
FOURTH LIBERTY LOAN—RAILROADS IN SOUTHERN REGION

Name of railroad	Total number employees on rolls	Total number employees subscribed	Percent subscribed	Average amount per subscriber
W. R. of Alabama	\$100,950	1,341	1.168	87.1
Atlanta, B. & Atlantic	217,100	2,719	2,625	96.5
Atlanta, C. & S. F.	1,601,800	20,000	84	93.7
Alabama Great Southern		Included with Southern Railroad		
Carolina, C. & O.	1,018,350	9,258		100.0
Charleston & W. Carolina	172,250	1,244	1,123	83
Cin., N. O. & Texas Pac.		Included with Southern Railroad		
Florida East Coast	288,800	3,000	2,874	95.9
Georgia Railway	174,250	1,697	79	29.7
Gulf and Ship Island	131,400	2,004	1,492	74.5
Gulf, Mobile & Northern		Included with Mississippi Central		
Illinois Cen. & V. & M. V.	86,650	1,317	1,041	79.0
Louisville & Nashville	2,708,000	46,683	34,282	73.4
Louisville, Hend. & St. L.	72,250	1,021	859	84.1
Mississippi Central	218,050	2,773	2,626	94.7
Mobile & Ohio	572,900	7,536	6,355	84.4
Nashville, Chat. & St. L.	956,853	12,200	9,978	81.8
New Orleans Great North.		Included with Mississippi Central		
Norfolk Southern	230,900	2,676	2,550	95.3
Piedmont & Northern		Included with Southern Railroad		
Washington Southern				
Rich., Fred'g & Pot.	260,000	3,735	2,803	75.1
Seaboard Air Line	1,695,050	17,837	15,305	85.8
Southern & As'd Roads	3,761,300	66,724	44,974	67.4
Southern R. R. in Miss.	76,100	747	742	99.5
St. Louis San Francisco	378,050	3,000	2,992	99.7
Tennessee Central	107,700	1,300	1,082	83.2
Western Railway of Ala.		Included with Atlanta & West Point		
Washington Southern		Included with Richmond & Potomac		
Winston-Salem South'd'd.	19,400	86	86	100.0
Yazoo & Mississippi Val.		Included with Illinois Central		
Ark. & Mem. Br. & Term.	4,900	58	58	100.0
Memphis Union Station	24,450	242	242	100.0
Union Railroad	52,900	495	485	100.0
Charleston Terminal	12,800	80	80	100.0
Kentucky & Ind. Ter. R.R.	118,500	679	679	100.0
Regional Director's Office	41,500	233	233	100.0
Short Lines & Terminals	77,950	1,598	1,598	100.0
Total	16,898,550	238,321	188,537	80.1
				\$89.60



British (left) and French (right) soldiers in the ruins of a railway station in France.

**This Is the Way the Huns Tried to Leave the Railways—
That Is—Before They Had to Run Too Fast**



Elevation and Sections of Rock Island 2-10-2 Type Locomotive



2-10-2 Type Locomotive for the Rock Island Lines

New Type of Cab and Spark Arrestor; Grease Lubrication on Crossheads and Trailer

A NUMBER OF NOVEL and interesting features are included in the design of a recent order of ten locomotives of the 2-10-2 type built by the American Locomotive Company for the Rock Island Lines. These include a new type of cab, a new spark arrester, and unique lubricating arrangements. These locomotives are designed for a load of 60,000 lb. on each pair of drivers. They are intended to traverse 16 deg. curves and have lateral mo-

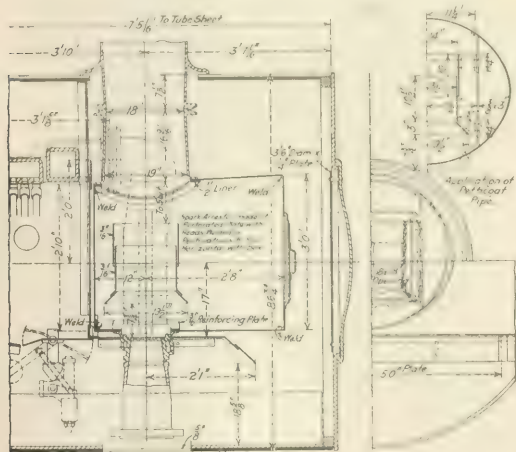
is applied. The firebox has a Security arch and is fired by a Duplex stoker. The grates are operated by the Franklin power grate shaker.

The Security spark arrester which has been in use for several years on the Rock Island Lines is used. This consists of a cylindrical or truncated conical box made of perforated plate or netting, closed at both ends and set between the nozzle stand and the stack extension. The box is reinforced around the openings where it is fastened to these parts. The petticoat pipe is supported on two braces inside the box. At the outer end a sliding door is provided which permits of readily inspecting the box or doing any work inside it. The entire box can be inserted or removed through the smoke-box door. The spark arrester is supported entirely between the nozzle stand and stack extension. The arrangement of the front end is clearly shown in the illustration.

Several months ago the Rock Island applied a new type of cab to a Mikado locomotive. It proved so satisfactory that a similar design is being used on all new power. The front wall of the cab, instead of being vertical, is sloped at the same angle as the back-head of the boiler and is set so that it projects forward only a few inches beyond the back-head. With this arrangement all the staybolts in the wrapper sheet are readily accessible for inspection or repairs. The angle of vision through the front cab window is also increased. The front part of the cab, which is eliminated in this design, serves no useful purpose but offers an opportunity for dirt to collect.

The main valves are of the piston type, 14 in. in diameter, and are operated by the Baker valve gear controlled by the Mellin power reverse. The valve chamber and cylinder bushings and piston and valve packing rings are of Hunt-Spiller gun iron. The piston rod packing is of the King type. The Nathan Manufacturing Company's drifting valve is used. A McCord force feed lubricator supplies oil to the valves and the lubrication of the air pump and stoker is provided for by the use of a Nathan two-pint two-feed hydrostatic lubricator.

A departure from the usual practice is the application of grease lubrication to the crossheads and trailer box hubliners, both of which are shown. The crosshead gibs are of gun iron with recesses in the wearing surfaces, filled with babbit. Grease is fed from a well at the center through a single hole to a groove extending across the face of the



Front End of the Rock Island 2-10-2 Type Locomotives with the Security Spark Arrester

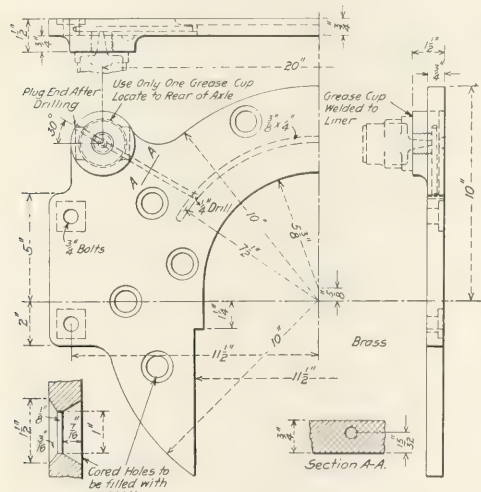
tion driving boxes on the front axle. The front and rear wheels are fitted with Detroit flange lubricators.

The clearances permitted the application of a boiler of large capacity. The boiler horsepower is 96.2 per cent of the cylinder horsepower rating. In the design of the boiler few innovations have been introduced. It is of the conical extended wagon top type with a 5-ft. 4-in. combustion chamber and tubes and flues 2¼-in. and 5½-in. in diameter respectively, 21 ft. 3 in. long. A type A superheater with 46 units

gib. The hub-liner on the trailer box is fitted with two lugs to one of which is welded a grease cup. The cup feeds grease to the hub-face at a point behind the center line. An annular groove is provided to facilitate the passage of the lubricant.

The tender used with these locomotives has a cistern of unique design with a flanged bottom. The sides are stiffened by T-irons which are continuous down one side, across the bottom and up the other side. In the ordinary design the side and bottom T-irons are joined to angle irons extending around the bottom edge of the tank and are reinforced by gusset plates. This new type of construction stiffens the sheets and prevents vibration which often causes them to crack at the sides just above the gusset plates. It also eliminates a calking edge at the bottom of the tank. The tender is carried on a cast steel frame. The air connections between the locomotive and the tender are made with Barco flexible metallic joints of the 3-V type.

Among the specialties applied to these locomotives not already mentioned are Westinghouse E-T No. 6 brakes with an 8½ in. cross compound compressor, Commonwealth locomotive cradle castings, Miner A-18 draft gear, Chambers throttle valves, Pyle-National headlights, Economy radial buffers, Nathan non-lifting injectors, Sellers coal sprinklers,



Trailer Box Hub Liner

Ashton safety valves, and Viloco H double type sander.

The principal dimensions, weights and ratios are given below:

General Data

Gage	4 ft. 8½ in.
Service	Freight
Fuel	Bituminous coal
Tractive effort	71,000 lb.
Weight in working order	383,000 lb.
Weight on drivers	302,500 lb.
Weight on leading truck	26,000 lb.
Weight on trailing truck	54,500 lb.
Weight of engine and tender in working order	572,900 lb.
Wheel base, driving	22 ft. 6 in.
Wheel base, total	41 ft. 3 in.
Wheel base, engine and tender	80 ft. 2¾ in.

Ratios

Weight on drivers ÷ tractive effort	4.21
Total weight ÷ tractive effort	5.33
Tractive effort × diam. drivers ÷ equivalent heating surface*	710.1
Equivalent heating surface ÷ grate area	29.5
Firebox heating surface ÷ equivalent heating surface*, per cent.	6.13
Weight on drivers ÷ equivalent heating surface*	47.4
Total weight ÷ equivalent heating surface*	67.05
Volume both cylinders	26.18 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	243.6
Grate area ÷ vol. cylinders	3.06

Cylinders

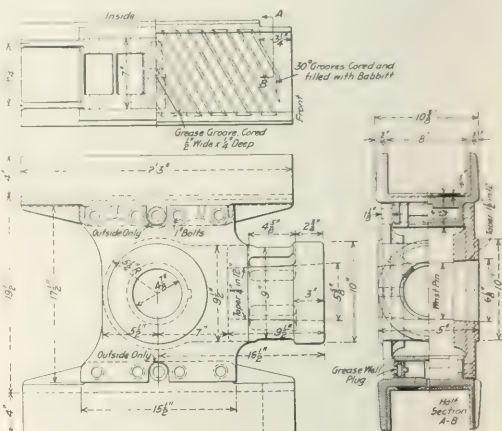
Kind	Simple
Diameter and stroke	30 in. by 32 in.

Pistons

Kind	Piston
Diameter	14 in.
Greatest travel	6¾ in.
Outside lap	1 1/16 in.
Inside clearance	0 in.
Lead in full gear	0 in.

Wheels

Driving, diameter over tires	63 in.
Driving, thickness of tires	3 in.
Driving journals, main, diameter and length	12 in. by 20 in.
Driving journals, others, diameter and length	Front 10 in. by 19 in., others 10 in. by 13 in.
Engine truck wheels, diameter	33 in.



Crosshead for the Rock Island 2-10-2 Type Locomotives

Engine truck, journals	6½ in. by 12 in.
Trailing truck wheels, diameter	43 in.
Trailing truck, journals	9 in. by 14 in.

Boiler

Style	Conical
Working pressure	185 lb. per sq. in.
Outside diameter of first ring	85½ in.
Firebox, length and width	120 in. by 96¾ in.
Firebox plates, thickness	Crown, back and sides ¾ in., tube 5/8 in.
Firebox, water space	Back and sides 5 in., front 5½ in.
Tubes, number and outside diameter	226, 2½ in.
Plugs, number and outside diameter	46, 5½ in.
Tubes and flues, total	21 ft. 3 in.
Heating surface tubes and flues	4,217 sq. ft.
Heating surface, firebox†	391 sq. ft.
Heating surface, total	4,608 sq. ft.
Superheater heating surface	1,180 sq. ft.
Equivalent heating surface*	6,378 sq. ft.
Grate area	80.2 sq. ft.
Center of boiler above rail	10 ft. 2 in.

Tender

Tank	Water bottom
Frame	Cast steel
Weight	189,900 lb.
Wheels, diameter	33 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	10,000 gal.
Gal. capacity	16 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

†Includes combustion chamber and arch tube heating surfaces.

OUR FOURTH LIBERTY LOAN.—Railroad employees on the lines on the Great Northern Railway in Canada subscribed for \$76,800 worth of bonds of our Fourth Liberty Loan.

SIAMESE TO STUDY AMERICAN RAILWAY SYSTEM.—Eight Siamese students connected with the Royal State Railways are about to leave Siam for the United States for the purpose of taking up the study of American railway methods. This is a new departure inaugurated by the recently appointed commissioner general of the Siamese State Railways. These students will be under the care of the Siamese Legation in Washington.

Commerce Reports

Annual Report Interstate Commerce Commission

Fundamental Aims of Railway Policy Discussed. The Commission's Relations to Federal Control

THE REQUISITES of an adequate transportation system, as the Interstate Commerce Commission sees them, are outlined by the commission in its annual report to Congress for the year ending October 31, made public on December 5. In addition to a discussion of what may be done with the railroads in the future, as to which no recommendations are made at this time, the usual routine account of the commission's activities is amplified by a discussion of its relations with the Railroad Administration. An abstract follows:

In our previous reports we have, as provided in the act to regulate commerce, transmitted to the Congress such information and data as were considered of value in the determination of questions connected with the regulation of commerce, together with such recommendations as to additional legislation as we deemed necessary. These bore on the regulation of competing common carriers, privately owned and operated. We deem it both unnecessary and inappropriate to renew these recommendations under existing conditions, an important feature of which is temporary unified operation of the carriers by a governmental agency during national emergency and under war powers. That emergency is passing, and in the light of experience gained and to be gained therefrom it will be profitable to appraise the results of unified operation and to apply them, in so far as pertinent, to the solution of the problems expressly reserved by the Congress for later consideration. The conditions, without precedent or parallel, which the war has produced now press upon the Congress matters of the gravest national and international concern. While we do not deem the present conditions and moment opportune in which to recommend concrete proposals for legislation, we may indicate certain lines of inquiry which must be pursued in order to reach sound conclusions.

The Future of the Railroads

Whatever line of policy is determined upon, the fundamental aim or purpose should be to secure transportation systems that will be adequate for the nation's needs even in time of national stress or peril and that will furnish to the public safe, adequate and efficient transportation at the lowest cost consistent with that service. To this end there should be provision for (1) the prompt merger without friction of all the carriers' lines, facilities and organizations into a continental and unified system in time of stress or emergency; (2) merger within proper limits of the carriers' lines and facilities in such part and to such extent as may be necessary in the general public interest to meet the reasonable demands of our domestic and foreign commerce; (3) limitation of railway construction to the necessities and convenience of the government and of the public, and assuring construction to the point of these limitations; and (4) development and encouragement of inland waterways and co-ordination of rail and water transportation systems.

Among the plans which doubtless will be proposed are the following: (1) Continuance of the present plan of federal control; (2) public ownership of carrier property with private operation under regulation; (3) private operation under regulation with governmental guarantees; (4) resumption of private control and management under regulation; and (5) public ownership and operation. Additional plans and modifications or combinations of those enumerated might be listed.

If the policy of private ownership and operation under

regulation is continued, the following subjects will require legislative consideration: (1) Revision of limitations upon united or co-operative activities among common carriers by rail or by water; (2) emancipation of railway operation from financial dictation; (3) regulation of issues of securities; (4) establishment of a relationship between federal and state authority which will eliminate the twilight zone of jurisdiction and under which a harmonious rate structure and adequate service can be secured, state and interstate; (5) restrictions governing the treatment of competitive as compared with noncompetitive traffic; (6) the most efficient utilization of equipment and provision for distributing the burden of furnishing equipment on an equitable basis among the respective carriers; (7) a more liberal use of terminal facilities in the interest of free movement of commerce; and (8) limitations within which common carrier facilities and services may be furnished by shippers or receivers of freight.

Should the policy of public ownership and operation be adopted there must be considered: (1) The just and fair price at which, and the terms under which, carrier properties are to be acquired; (2) prohibiting the operation of railways as a fiscal contrivance, insuring their administration in the interests of the convenience and commerce of the people, requiring that they shall be self-supporting and that their rates shall be properly related to the ascertained cost of service, and retaining and extending the economies and advantages of large scale production in transportation; (3) responsibility and relationship of the railway administration to Congress and other federal authorities and to the states; (4) guarding against the intrusion of party politics into railway management; (5) a status for railway officers and employees under which the railway service will attract and retain the best talent; and (6) maintenance of a tribunal for the determination of controversies which will inevitably arise even under public operation.

The above outline is a mere enumeration of some important points to be considered. We will at an appropriate time report to Congress such information, suggestions or recommendations as we believe may be of assistance in solving the many and difficult transportation problems.

The Commission's Relations to Federal Control

The magnitude of the task devolving upon the director general, no less than the war emergency which had created it, rendered imperative on our part a prompt offer to the United States Railroad Administration of any assistance that we could render. This tender was accepted by the director general, and the individual commissioners, in addition to their regular duties, prosecuted important investigations at his request.

Among these matters were the following: The assembling of financial information covering prospective capital requirements and security issues for the current year; the maintenance of the integrity of tariff publications in substantial conformity with the commission regulations; assistance in obtaining greater uniformity in freight classification; an inquiry into the advisability of federal control of express companies; an inquiry into the information or sources of information available to the United States Railroad Administration in the several departments or branches of the government; an inquiry into the intercorporate relations of railroads; an investigation of the wages of railway employees, for which purpose a special commission was appointed by the director gen-

eral, including a member of this commission; an inventory of the property of carriers under federal control; studies of possible economies in transportation by shorter routing of traffic and the avoidance of unnecessary cross hauling and by physical connection of railroads which had previously been operated under competition; the undertaking to serve as intermediary in matters before state commissions affecting carriers under federal control; an inquiry into the proposed discontinuance of operation of certain short lines of railroad; an inquiry into methods of fuel economy; and examination of statistical and accounting problems.

In addition to the above list of matters, which is merely illustrative, various concrete situations affording difficulty or perplexity were, at the director general's request, investigated by members of the commission, and recommendations submitted thereon. Among these may be mentioned: proposed federal control of the St. Louis municipal bridge; the projected removal of the freight terminal at Sedalia, Mo.; information as to existing schedules of coal rates; the development of certain inland waterways; grade crossing elimination in Indianapolis; rentals of carrier owned elevators at Kansas City, Mo.; store-door delivery in New York City.

In addition the services of various bureaus of the commission have been freely utilized at the instance of the director general, in particular the bureaus of tariffs, of carriers' accounts, of statistics, car service, and valuation.

At the director general's request, four of the commissioners have served on a general conference committee on the drafting of the standard compensation contract.

The federal control act laid the legislative foundation for the operation of carriers by the federal Railroad Administration. During the period of the emergency which led to its enactment to meet conditions growing out of the war it has changed in certain instances the functions of this commission, superseding in some cases the powers formerly exercised by us, altering in some degree our jurisdiction, and in other instances imposing upon us new duties. Certain salient changes resulting from this act are worthy of notice.

Changes in the Initiation of Tariffs

Railroads or transportation systems not under federal control remain, so far as interstate traffic is concerned, in all respects subject to the act to regulate commerce. For the most part, their gross revenues are small in comparison with those of the carriers under federal control.

For the carriers under federal control the President may initiate rates, fares, charges, classifications, regulations and practices which shall not be suspended by us pending final determination, by filing the same with us. His power so to initiate is not in terms confined to interstate traffic. Many of the schedules so filed purport on their face to apply alike on interstate traffic and on traffic moving wholly within the boundaries of any one state. Such schedules take effect at such time and upon such notice as he may direct, thus superseding the requirements of section 6 of the act to regulate commerce where statutory notice of 30 days is required, except where the commission allows changes upon shorter notice. The power of the President to initiate increased rates, fares, charges, or classifications is not limited by the proviso in the second paragraph of the fifteenth section of the act to regulate commerce, as amended, which precludes the filing of an increased rate, fare, charge or classification, except after approval thereof has been secured from the commission. The fifteenth section applications then pending have in practically all cases been ordered withdrawn by the director general. It has resulted that fifteenth section applications have been greatly reduced in number, and are practically confined to carriers not under federal control or where such carriers participate in traffic.

The total number of new tariffs filed has also shown a marked diminution. The policy of the Railroad Administra-

tion is clearly in the direction of a smaller number of tariff issuing bureaus. This will effect a material reduction in the number of schedules filed, and will simplify the tariff situation.

Effect of Control Act Upon Rate Controversies

General Order No. 28 issued by the director general increased freight rates and passenger fares generally throughout the United States upon federally controlled roads. The rates and fares so increased became and still are the governing rates of the country. Many of our matured and maturing reports and decisions were deferred to enable us to give careful consideration to the effect of this order. The rates under attack in practically all pending cases had been increased by the rates initiated by General Order No. 28. It was urged that these higher rates could not be passed upon by the commission so as to yield a lawfully effective order until the rates initiated by General Order No. 28 had been assailed as such by formal complaint to the commission.

The number of new complaints attacking rates instituted by the director general has up to date been less than the usual number filed against carrier-made rates. It is assumed that this is in part attributable to the feeling that existing rates partake somewhat of the character of a war measure.

Certificates Prerequisite to Executing Compensation Contracts

The federal control act provides that a carrier taken under federal control may be guaranteed during the period of federal control an annual sum

not exceeding a sum equivalent as nearly as may be to its average annual railway operating income for the three years ended June 30, 1917.

And also that

The average annual railway operating income shall be ascertained by the Interstate Commerce Commission and certified by it to the President. Its certificate shall, for the purpose of such agreement, be taken as conclusive of the amount of such average annual railway operating income.

In making the certificates we were governed by the consideration that the federal control act employed certain specific terms of the accounting system prescribed by us for the reports required of the carriers. The end of the three-year period designated in the statute did not however coincide with the end of the fiscal year currently in effect. We were, therefore, compelled to compute the railway operating income attributable to the first six months of the calendar year 1917 in conformity, so far as possible, with the accounting methods laid down by us for the carriers' observance. This certification is made subject to such changes and corrections as we may hereafter determine and certify to be requisite in order that the accounts and reports of the company used as the basis of computing said average annual railway operating income may be brought into conformity with our accounting rules or regulations in force at the time of such accounting, or in order to correct computations based on such accounts or reports.

The difficulty which arose from the different standards of maintenance and depreciation observed by different carriers was met by a provision in the standard compensation contract. Stated in general terms, this provides that during federal control the Railroad Administration shall expend sufficient on the carrier's property to insure its return in substantially as good repair and complete equipment as it was on January 1, 1918, with the proviso that an average annual expenditure for such purposes, equal, making due allowance for differences in wages of labor and cost of materials, to that made by the carrier itself during the test period shall be deemed a satisfaction of the covenant, and with a further proviso that expenditures in excess of those so made by the carrier for the test period, but required for the safe and proper operation of the property, assuming a use similar to the use for the test period, shall be made good by the carrier.

On September 3, 1918, we transmitted to the President the first lot of certificates required by the federal control act.

The act to regulate commerce is based upon the constitutional power of Congress to regulate interstate and foreign commerce. The federal control act is based upon the war powers of the national government. The latter power, while its exercise has ordinarily been of shorter duration, is of much wider extent than the former.

The Commerce Act as Affected by Federal Control

The federal control act would apparently have permitted the President to allow the carriers, as such, to operate the railroads under his general supervision and control. He has chosen, however, not to do so, but to operate them directly through the director general. The orders issued by the director general are the orders of the President whose representative he is.

It has thus come about that for the time being certain sections of the act to regulate commerce have, in their application to carriers under federal control, been superseded by the orders of the director general. Thus General Order No. 1 authorizing the disregard of established routes where efficiency or economy would thereby result has superseded the fifteenth section of the act to regulate commerce in so far as carriers were previously protected from being short hauled and in so far as the shipper's right to route the movement of freight is concerned.

Similarly, the director general's Order No. 1 unifying the transportation systems under federal control supersedes the protection thrown by section 3 of the act to regulate commerce around the carriers' exclusive right to the use of their tracks or terminal facilities.

Section 10 of the federal control act provides that the commission shall not suspend, pending final determination thereon, rates or fares initiated by the President; and that rates and fares initiated by the President shall become effective at such times and on such notice as he directs.

Fifteenth section applications to file increased rates, fares, charges or classifications are no longer compulsory so far as carriers under federal control are exclusively concerned. It is disputed whether the provision of the same section relating to the burden of proof to show that an increased rate is just and reasonable is qualified by section 10 of the federal control act.

Advisory Function of the Commission

If it be assumed that the power of the director general to initiate rates applicable wholly within a state is not inhibited by section 15 of the federal control act, the question arises whether the jurisdiction of the commission has not been extended by section 10 of that act to embrace a review of state rates so initiated. The first proviso of section 1 of the act to regulate commerce is that "the provisions of this act shall not apply to the transportation of passengers or property, or to the receiving, delivering, storage, or handling of property wholly within one state." The government has taken over transportation systems carrying both state and interstate traffic. The federal control act empowers the President to initiate rates, fares, charges, classifications, regulations, and practices whenever in his opinion the public interest requires, by filing the same with the Interstate Commerce Commission. Our jurisdiction to determine the reasonableness and justice of any such order of the President relates to "any rate, fare, charge, classification, regulation, or practice of any carrier under federal control." The findings and orders which the commission may enter after hearing are such as are authorized by the act to regulate commerce as amended.

There have been raised at least two important questions relating to the fourth section of the act to regulate commerce as affected by the federal control act. The first is whether pending fourth section applications filed by the carriers pro-

tecting their deviations from the rules of the fourth section, until a determination of the applications by the commission, may be continuously passed upon as heretofore; the second is whether the rules of the fourth section apply to rates initiated under the federal control act.

Under the language of section 8 of the federal control act the director general may avail himself of our advice, assistance, and co-operation. It has been and is our disposition and policy to respond to such requests, and when necessary or appropriate, we take testimony and hear arguments from interested parties in the premises. Important instances are the pending consolidated classification case and the express case.

Formal Docket

The number of formal complaints filed is 342, a decrease of 309. During the same period 576 cases have been decided and 77 have been dismissed by stipulations or on complainant's request, making a total of 653, as against 852 during the previous year. We conducted 596 hearings and took approximately 104,983 pages of testimony, as compared with 1,228 hearings and 210,133 pages of testimony during the preceding year. The reduction in formal complaints is attributable in large part to the patriotic motives of shippers, and in part to the amendment to the fifteenth section of the act.

Investigation and Suspension Docket

The amendment of August 9, 1917, to section 15 of the act prohibits carriers from filing schedules of increased rates, fares, or charges except after approval thereof has been secured from the commission. The operation of this law naturally has had the anticipated effect of substantially reducing the number of instances in which the power to suspend proposed increased rates, fares, or charges filed by carriers was sought or exercised. During the period covered by this report 10 such proceedings have been instituted, a decrease of 186, and 103 such proceedings have been disposed of, a decrease of 120. Under supplementary orders of suspension many proposed new schedules were added to pending investigations. The commission declined to suspend protested schedules in 18 instances, a decrease of 218 as compared with the previous year.

Bureau of Correspondence and Claims

The number of informal complaints received was 5,458, an increase of 158 over the preceding year. During the same period carriers filed 2,761 special docket applications for authority to refund amounts collected under the published rates, admitted by the carriers themselves to be unreasonable, a decrease of 2,122 under the preceding year. Orders authorizing refunds were entered in 2,752 cases, a decrease of 2,607, and repatriation was so awarded in amounts aggregating \$682,900.50. In addition, 182 cases were dismissed or otherwise disposed of without orders.

Tariffs

There were filed 141,254 tariff publications, a decrease as compared with recent years, notwithstanding the large number of schedules filed to establish the 15 per cent increases authorized in eastern territory and the 25 per cent increases ordered by the director general. This reduction may be attributed in part to the operation of the amendment which requires carriers to secure the approval of a proposed increase before the tariff containing it is filed. During this period 2,891 schedules tendered for filing were rejected for failure to give lawful notice, and 556 schedules containing increased rates or fares tendered for filing were refused because the carrier had not secured the approval required.

Our Bureau of Tariffs receives and responds to continually increasing demands for rate information from shippers, from the Railroad Administration, and from departments and

bureaus of the government, including those chiefly interested in the transportation of troops and war materials.

During the year carriers have filed 5,282 applications for authority to file tariffs making increases in rates. The total number of such applications filed since the amendment of August 9, 1917, is 6,682. One thousand two hundred and forty-two applications have been approved, 83 denied in full, 116 denied in part, 3,897 withdrawn by the applicant carriers, 168 assigned to docket for formal hearings, and 1,237 are now pending.

Classification

Following the policy outlined in our previous reports, we have endeavored to stimulate the work in the direction of uniformity in freight classification. At a conference of the classification committees, called on our suggestion, it appeared that the work that had been undertaken by the carriers' uniform classification committee, and which did not include fixing of ratings, might be brought to a conclusion at a not distant date. We addressed an inquiry to the carriers as to why they could not, by January 1, 1919, or earlier effect an assimilation or consolidation of the three general freight classifications into one volume containing one set of uniform commodity descriptions with three rating columns, one for each territory, subtended, and with one set of general rules. Shortly after this communication was sent, the director of traffic of the Railroad Administration took up the question, and after conferences with us he appointed a small committee, of which our classification agent was a member, to take up the unfinished work of the uniform classification committee and bring forward a suggested consolidated classification carrying uniform rules and regulations and with three columns of ratings, one each for the official, western and southern classification territories. It was understood that the report of this committee in the form suggested would, upon request of the director general, be made the subject of an investigation by us. Under section 8 of the federal control act request for such an investigation and advice to the director general based thereon was made upon us. Hearings have been held in important commercial centers throughout the country, but have not been concluded.

It was not intended that this committee's work or its report should contemplate making the consolidated classification a source of additional revenue. Without forecasting anything with regard to the report which we will make after the hearings and arguments are closed, it seems not inappropriate to say that the individual representatives of the several classification territories injected numerous proposed increased ratings in the proposed consolidated classification. These were especially numerous in the southeast. Objections have been voiced to various features of the proposed classification, mainly with respect to the increased ratings and the rule relating to mixed carload ratings.

Uniformity in classification ratings will necessitate a great many changes. A change in rating automatically effects a change in rate, to say nothing of the effect on commercial competition between competitive articles or commodities. No two of the existing classifications have the same number of classes.

The ideal situation would be complete uniformity in ratings and a definite relationship in percentages of the rates on the several classes to the rate on the first class. Some progress has been made in the direction of more uniformity in the relationship of the rates on the several classes to the first-class rate, but conditions have created numerous and widely varying relationships, which have long existed, and now exist.

Express Companies

The block system of stating express rates has been adopted for intrastate business in all but three of the states, and these three are now, as we understand, preparing schedules

substantially in accordance with that system. The completion and adoption of these schedules will remove the conflict between state and interstate express rates mentioned in our last report.

Effective July 1, 1918, the principal express companies were merged into one company, which is operating under a contract with the United States Railroad Administration. It is expected that this consolidation will permit of substantial economies in operation and bring about improvement in the service. The character of the express service rendered during the past year has been complained of frequently as inferior and inadequate. The cause of these complaints has been attributed by the express company to extraordinary demands upon the service and insufficient and inefficient labor, due to war conditions. Informal complaints of delays in service and in adjustment of loss or damage claims and lack of pick-up and delivery service have been received. These have been brought to the attention of the carriers and a disposition to dispose of them properly has been shown, although in some instances the process of adjustment has been slow.

Bureau of Inquiry

Forty-six indictments were returned for violations of the act to regulate commerce and acts supplementary thereto. Twelve were against carriers or carriers' agents and 32 against shippers, passengers, or interested parties other than carriers. Two indictments, for conspiracy, were against carriers and shippers jointly. During the year 34 cases were concluded. In 20 cases pleas of guilty were offered by the defendants. In four cases verdicts of guilty were rendered, in four cases verdicts of not guilty were rendered, and in one case the jury disagreed. In one case a demurrer to an indictment was sustained. In five other cases indictments were dismissed upon motion of the government, deaths of defendants necessitating such action in two instances.

It has been necessary for the government to use a large proportion of the available railroad service for military traffic and for serving industries that are engaged in producing munitions, especially those on railway lines which reach Atlantic ports. At times embargoes have been laid against the transportation of certain commodities for private purposes to such ports, especially lumber. As embargoed lumber could readily be sold at enhanced prices in the markets at the points of delivery affected, certain shippers took action to procure its transportation into such markets despite the restraining embargoes. These shippers, without the authorization of government representatives, caused many carloads of lumber to be billed to seaboard terminals, improperly naming as consignees the United States Shipping Board, the Quartermaster's Department and divers individual officers of the United States Army. Transportation of such shipments as government freight was thus procured. While some of this lumber was sold, in competition with lumber dealers who employed honest methods, to government contractors, most of it was disposed of at the points of delivery for private uses. The practice added to traffic congestion and effected an unjust discrimination against honest lumber dealers who did not resort to such means in order to secure transportation. Nine indictments, charging discriminations in violation of the Elkins act, have been obtained against the dealers who employed these unfair methods.

The Chicago & North Western Railway Company, the Minneapolis, St. Paul & Sault Ste. Marie Railway Company, the Chicago, Milwaukee & St. Paul Railway Company and several lumber shippers have been indicted for granting and receiving concessions in violation of the Elkins act. Rails and other track material of substantial value were leased by the carriers to the lumber companies and the latter were not required to pay adequate compensation for the use of such material.

Bureau of Law

On October 31, 1917, there were 29 cases involving orders or requirements of the commission pending in the courts, of which 15 have been concluded. During the year two cases were instituted, so there are now pending in the different courts 16 cases. Of these, two are in the Supreme Court and 14 in district courts. Of the 15 cases finally disposed of, two were dismissed on motion of the petitioners; two, instituted for the collection of penalties, were dismissed on motion of United States attorneys; in one, prosecution was abandoned by the petitioner after the Supreme Court of the District of Columbia had rendered a decision upholding the order of the commission; in one prosecution was abandoned by the parties after a decision had been rendered by the Supreme Court in a case involving the same subject matter, namely, the *Illinois Passenger Fares Case*, and in nine, final decisions were rendered by the Supreme Court.

Bureau of Carriers' Accounts

The functions of the bureau with the beginning of the operations by the government of the railroads and other carriers under the jurisdiction of the commission were in some respects altered and enlarged. As to the railroads taken over by the government certain changes in detail as to accounting and reporting are necessary because of the maintenance for each carrier of two separate organizations, one by the government for operating and another by the carrier for financial or corporate purposes, whereas formerly but one organization was maintained. Like changes may prove to be necessary in the accounts and reports of sleeping-car, telegraph and telephone companies, depending on the contracts to be made with such companies by the federal government. Some provision also seems necessary for accounting for and reporting the expenditures of the administrative offices in connection with the operation of the railroads and other carriers now under government control.

During the period from January 1, 1918, the date the accounting under federal operation of certain systems of transportation became effective, to March 21, 1918, the date of the approval of the federal control act, the activities of the bureau were directed largely toward a completion of the general examinations of accounts in the field, previously started or arranged for; to a study of the probable necessary changes in accounting practice growing out of the assumption of operations by the government; and to the formulation of methods of conducting future examinations and the work of the field force generally in view of the changed conditions. The matter of the revision of the accounts and reports is still being prosecuted in co-operation with the carriers and those having charge of their operations. No changes are at present contemplated as to the railroads not taken over by the government.

The value of strict uniformity in accounting has perhaps never been better illustrated than in its relation to the federal control of carriers. The uniform systems of accounts have made it practicable for the Congress to fix a basis of compensation for railroads and other systems of transportation, based upon the "average annual railway operating income" for the three-year period ended June 30, 1917, to be certified by the commission as required by the federal control act. Some re-adjustment of the items affecting "average annual operating income" as stated in the reports of the carriers for the three-year period may be necessary, due to erroneous accounting, but this is a detail of relatively easy disposition.

It should be understood, however, that uniformity of accounting, so often referred to in this and previous reports, is not so far-reaching as to control, in a physical sense, what the managerial policy of any railroad or other carrier shall be; nor has the act to regulate commerce been construed by the commission as vesting in it any such authority or power. For

example, no attempt has been made to require the observance of a fixed standard of maintenance. The determination of the scale of maintenance to be followed by a carrier in the upkeep of its physical property is an exercise of the right to administer that property according to the best judgment of those to whom it has been entrusted; a right with which the commission is not empowered to interfere.

On the other hand, depreciation, while not within the control of carriers, is an inevitable factor of operating expense, and therefore should not be ignored by them in their accounts. Its measure, however, depends to a large extent upon physical and operating conditions, which vary a great deal with different carriers and in different sections of the country. In recognition of this fact the commission has so far permitted the carriers to determine for themselves the rate of depreciation that shall be charged, the reasonable accuracy of which, based upon its own experience, each carrier must be prepared to justify.

Bureau of Statistics

The work of this bureau has been considerably increased, owing to the statistical requirements growing out of federal control. Many special statements have been prepared upon the request of various officials of the Railroad Administration. In this bureau also are prepared the computations which lie at the basis of the certificates of average annual railway operating income, which we are required to make to the President.

In making these certificates, the amount of railway operating income, as defined in the federal control act, is first ascertained from the annual reports for the fiscal years 1915 and 1916 and the special report for the fiscal year 1917. The figure thus ascertained is modified in two particulars: (1) by charging to "Railway tax accruals" for the six months ended June 30, 1917, one-half the actual war taxes assessed for the calendar year 1917 under the act approved October 3, 1917; and (2) by charging to the appropriate operating expense accounts for the six months ended June 30, 1917, the total amount of wage increases actually earned in that period under the Adamson law. Apart from these two adjustments the only ones to be made are such as we may now or hereafter determine and certify to be requisite in order that the accounts and reports of the company may be brought into conformity with the established accounting regulations.

As explained in the report of last year, our statistical requirements have been considerably curtailed to reduce clerical labor of the carriers. By notice of April 12, 1918, we limited the monthly reports of revenues and expenses of steam roads to those companies having annual operating revenues above \$1,000,000.

Revised rules for reporting accidents were issued, effective as of October 1, 1918. The classes and causes of railway accidents will be analyzed more fully in order to make the statistics as useful as possible to those engaged in the work of accident prevention.

In Appendix C there are presented various figures compiled from reports on file in this bureau.

There appears first a statement of revenues, expenses and operating income for the months in 1918 for which returns are available in comparison with those for corresponding months in 1917. The railway operating income is stated with the modifications specified in the federal control act. The first six months of 1918 show a marked decline as compared with the previous year. In June the accruals on account of retroactive wage increases were included, which fact explains the extraordinarily poor showing for that month in operating income. In July and succeeding months the effect of increases in freight rates and passenger fares appears both in revenues and income. The railway operating income, without adjustment on account of equipment and joint facility rents, is given by months for the years 1914 to 1918.

The statement of railway accidents shows that fatalities to

trespassers are much more numerous than to employees and passengers combined. The larger number of "Other non-trespassers" killed is mainly the result of grade-crossing accidents, the figures being considerably in excess of those reported last year. Of the total number of persons injured, however, the major portion are employees.

A series of tables is also included to illustrate the development of steam roads in the United States since 1908. The continuity of the tables is somewhat impaired by the change in the date of the closing of the statistical year. It will be observed that this development has been in the direction of providing relatively more facilities on the existing lines rather than in the building of new railroads. Until the year 1916 the miles of yard tracks and sidings increased about as rapidly as the traffic, measured in loaded freight-car miles.

The operating income in relation to reported investment, while falling to a low level in 1914 and 1915, reached its maximum in 1916, when the carriers received practically 6 per cent on the investment shown by their books. The proportion of funded debt to capital stock shows but little change during the period. In the relation of net income, that is, income after payment of interest and rentals, to capital stock, the low point is the year 1915, while the year 1916 shows the highest ratio in the table. It is true, however, that the total amount accrued in dividends reached its maximum in 1911, following the prosperous year 1910, and since 1913 the proportion of stocks paying a dividend has declined. The dividends in relation to both dividend-paying stock and to all stock showed but little tendency in 1916 to recover from the low average of 1915. The tendency to an increased car-load and train load is marked. The economies of an expanding traffic were in large measure offset by increasing costs of operation. When all freight and passenger traffic is reduced to a ton-mile basis, the total operating expenses per ton-mile showed little tendency to decrease. This is also true with respect to labor compensation per ton-mile. The receipts per ton-mile show some tendency to decline. It should be noted that the ton-mile basis, with a varying proportion of various classes of traffic, and with changes in the length of haul, is not an entirely reliable index of rate changes. Earnings per passenger per mile increased during this period.

Bureau of Safety

A detailed report of the work of the Bureau of Safety is published as a separate document.

Violations of the safety appliance acts occurring subsequent to December 28, 1917, on roads operated by the director general have not been filed with the various United States attorneys for prosecution, as has been the practice heretofore. However, all infractions of the law on such roads are being referred to the director general to be dealt with in accordance with his Order No. 8, and suits for the penalty are being filed as to all violations occurring on roads which are privately operated.

It is as yet too early to express definitely the degree of success attained under this order in comparison with the former method of instituting suit for the penalty under the statute. Under the former system there was a double purpose served by prosecutions for the penalty, that of publicity in defending such suits and the disciplinary measures taken by the carrier to prevent subsequent cases being filed. Great care must be taken to place the responsibility on the proper party regardless of position, so as not to permit the shifting thereof from officials to employees or the evasion of same in any manner. With this object in view, our inspectors are procuring the facts and circumstances surrounding every violation of the law which comes under their observation, and this information is transmitted to the director general for action.

The casualties on steam railroads in connection with the

operation of trains during the calendar year 1917 are summarized as follows:

Class of person	Number of persons—	
	Killed	Injured
Trespassers	4,243	3,829
Employees	2,781	52,780
Passengers	301	7,582
Persons carried under contract, such as mail clerks, Pullman conductors, etc.	42	792
Other non-trespassers	2,200	5,987
Total of above classes	9,567	70,970

In addition, there were 520 persons killed and 123,835 injured in non-train accidents.

SAFETY APPLIANCE ACTS

During the calendar year ended December 31, 1917, 166 employees were killed and 2,508 injured in coupling and uncoupling cars; casualties resulting from employees coming in contact with overhead and side obstructions and from falling from and getting on and off cars occasioned 591 deaths and 16,384 injuries. This represents an increase of 30 in the number killed and 68 in the number injured in the former class of accidents, and 27 in the number killed and 447 in the number injured in the latter class of accidents, as compared with the calendar year ended December 31, 1916.

During the fiscal year, 95 cases, involving 377 counts, were transmitted to the several United States district attorneys for prosecution. Cases aggregating 66 counts were tried, of which 48 counts were decided in favor of, and 17 counts adversely to the government, 14 of which 17 counts are now pending appeal to the Circuit Courts of Appeals and 1 count is pending decision in the District Court. In cases involving 373 counts, there were 338 confessions of judgment and 35 dismissals. In the various Circuit Courts of Appeals, there were decisions in 6 cases involving 49 counts, in 5 cases of which, involving 38 counts, judgment was in favor of the government, while in 1 case of 11 counts, judgment was for the defendant. There are now pending in the various District Courts 145 cases involving 560 counts.

HOURS-OF-SERVICE ACT

During the year there were transmitted to the several United States district attorneys for prosecution 60 cases, involving 529 counts. Cases aggregating 154 counts were tried, of which 85 were decided in favor of, and 64 adversely to the government. In cases involving 780 counts there were 626 confessions of judgment and 154 dismissals. In the various Circuit Courts of Appeals there were decisions in 7 cases involving 187 counts, in 172 counts of which judgment was in favor of the government, and in 15 counts judgment was for the defendant. In 2 cases involving 120 counts, in which judgment for the government was affirmed by the Sixth Circuit Court of Appeals, the defendant has applied to the Supreme Court for a writ of certiorari. This application is pending decision. There are also pending decision before the latter court on writs of certiorari, 2 cases involving 29 counts, and before three Circuit Courts of Appeals on writs of error 3 cases involving 23 counts. Pending trial in the various District Courts are 111 cases involving 1,174 counts.

INVESTIGATION OF ACCIDENTS

During the year ended June 30, 1918, 91 train accidents were investigated by the commission. In these accidents, comprising 63 collisions and 28 derailments, 374 persons were killed and 1,730 were injured; the collisions investigated caused the death of 295 persons and the injury of 1,165 persons, while in the derailments investigated 79 persons were killed and 565 were injured.

Twenty-six of these collisions occurred on block-signalized lines, 13 in automatic block-signal territory, and 13 in non-automatic block-signal territory; 1 occurred within the limits of an interlocking plant; five occurred on track where yard rules were in effect, while 31 occurred on lines operated

by the train-order and time-interval system. Of the 13 collisions investigated which occurred in automatic block-signal territory, 8 were due to failure of engineers to heed automatic block-signal indications, and 1 was caused by failure of a train crew to obey a rule requiring a train on a siding to wait two minutes after the switch was opened before pulling out on the main line; in the other 4 cases the signal system in use was not involved, 2 of these accidents being due to trains running away on mountain grades and 2 involving trains running against the current of traffic, which movements were governed by train orders.

The most disastrous accident investigated during the year, which resulted in the death of 60 persons and the injury of 128, occurred on a line operated by a modern automatic block-signal system; it was caused by an engineman falling asleep and failing to see a stop signal. In the report upon this accident it was pointed out that since accident investigations were begun in 1911 approximately 10 per cent of the total number of accidents investigated were caused primarily by the disregard of signal indications. As many of these accidents occurred on lines equipped with the best signal systems, properly installed and maintained, the urgent need of some further safeguard such as automatic devices designed to compel obedience to signal indications is apparent.

With but two or three exceptions the collisions investigated which occurred in non-automatic block-signal territory were caused by lax practices and non-observance of rules. The investigations disclosed that in many instances little, if any, additional protection, as compared with the train-order and time-interval system, was afforded, and the principal need disclosed by the investigation of these accidents is for closer supervision as well as strict adherences to the methods and practices prescribed for the operation of the non-automatic block system.

Approximately half of the collisions investigated occurred on lines operated by the train-order and time-interval system, and many of them were due to the inherent weaknesses of that system of train operation. Many could have been prevented by the proper application of block signal principles, and it is beyond question that the adoption of the block system on lines now operated by the train-order system would result in a material reduction in the annual casualty record.

We call attention to recommendations in previous reports relating to the standardization of railroad operating rules. In addition to the feature of increased safety which would result from uniformity in operating rules, accident investigations frequently disclose situations where safety conditions would be materially improved by the application and interpretation of rules which are now in effect on the more advanced and progressive roads of the country.

In many sections of the country railroads are experiencing difficulty in securing experienced and competent men. Instances have been disclosed where mere boys have been employed as operators, with little or no experience and training. In view of the abnormal industrial conditions attention is called to the necessity for extraordinary zeal in the instruction and examination of employees, as well as constant supervision to insure that proper practices are being followed.

Of the 28 derailments investigated 17 were caused by defective track and 3 were due to defective equipment; in 3 other cases the speed of the trains was the primary cause; in 3 cases the derailments occurred on account of local conditions, and in 2 investigations the causes of the derailments were not definitely ascertained. To secure proper track maintenance constant inspection, necessary repair work, and renewal of worn materials are essential. If the abnormal demands for steel and steel products have resulted or do result in curtailment of the supply of new rails available, and the continued use of worn rails, this fact, together with increased traffic in many parts of the country, requires that more than

ordinary precautions in the matter of inspection and repair be taken. Thorough inspection must also be relied upon to insure the safety of equipment.

INVESTIGATION OF SAFETY DEVICES

Under authority of the act of October 22, 1913, tests have been conducted during the past fiscal year of an air-brake system. A detailed report upon this device will be transmitted to the Congress separately. During the year plans of 93 devices were examined and opinions thereon transmitted to the proprietors.

The annual statistical report of January 1, 1918, published by this bureau indicates a net increase during the year of 1,123.8 miles of road operated by the block system. The total miles of road operated by the block system on January 1, 1918, being 99,531.7 miles.

Bureau of Locomotive Inspection

The work of the bureau of locomotive inspection during the fiscal year ended June 30, 1918, is shown in detail in the report of the chief inspector, published separately. The tables appearing below show, in condensed form, the number of locomotives and tenders and all parts and appurtenances defective, and the number ordered out of service on account of not meeting the requirements of the law. They also show the total number of accidents due to failure from any cause of locomotives and tenders and all parts and appurtenances thereof, and the number killed or injured thereby.

LOCOMOTIVES AND TENDERS, AND PARTS AND APPURTENANCES DEFECTIVE, AND NUMBER ORDERED OUT OF SERVICE			
	1918	1917	1916
Number of locomotives and tenders.....	1,123.8	1,123.8	1,123.8
Number of parts and appurtenances.....	54	54	54
Percentage total defective.....	5.4	5.4	5.4
Number ordered out of service.....	2,125	3,294	1,943

ACCIDENTS DUE TO FAILURE OF LOCOMOTIVES AND TENDERS, AND PARTS AND APPURTENANCES THEREOF			
	1918	1917	1916
Number of accidents.....	41	41	41
Increase over previous year..... per cent	4.1	4.1	4.1
Decrease from previous year..... per cent	25.8	25.8	25.8
Number injured.....	756	756	756
Increase over previous year..... per cent	4.8	4.8	4.8

The following table shows the total number of persons killed and injured by failure of locomotives or tenders, or any part or appurtenance thereof, during the three years ended June 30, 1916-1918, classified according to occupations:

	1918		1917		1916	
	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:						
Enginemen.....	19	306	21	304	12	235
Firemen.....	1	1	1	1	1	1
Brakemen.....	1	1	1	1	1	1
Conductors.....	1	1	1	1	1	1
Switchmen.....	1	1	1	1	1	1
Roundhouse and shop employees:						
Boiler makers.....	1	1	1	1	1	1
Machinists.....	1	1	1	1	1	1
Forgemen.....	1	1	1	1	1	1
Inspectors.....	4	1	1	1	1	1
Watchmen.....	3	1	1	1	1	1
Boiler washers.....	4	1	1	1	1	1
Hostlers.....	8	1	1	1	1	1
Other roundhouse and shop employees.....	1	1	1	1	1	1
Other employees.....	26	5	22	1	7	1
Non employees.....	1	1	1	1	1	1
Total.....	63	321	63	321	53	321

Summarizing, for the purpose of comparison, accidents and casualties resulting therefrom during the year shows an increase of 4.1 per cent in the number of accidents, with a decrease of 25.8 per cent in the number killed, and an increase of 4.8 per cent in the number injured.

The decrease in number of locomotives inspected is due to the fact that a substantial percentage of the inspectors were engaged in special work. During November and December, 1917, and January, February, and March, 1918, almost all inspectors were directed to check the congestion at terminals in an effort to see that locomotives were properly furnished

so that the coal movement might be facilitated and the fuel shortage relieved. A number of inspectors were permanently transferred to the service of the director general.

The period covered by this report was the most difficult in the history of American railroads in which properly to maintain locomotives. This is primarily due to the war conditions, which made it necessary to use to their maximum capacity all locomotives that were serviceable and to return to service many locomotives that had been out of service for years awaiting disposition, and which in some cases were put in service without having been thoroughly repaired. Proper maintenance of locomotives was also made difficult by the large number of mechanics who entered military service. The unusual demands for power resulted in the use of many locomotives in violation of federal laws, no doubt, with the thought that the movement of traffic was being expedited thereby, but the results of this practice were clearly demonstrated during the past winter.

Bureau of Valuation

It was stated in our report for 1917 that the field work of the engineering section would be completed during 1919. While the war has interfered with the prosecution of this work to a greater degree during the current year than before, it is still hoped that this limit can be met. From October 1, 1917, to September 30, 1918, road and track parties covered 53,244.56 miles of main line and 81,469.73 miles of tracks, which was in excess of any previous year. Some districts will finish slightly in advance of others, but it is still believed that our engineering field work can be substantially accomplished by January 1, 1920.

Our last report stated that the office work of the engineering section should be finished during 1920, but that statement must be somewhat modified. The effect of the war upon the office forces has been much more serious than in the field. For some reason it has been more difficult to maintain the integrity of that force, it having several times happened that more than 25 per cent of the office employees in a given district have changed during a single month. It is impossible to predict just what the effect of this will be, but unless conditions become worse, not much additional time will be required.

Our land section can not produce completed reports until certain information is received from the carriers as to their lands; and inability to obtain this has limited the progress of this section. At the present time carriers are doing fairly well in this respect and it is expected that this section will complete its work within the year 1920.

The greatest difficulty has been experienced in obtaining and retaining competent accountants. The needed information can be readily collected from the books of the carriers, but it is difficult to find men who are competent to put this into the form of a completed report. The field work of this section will be finished in the first half of 1920, but there may be some delay in the preparation of final reports.

Attention is again called to the fact that, owing to the failure of carriers to furnish necessary information as to their equipment, and especially as to their lands, it is found necessary to stop work upon particular properties and proceed with other properties. Today the work of the bureau in all branches is well advanced upon every considerable road in the country and is approaching completion upon many of the most important, but reports have been delayed by the lack of this information. Carriers did not realize at the outset the difficulties involved in compiling the original cost of their lands and unreasonably delayed the beginning of that work.

On the whole, it is believed that while the war has seriously affected this work it will not greatly postpone the period of final completion nor increase the total expense.

Reports in the first contested cases which were exhaustively presented, in which the methods and principles employed

have been stated, have been transmitted to Congress for its information. The methods and principles there stated are being applied to valuations now before us and will be followed in the further progress of our work.

Nine Months of Federal Railway Control

AMERICAN SHIPPERS paid 9.28 mills per freight ton mile in August, 1918, against only 7.19 in August, 1917, an advance of nearly 30 per cent; in September, 1918, operating expenses of the railways absorbed 75.95 per cent of operating revenues against only 68.37 per cent for the same month in 1917, and the American public paid nearly \$560,000,000 more for inferior service during the nine months to September 30, 1918, than it did during the same period in 1917. These are the concrete results under government control as computed by the Bureau of Railway News and Statistics, Chicago from the monthly reports to the Interstate Commerce Commission and the latest report of freight train operation issued by the Operating Statistics section of the Railroad Administration.

The relative figures of receipts per freight ton mile for August may be accepted as representative of what they will be for the two years in question. In the month of August last, Order No. 28, increasing freight rates, was fully operative, while Order No. 27, advancing wages, was only partially so, as its scale is being constantly added to by supplementary orders.

The advance in the operating ratio is even more startling than it appears, for September is naturally a month of high revenues and moderate expenses. In the ten years prior to 1917 the operating ratio for September ranged between 61.25 per cent (1909) and 67.43 per cent (1913).

The tale as to the great increase in the amount paid by American shippers and travelers may be told in three lines:

	Operating revenues (000 omitted)	Operating expenses (000 omitted)	Op. ratio including taxes
For 9 months to September 30, 1918...	\$3,637,420	\$2,948,135	81.11%
For 9 months to September 30, 1917...	\$3,079,191	\$2,167,019	70.41%
Increase	\$558,229	\$781,126	

That the expenses outstripped the revenues, great as they were, is not surprising, for the remedy of advanced rates was not applied until the epidemic of higher wages had run nearly six months.

More in detail the income account for the corresponding nine months of the two years under review was as follows:

INCOME ACCOUNT OF STEAM RAILWAYS FOR NINE MONTHS TO SEPTEMBER			
	30, 1918	1918	1917
Operating revenues:		\$2,948,135	\$2,167,019
From freight	\$2,519,831,304	\$2,162,788,494	\$1,734,411
From passenger	79,931,553	70,134,411	47,763,632
From mail	14,484,473	14,484,473	8,340,132
From express	92,047,932	93,969,832	86,970,831
From other transportation	93,969,832	94,217,712	81,413,461
From incidental, etc.	94,217,712	2,947,650	.....
Joint facility, balance	2,947,650	.....	.....
Total operating revenues	\$3,637,420,447	\$3,079,191,961	.....
Operating expenses:		\$2,167,019	\$1,734,411
Maintenance of way and structures	\$471,398,456	\$471,398,456	\$361,736,028
Maintenance of equipment	801,170,664	801,170,664	517,787,097
Traffic expense	39,777,117	39,777,117	49,978,081
Transportation expense	1,524,912,539	1,524,912,539	1,143,495,706
General expense	84,910,701	84,910,701	74,016,323
Transportation for investment (credit) red	4,020,742	4,020,742	20,084,097
Total operating expenses	\$2,948,135,115	\$2,948,135,115	\$2,167,019,330
Net revenue from operation	689,285,332	689,285,332	\$121,774,629
Taxes, rentals, cost and interest	144,006,380	144,006,380	\$53,900,441
Railway operating income	\$545,119,052	\$545,119,052	\$757,255,188

The most disquieting feature of this statement is the fact behind it that the vast expenditures for maintenance of way and of equipment do not provide the equivalent in facilities that half the amounts did a decade ago. The railway cost of living has doubled in ten years.

The Rock Island Builds Two Rainbow Arch Bridges

A Limited Weight Structure and a Shallow Floor Are Two Advantages Gained by This Design

THE USE OF THE SO-CALLED "rainbow" arch for highway over crossings was adopted in two instances by the Chicago, Rock Island & Pacific because this type of structure afforded the advantages of reinforced concrete in locations where concrete construction would otherwise have been found impracticable. Concrete girder bridges of the through type, while affording a relatively thin floor in cases where there is limited headroom, assume decidedly



The Bridge at Little Rock

unwieldy proportions for spans much in excess of 35 or 40 ft. On the other hand, arch bridges of the usual design are of no avail where the clearance is limited. The rainbow arch provides a structure of limited weight, while affording a thickness of floor as shallow as may be obtained in any case where reinforced concrete construction is used.

The rainbow arch is essentially an adaptation to concrete of the bow-string arch used quite commonly in this country years ago for highway bridges. The principal modification in the application to concrete lies in the elimination of the

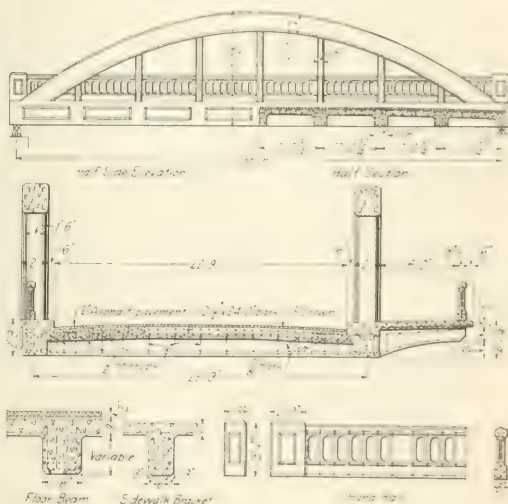


Steel Frame for the Arch at Horton with Temporary Falsework Cross Beams in Position

diagonal web members, while the vertical web members serve purely as floor hangers. In other words, the upper chord is virtually an arch rib with the bottom chord serving as a tie to take the thrust at the springing line. From the practical standpoint, it is really a concrete truss bridge. In the two cases in which it has been applied on the Rock Island, the spans have been placed on old masonry from which the old superstructure had been removed. One of the photo-

graphs shows a bridge of this type of 60 ft. span, built at Little Rock, Ark., while another photograph and the drawings show the details of a 56-ft. span built at Horton, Kan.

The bridge at Horton affords a roadway 22 ft. 9 in. wide between the trusses with a 6-ft. cantilever walk on one side. The arch has a rise of 11 ft. with a radius of 36 ft. 3 in. for a length of 21 ft. at the crown and a radius of 49 ft. 5½ in. for the remaining portions on either side. The arch rib is 2 ft. wide and 2 ft. 3 in. deep, while the bottom chord, which has the same width, is 2 ft. 9 in. deep. Hangers, spaced at intervals of 7 ft. 0¾ in., are 1 ft. 6 in. wide and 8 in. thick. These support floor beams spanning from truss to truss which are of the T-beam type with a width of 1 ft. 6 in. and a total depth of 2 ft. 3 in. at the center line of roadway. The roadway slab which is supported by these floor beams is 9 in. thick. The sidewalk



Details of the Concrete Work

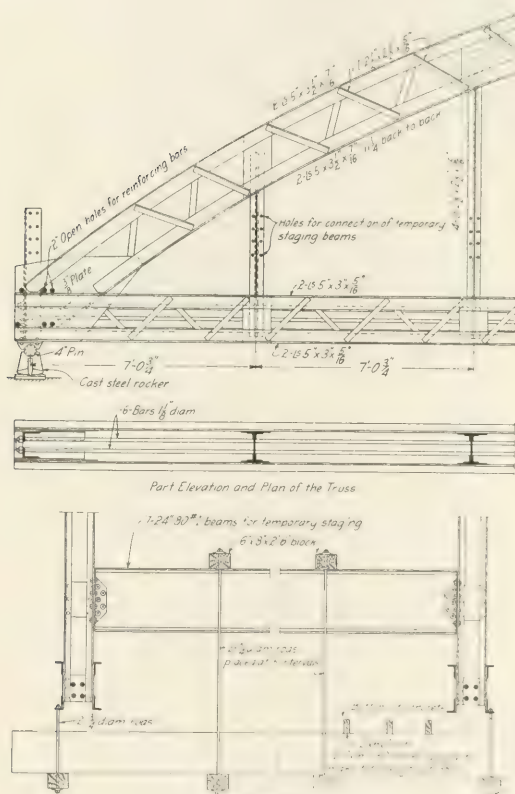
is supported by cantilever brackets of somewhat lighter proportions than the floor beams. A reinforced concrete hand railing built monolithic with the structure is provided on either side.

One important advantage from the standpoint of construction which was secured with this design, comes about through the use of structural steel trusses for the reinforcement, since these served to support the concrete formwork, thus eliminating all falsework underneath the structure. One of the drawings shows the part view of this reinforcement. It consists of a complete arch rib and bottom tie, each consisting of four 5-in. by 3½-in. angles arranged in the form of a rectangular section with lacing on four sides of the top chord and on the two vertical sides of the bottom chord. Owing to the fact that the compression in the concrete of the arch rib is responsible for a considerable portion of the horizontal thrust at the springing line, the angle members of the bottom chord are supplemented by six rods 1½ in. in diameter anchored to diaphragms at

the ends of the bottom chord against which the concrete of the ribs has direct bearing.

The hangers consist of four angles arranged in the form of an I-section connected by batten plates. These were given a length such that the bottom chord has a chamber of 3 in. when erected. To compensate in part for secondary stresses the riveted connections of the rib to the bottom chord and the splicing of the top chord at the crown were made with the splice in the bottom chord at the center of the bridge separated by 15/16 in., after which the six tie rods in the bottom chord were drawn up until the splice was closed. Pin bearings were provided at each end of the span with rocker shoes at one end to provide for expansion.

This plan also shows the arrangement by which the



The Steel Frame and Method of Supporting the Formwork

forms for the concrete were supported on the steel work. Old I-beams 24 in. deep, weighing 80 lb. per ft. were taken from stock and riveted between the hangers of the two trusses. A staging underneath the bottom chord was suspended from these beams and on this a platform was built which served as a support for the form work for the beams and slabs of the floor. After the floor had been poured and a sufficient time had elapsed for the concrete to cure, the staging and temporary beams were removed, after which the concrete for the arch ribs and hangers was poured.

The span at Little Rock, which was built in 1917, cost \$4,900. The basic design according to which these

bridges were built is covered by a patent owned by the Marsh Engineering Company of Des Moines, Iowa. The work on these two structures was carried on under the general direction of C. A. Morse, then chief engineer, and I. L. Simmons, bridge engineer, of the Chicago, Rock Island & Pacific.

Luther M. Walter Opposed to Government Ownership

UNLESS WE CAN HAVE private management with intelligent regulation we shall destroy the spirit of competition and the premium on genius which have made our country great. The great difficulty with any scheme of government ownership or government operation is that it inevitably places a query in the minds of those connected with it whether policies contemplated will be applauded or disapproved by the voters of the country. I am unalterably opposed to any action that will put the ownership or control of our railway system into the maelstrom of party politics, which has been the bane of the industrial and social life of the country.

This is the substance of remarks which were enthusiastically applauded by 350 shippers and railroad men at a noon-day luncheon of the Traffic Club of Chicago on November 29. Luther M. Walter, assistant to the director of Public Service and Accounting of the Railroad Administration, was the speaker, and he laid emphasis on clauses in the government control act and the President's proclamation which are specific in stating that federal control of railways was established only on account of the war emergency. Continuing, Mr. Walter said in part:

"Now that the reason for government operation has ceased to exist, the railways should, according to the expressed intent of Congress, be returned to their owners. Just how and when this will be done must now be determined and the policy decided upon by the administration should be made known to the security holders and the general public. There are three possibilities—the immediate return of the roads, their return at the end of 21 months following the signing of the peace treaty and their retention until definite legislation is passed which will ensure the healthy and prosperous development of our transportation system under private management.

"With wages higher than ever before, with war traffic gone and nothing as yet to take its place, it would be a calamity to return the roads to their owners without protecting them from the disastrous deficits which would inevitably pile up under the divided and short-sighted regulation of pre-war times. In its annual meeting at Cincinnati last week the National Industrial Traffic League announced its unqualified opposition to government ownership or operation and urged legislation which would protect the shipper and the public and at the same time remedy the conditions which impeded successful private operation before the establishment of federal control.

"There is some difference of opinion among security holders on the best disposition of the roads. Some fear unfair treatment in the event of a reversion of the properties to private hands and are therefore willing to cash in now if the government will offer reasonable compensation. Others believe private operation to be to the best interests of the nation, but advocate the passage of the necessary protective legislation. One of the reforms desired is federal control of the issuance of securities. Another problem which must be solved is the definite limits of state as against governmental regulation. These and other fundamental questions affecting transportation were being studied by a congressional commit-

tee before the war, and this body will undoubtedly resume its work."

Not only is Mr. Walter personally opposed to government ownership, as indicated previously in the foregoing abstract of his speech, but he believes that shippers and the public in general will demand the return of competition—not wasteful

competition, but a competitive condition which will retain the benefits achieved through the pooling of facilities, the economical routing of traffic and other results of joint action, at the same time producing the high quality of service which is only possible under private management outside the sphere of partisan politics.

New Schedules for Chicago Live Stock

Plan to Prevent Congestion in Union Stock Yards and Resulting Blockade on Terminal Lines

FROM 1,300 to 1,500 out of the 20,000 cars which arrive in Chicago daily are loaded with live stock. To avoid congestion in the Chicago terminal district and the Union Stock Yards, it is essential that this traffic be distributed as evenly as possible throughout the course of the week and that the packing houses receive advance information regarding shipments under way so that stock may be expeditiously disposed of upon arrival.

The first step taken to stabilize the movement of live stock for the Chicago market occurred on December 10, 1917, when the United States Food Administration established two zones in the territory tributary to Chicago with separate sets of shipping days. The first zone extends approximately 300 miles from the city and receives shipments for movement to arrive at Chicago for the Tuesday, Thursday, Friday and Saturday markets. The second zone includes territory about 100 miles beyond the first zone, or, to be more precise, all stations from which trains can make the Chicago market within the 36-hour limit on stock shipments. Live stock from the second zone is accepted for movement for arrival at Chicago for the Monday, Wednesday, Friday and Saturday markets.

The zoning system proved of great assistance to both the packers and the railroads, but was defective to the extent that it did not prevent congestion at the Chicago stock yards on Mondays. In the second zone, in districts where the quantity of stock shipped was not sufficient to justify more than one shipping day a week, the stock was generally shipped to arrive at Chicago on Monday, which is regarded as the best market day by many farmers. Unusually heavy arrivals on Monday, or, in fact, on any other day in the week, proved a hardship on the packers, especially because they had no previous advice of the volume of the shipments and were not prepared to handle them.

These difficulties, it is believed, will be overcome by new schedules for the movement of live stock to the Union Stock Yards, Chicago, which will become effective on railroads in the Northwestern region on December 9. Each railroad has been divided into districts and the day or days of the week and the time of day when stock cars will leave the stations included in each district are definitely fixed. In general, it has been arranged to give the shipper an opportunity to load on some other day than Saturday so that arrivals at Chicago on Monday will not be abnormal. In the past shippers of stock have suffered considerable loss of time and inconvenience because the railroads have not strictly observed their live stock schedules. The new plan will remedy this condition. If a train is scheduled to leave a station at 2:30 p. m., it will leave at that time with the punctuality of a passenger train. The shipper may assemble his stock accordingly and load it to conform with this time of departure.

To avoid congestion at Chicago the new scheme provides a number of protective measures. In order to enable the

Union Stock Yards & Transit Company to arrange for the necessary force to handle the stock promptly, the railroads will arrange, under the plan, to give advance notice of the arrivals for the following day's market. Federal managers of all railroads within the States of Illinois, Iowa, Minnesota and Wisconsin, which extend into the Chicago terminal district, will make a daily report by telephone, not later than 10:30 a. m., to the United States Bureau of Markets, Union Stock Yards, Chicago, stating the total number of cars of live stock which will arrive at the yards from their respective roads for the following day's market, classified as indicated below: Cattle; calves; hogs, single-deck; hogs, double-deck; sheep, single-deck; sheep, double-deck; horses; mules; mixed shipments. The report will include stock to be received from connections. Federal and general managers of such connecting lines will cooperate by furnishing the information as to stock to be delivered sufficiently in advance so that the daily report may be made to the Bureau of Markets before 10:30 a. m.

Train dispatchers having jurisdiction within the Chicago terminal district will report by telephone to the Bureau of Markets between 4:30 a. m. and 5 a. m. the number of cars and kind of stock which have reached the Chicago Junction Railroad during the night and up to the time the report is given, and the estimated time of arrival on the Chicago Junction of each train then en route which will arrive up to 5 p. m. of that date. The report will also include the number of cars and the kind of stock in the trains en route and their train numbers. Example:

Up to 4:45 a. m. the following cars of stock have reached the Chicago Junction from the C. & N. W. Galena division, 150 cattle, 5 calves, 7 hogs, 42 sheep, 1 horse, 1 mule, 3 mules.
The following trains are en route: No. 13, engine 1546, reaches the Chicago Junction, 5:10 a. m., has 5 cars cattle, 27 hogs, 12 sheep, 6 horses.
Extra 1742, 5:45 a. m., 32 cattle, 15 hogs.
Extra 1754, 6:15 a. m., 28 cattle, 17 hogs.

Each railroad will report by telephone to the train dispatcher of the Chicago Junction as soon as possible after 6 p. m. of each day (a) the train numbers of the stock shipments under way; (b) the estimated time of arrival at the Chicago Junction; (c) the number of cars and kind of stock in each train en route at that time. Example:

Trains on C. & N. W., Galena division, will reach the Chicago Junction as follows:
Extra 1708, 11 p. m., 50 cars cattle.
Extra 1710, 12:30 a. m., 40 cattle, 5 calves.
Extra 1714, 1 a. m., 30 cattle, 20 hogs.
Extra 1718, 1:35 a. m., 30 cattle, 7 hogs.
Extra 1722, 2 a. m., 30 cattle, 1 horse, 1 mule.
No. 122, engine 1736, 3:30 a. m., 5 cattle, 27 hogs, 12 sheep, 6 horses.
Extra 1742, 5:15 a. m., 32 cattle, 15 hogs.
Extra 1754, 5:45 a. m., 28 cattle, 17 hogs.

This report is to be supplemented at intervals during the night if there is any change in the estimated time of arrivals. It is highly important in handling live stock traffic that the train dispatcher of the Chicago Junction receive the information included in the reports so that any action necessary to avoid congestion may be taken at the proper time.

In addition to making these reports, the railroads will send by mail to the regional director a daily statement covering the movement from each district. Example:

UNITED STATES RAILROAD ADMINISTRATION

W. G. McALEE, Director General of Railroads

REPORT OF MOVEMENT OF LIVE STOCK TO UNION STOCK YARDS, CHICAGO

District Number	Date	Day of Shipments	Number of Cars Shipped
1	11/6	Wednesday	26
19	11/6	Wednesday	24
10	11/7	Thursday	41

R. H. ASHTON,
Regional Director.

The new schedules not only are designed to avoid congestion at the stock yards and further to stabilize the movement of the traffic to the Chicago market, but they are calculated to produce better service for the shippers. The advantages to the shippers accruing from a strict observance of live stock schedules under the new arrangement have been pointed out previously. It is also planned under the new scheme to give closer attention to the comfort and convenience of the shippers en route from point of origin to destination. In the past caboose cars on stock trains have been overcrowded because other than actual owners or employees accompanied stock. This is in violation of instructions, and stock contracts from now on will be issued only to owners or regular employees of owners. Railroads have been instructed to exercise care to insure the transfer of those accompanying stock from one caboose to another with the greatest safety and the least possible inconvenience, and officers in charge, particularly at terminals, have been directed to see to it that nothing is left undone to provide satisfactory service to the shippers.

While the carriers intend to give closer attention to the wants of the shippers, they also hope to receive greater co-operation from the latter in return. Shippers are urged to have their stock loaded on time and to place orders for cars far enough in advance to avoid any delay in loading and to economize train service. They have been also asked to order only as many cars as are needed to avoid a surplus at one station and a shortage at another, and to refrain from duplicating orders at stations on various lines in the same territory. Agents are requested to explain to shippers that stock will be moved on the schedules only on the days specified. If it is found that the business handled does not justify the continuation of all the shipping days provided for, consideration will be given to the elimination of certain days. In general, additional loading days were specified in the new schedules in order to bring about a distribution throughout the week of arrivals at Chicago from the various districts, and in particular to avoid congestion at the stock yards on Mondays.

Hale Holden, regional director of the Central Western region, has issued an order (December 3, Supplement No. 1 to Circular 209) to further facilitate the shipment of hogs. The order is to the effect that where designated stock shipping days are provided under the zone arrangement, and the permits under the embargo rules automatically expire before the date of such service, agents must immediately wire the Hog Control Committee for the necessary time extension, specifying the date of the next regular service.

Seven hundred and thirty-one officers and employees of the Canadian Pacific have been killed in the great war. This number is shown on the company's Roll of Honor, recently issued by C. H. Buell, staff registrar. The total is up to October 1; and the number of wounded, since the war began, is 1,585. The service flag of the company shows that 9,497 employees of the company joined the colors between August, 1914, and September, 1918.

Orders of Regional Directors

RENTAL CHARGE FOR LOCOMOTIVES.—In Order 126 the Southwestern regional director announces that the rate for the rental of locomotives to industries and small lines has been set at one-tenth cent per pound of tractive power per day, with a minimum of \$30 per day. This rate of rental will apply in all cases where locomotives are loaned to any such industries or small lines.

"Way to Ship."—In Circular 19 the terminal manager of the Chicago terminal district announces that the routings indicated in the publication, "Way to Ship," have been compiled to conform with circulars issued by the Northwestern regional director covering the routing of l. c. l. freight moving from or via the Chicago gateway. The authors of the "Way to Ship," namely, the Chicago Association of Commerce, will be advised of changes made and will arrange for supplements or corrected issues when necessary. The publication will therefore be considered as an official guide, subject to change, in routing and loading l. c. l. merchandise shipments. The employees of railways as well as shippers will be governed by the routing directions it contains.

Dining Car Rates for Soldiers.—Circular 137, Southwestern regional director, is substantially the same as Order 1200-409 A221 of Eastern regional director (see page 867, *Railway Age*, November 15).

Endorsing Bills of Lading "Subject to Delay."—The Eastern regional director, file 600-43 A277, states that it has been customary in the past during times of trouble, for the carriers to accept freight, endorsing the bills of lading "Subject to Delay." It will, of course, be necessary to continue to receive freight where conditions are known to exist that may retard transportation, and it is suggested that when conditions warrant, the following endorsement be used on bills of lading and live stock contracts in lieu of the above:

Abnormal conditions prevail on the lines of carriers which will handle this shipment and it is subject to delay. This advice is given to the owner of the property covered by this contract, in order that he may have due notice of the fact.

The Southwestern regional director has issued a similar order designated as No. 128.

Freight Not to Be Billed to Shipper's Order.—The Southwestern regional director in Order 125 calls attention to the fact that some shippers are sending grain, lumber and some other commodities to the principal markets "to shipper's order" without sufficient information as to the person at point of destination who is to be notified. This practice is forbidden in Rule 38 of the Western Classification, which prohibits the issuing of bills of lading for shipments consigned to order unless the name of the firm to whose order the shipment is consigned is plainly shown. The director states that this rule will apply on all shipments whether or not the tariffs covering them are subject to the Western Classification.

Annual Transportation for Dependents.—In Supplement No. 5 to Order No. 109 the Southwestern regional director states it will be permissible to continue for the year 1919 the former practice covering the issuance of annual or term transportation to wives and dependent members of families of officers and employees. Where such transportation is desired over foreign roads a list of the passes desired is to be submitted to the regional director.

Society of Railway Financial Officers.—The Eastern regional director, file 102-1-8 A289, states that under date of October 9 the Society of Railway Financial Officers was advised that until further orders the director general approved of that society making assessments and the carriers paying same, as may be necessary, for the current expenses of the association, such payments to be charged to operating expenses.

Rectangular Tanks Switching Locomotives.—The Eastern regional director, file 500-1-65 A284, asks whether locomotives used in switching service have rectangular tanks or otherwise and whether it is desired to make any change; if so, why?

Memberships in Various Organizations.—The Eastern regional director, file 102 A283, states that a number of applications have been received for permission to charge to operating expenses dues incident to membership in chambers of commerce, boards of trade, cotton exchanges, traffic clubs, and similar organizations. The conclusion has been reached that no railroad under federal control should maintain more than four such memberships in any organization as a charge against operating expenses.

The Southern regional director has issued a similar circular designated as Circular Letter No. 410.

Restrictions Against Use of Box Cars for Loading Perishable Commodities During Winter Season.—The Eastern regional director, file 2,000-26-157 A287, states that in order to secure immediate uniformity of action respecting certain outstanding embargoes against receipt of carload shipments of perishable commodities loaded in box cars, without lining, or other provisions requiring heater protection, the following rules should be observed:

1. Cancel any outstanding embargoes against acceptance from connections of carload shipments of perishable freight loaded in box cars.
2. Refrigerator cars must be restricted to use where such cars are actually required to afford protection to perishable traffic.
3. Accept perishable commodities loaded in box cars without protection subject to railroad responsibility where length of haul involved and direction of movement warrants judgment that shipment may move to destination without loss or damage.

4. If change in weather threatens loss or damage to perishable freight loaded in box cars, transfer of lading must be made to suitable equipment.

5. Instructions applicable at originating points are also to apply at point of reconsignment.

Common Use of Terminals.—The Eastern regional director, file 600-85A273, calls for the following information:

1. Suggestion has been offered that terminals of all lines under federal control at common points be thrown open for the unrestricted receipt and delivery of carload freight.

2. Before this question is decided it is necessary that I be furnished with statements showing the approximate amount of switching charges collected, which would represent a loss of revenue to the carriers if terminals were used in common by all lines.

3. In submitting figures consideration should be given to the practice of one line absorbing the switching charges of another at common points, as where this is done there is no actual net loss.

4. In some cases only a part of the switching charge is absorbed by the line-haul carrier, and the difference between the total charge and the absorption would represent loss of revenue under unrestricted use of terminal facilities.

5. Please have the information called for in Paragraph 2 furnished at the earliest date possible, for quarter ended September 30, 1918.

6. Also advise how and to what extent this would complicate operations and cause congestions.

Reports of Fire Losses.—The Southwestern regional director has issued Order No. 130, cancelling Order No. 162 relative to reporting fire losses. This revised order instructs that prompt telegraphic reports be made to the regional director of fires resulting in losses of \$5,000 or over, showing the character and extent of the loss, whether covered by insurance, the means taken to extinguish the fire and where rolling stock is involved the number of cars and the damage to equipment and contents.

A similar order has been issued by the Eastern regional director.

Transverse Fissures Cause Rail Failures

Engineer-Physicist Howard Suggests That Rails Are Being Stressed Beyond Service Limit

W. P. BORLAND, chief of the Bureau of Safety of the Interstate Commerce Commission, has issued a report of an investigation made by James E. Howard, engineer-physicist of the commission, of the rail failure which occurred on the Long Island Railroad near Central Islip, N. Y., on April 15, 1918. The failure of two rails caused the derailment of a troop train consisting of a locomotive and 12 steel coaches when traveling at a speed estimated to be about 30 miles an hour. The track was laid with 80-lb. steel rails, 30 ft. in length, with 17 or 18 oak ties under each rail. The ballast was gravel and cinders and anticreepers were used. No tie plates were used. An abstract of Mr. Howard's report follows:

The derailment resulted from the failure of two rails located on the north side of the track, the failure being clearly due to the presence of transverse fissures in the two rails. It is believed that the line of rupture first developed was that next the receiving end of the first rail followed in succession by the other lines of rupture in the direction in which the train traveled, the last fracture made being the one nearest the leaving end of the second rail. Each rail displayed a number of transverse fissures. Seven were displayed by rail No. 1 and six by rail No. 2. A seventh fissure was found in the latter when the rail was nicked with a chisel and broken for convenience in handling.

When polished and etched rails 1 and 2 were shown to be structurally very unsound. This decided lack in uniformity had also been observed in machining the rail sections. Portions of the cross section were spongy, other parts were hard and machined with difficulty. The flange of one section displayed irregular shaped voids along a part of its length. The

interior sponginess surrounded a central core in the head, with streaked metal in the web and upper part of the base.

From information acquired, it appears that the Lackawanna Iron and Steel Co., at the time these rails were rolled, used horizontal heating furnaces at the South mill at Scranton, new soaking pits having been introduced later in the year 1898. This practice would lead to such indications as were witnessed in these cross sections.

The chemical composition of these rails is shown on table No. 1, as follows:

TABLE NO. 1. CHEMICAL ANALYSIS OF RAIL 1 AND SHORT LENGTH RAIL USED IN DERAILMENT TEST

Description	Material Tests					
	Carbon	Manganese	Phosphorus	Sulfur	Silicon	Copper
Rail No. 1						
Center of head	.41	1.04	.007	.004	.187	.0028
Center of head near web	.41	1.14	.021	.041	.157	.703
Short length rail:						
Corner of head	.61	1.39	.040	.127	.157	.721
Center of head near web	.60	1.37	.043	.143	.149	.696
Rail No. 2:						
Next to receiving end of rail						
Head broken in cross section	.50	1.14	.014	.008		
Flange broken in cross section	.41			.044		

The results of tensile tests of longitudinal specimens from the head of rail 1 are shown on table No. 2:

TABLE NO. 2. TENSILE TESTS OF LONGITUDINAL SPECIMENS FROM HEAD OF RAIL 1
[Diameter of stem, 0.505 inch; length, 2 inches.]

Location	Average		Elonga- tion Per cent	Contraction Per cent	Appearance of fracture
	Limit per square	Tensile strength per square			
Inside	77,000	85,000	1.5	5.7	Granular
Do.	75,500	106,000	5.0	5.7	Do.
Middle of head	67,000	116,000	10.5	13.3	Do.
Do.	67,000	102,000	4.0	5.7	Do.
Outside	69,500	72,000	2.5	5.7	Do.
Do.	73,500	102,500	4.0	5.7	Do.

The tensile tests showed brittle metal. In machining some parts of the rail showed toughness, while other parts were weak and brittle. Rail No. 1, as a whole, was irregular in chemical composition and physical state.

The internal strains in the failed rails were measured. Each of the strips on which the stresses in the head and base of rail 1 were measured expanded in length when detached from the remaining portions of the rail, showing the metal along them had been in a state of compression when the rail was intact.

The disposition of the strains in the interior of the head were indicated by the measurements. The relief of internal strains of tension occurred on the gage side and upper part of the head, with strains of compression released on the outside of the head and next the web. The maximum tension in the head, when the rail was intact, was therefore at some place on a diagonal line leading from the center of the head to the upper corner on the gage side, crossing the locality in which many transverse fissures have their nuclei. There was a change in the dimensions of the head when it was detached from the web, most pronounced along the top of the rail. The gaged length on the top of the head showed an extension of 0.0029 in.

When detached from the base (taken on a section located $5\frac{1}{2}$ ft. from the receiving end), the upper element of the head of rail 1 expanded 0.0030 in. while the under side of the head contracted 0.0024 in. on each gaged length in the fillets. The gaged lengths on the sides of the head were just above its neutral plane, each expanding one-thousandth of an inch. These measurements represent the first stage in the examination of this section. They were followed by the determination of the internal strains in the strip of metal from the middle of the head. The metal in this part of the head was in an initial state of tension, excepting the outside edge of the strip. The tension was greatest at the edge on the gage side of the head, while in the vicinity of the nuclei of transverse fissures it reached a value of 7,660 lb. per sq. in. Two sections of rail 2 were also examined for internal strains.

The rails had been in service for a period of 20 years. To outward appearances they were good-looking rails; little wear had taken place. The shapes of the heads showed but little distortion; yet within them destructive transverse fissures had developed. Over what interval of time these transverse fissures had been in existence, or the rate of their development, is not known.

These rails had carried the lighter traffic of the railroad for a period of time without known examples of transverse fissures having appeared. War activities increased the traffic seven to ten-fold in the amount of tonnage currently passing over them, with a considerable increase in the weight of the equipment, conditions which not unlikely contributed toward the formation of transverse fissures and accelerated their development.

The metal was no doubt defective at the time the rails were rolled. The rails having been in service for a period of 20 years before displaying these transverse fissures would lead to the inference that the defective state of the metal had had slight influence, if any, on the development of the fissures, and that they had developed when traffic over them increased and for that reason.

The structural unsoundness of the metal unquestionably detracted from its strength in a crosswise direction, and variations in strength in the direction of its length lowered its tensile strength. There was a considerable margin, however, between the elastic limit of the steel, and the sum of the internal stresses and the direct bending stresses under train loads, as the latter are understood to be. The margin between the working stresses and the elastic limit of the steel is the factor which has most to do with retaining the integrity of the metal unimpaired. What advantages accrue from

high tensile strength and ability to display a given elongation or contraction of area in the tensile test when referred to the endurance of rails under service conditions, are yet obscure matters.

The present rails affording such pronounced examples of defective steel, at the same time being coupled with a long term of service before displaying transverse fissures, gives emphasis to the query what influence the structural unsoundness may have had in accelerating or retarding the inception and rate of development of these transverse fissures. Judging from the present exhibit, the lesser number of transverse fissures recorded as having occurred in Bessemer rails over those made of open hearth steel, can not owe their comparative immunity to the excellence of the earlier product of the Bessemer process, nor more specifically to the casting conditions then in vogue. It may be possible that a certain looseness of structure in the zone of transverse fissures will permit the metal to respond to internal strains without starting an incipient fracture. The prevalence of transverse fissures in steel structurally sound and of satisfactory chemical composition removes from consideration the suggestion that essentially unsound steel must be present in order that a transverse fissure may be developed.

This derailment again forcefully calls attention to the dangers resulting from transverse fissures in rails. In these rails there were 14 transverse fissures, of which 13 were disclosed at the time of the derailment and one other in the subsequent examination of the rails. In two other rails which were also examined at the time 8 transverse fissures were found, making 22 fissures in all.

The continued display of transverse fissures in rails demands action should be taken for their prevention. If present equipment has reached that stage when increase in wheel loads is no longer permissible, this feature should be taken into account in the design of new equipment. This idea calls for a suspension of the trend which has marked the design and construction of new rolling stock, and which, in the immediate past, has been in the direction of both heavier motive power and rolling stock.

If the prevalence of this type of fracture is accepted as evidence that wheel loads are too high, the correction can not be made at once. The equipment, such as it is, must be used, and can be replaced only by the gradual process of renewal. For the time being reliance must be placed on superior maintenance of way and vigilance in track inspection to obtain immunity from the dangers which attend broken rails.

There are no remedial measures, as such, for the restoration of overstrained steel. The safety feature is in no way changed, whether the overloading is done on sound or unsound steel. Loads must be regulated according to the properties of the materials which are obtainable, but this will not be considered an excuse for the manufacture or use of steel if it can be improved in what is so vaguely designated as its quality.

It has been held on the part of some that the responsibility for the formation of transverse fissures rested upon the steel mills, although it has not been made clear what detail of manufacture was under consideration in attaching responsibility to the properties of the steel. Importance has been placed upon the facts that certain heats of steel developed transverse fissures, while other heats did not. In the preparation of these accident reports efforts have been made to acquire data upon the conditions of manufacture, investigating all tangible suggestions which have come to notice having to do with mill practice. The results of these efforts have not confirmed the views of those who regard the cause of transverse fissures as being due to mill practice. The discovery of a mill defect and its correction would put the matter of transverse fissures on a much less disquieting basis than the results of the investigations have led to. They tend

to indicate that rails are being strained beyond the ability of steel permanently to endure the service stresses, which is a very serious situation to meet.

The installation of rails of far greater sections than those which are now being rolled, in itself not yet found promising, would seem to exhaust the efforts which have been made in providing for present equipment and speeds on track as now constructed.

Opportunity is open to acquire more exact data from the

track than are now available concerning the conditions which attend the formation of transverse fissures. The limit of rolling loads on wrought iron rails was very early reached, and it has already been passed on rails of low carbon. The hardest rails, as well known, display transverse fissures and fail without warning. An appreciation of the conditions which prevail in the track should lead, without delay, to concerted action toward the elimination of this dangerous type of rail fracture.

Doings of the United States Railroad Administration

Marking Time Because of the Resignation of the Director General, Judge Lovett Resigns

AT THE TIME that President Wilson proposed an early relinquishment of the railroads from federal control, just six of the contracts between the Railroad Administration and the railroad companies providing for the compensation of the railroads during federal control had been signed, those of the Chicago & North Western; Chicago, St. Paul, Minneapolis & Omaha; Chicago, Burlington & Quincy; Fort Worth & Denver City; Colorado & Southern, and Atchison, Topeka & Santa Fe. The same contracts covered a number of subsidiary roads. In addition, contracts with 10 roads had been approved by subordinates in the Railroad Administration and were before General Counsel John Barton Payne for action. These included the Lehigh Valley; Buffalo, Rochester & Pittsburgh; Central of New Jersey; New York, Ontario & Western; Missouri & North Arkansas; Trinity & Brazos Valley; Richmond, Fredericksburg & Potomac; Great Northern; Gulf, Texas & Western, and Minnesota & International. Two contracts, those for the Southern Pacific and the Boston & Maine, were under discussion but had not been approved, 12 had been drawn up by the Railroad Administration and sent to the companies for discussion, 25 contracts had been prepared in a preliminary way by the Railroad Administration, but were awaiting further information from the corporations or the consideration of claims for special compensation in addition to the standard return. A number of other contracts had been prepared by the companies in preliminary form, but had not received detailed consideration by the Railroad Administration. The Railroad Administration has been awaiting receipt of a considerable amount of detailed information which has been requested of the railroad companies in a questionnaire sent to them a short time ago.

Railroad Administration Marking Time

The Railroad Administration has practically marked time since the announcement of Mr. McAdoo's resignation and pending the announcement of his successor. This has been due not only to the belief that the days of the Railroad Administration are numbered and that its future activities will be in the direction of "unscrambling" rather than along constructive lines, but also to the uncertainty as to how orders for equipment and improvements may be financed. While the operating department is busy with the readjustment of traffic from war to peace conditions, the Division of Capital Expenditures and the purchasing department have been working for several days with a view to gathering up loose ends. A large proportion of all recent requests for authorizations for new work have been turned down and an investigation is being made as to what the railroad corporations will assume in the way of capital expenditures as well as the possibility of cancelling any of the outstanding orders for

100,000 cars, of which only a small percentage has been delivered, although it is understood that no definite decision to cancel any orders has been reached.

The question as to whether the corporations can be forced to accept and finance cars ordered by the Railroad Administration has been accentuated by the restraining order obtained by the Toledo, St. Louis & Western to prevent the director general from compelling it to accept 1,250 freight cars, in addition to the general uncertainty caused by the sudden termination of the war. The law authorizes the President to order carriers to make improvements or to provide terminals or equipment "necessary or desirable for war purposes or in the public interest." It would have been much easier to prove that cars or equipment were necessary or desirable for war purposes while the war was in progress than it will now be to prove them necessary or desirable in the public interest, particularly in the case of orders placed at high war prices but not completed until after the war emergency had passed. As the President stated in his address to Congress, some of the companies will consent to the plans for equipment and improvements, while some will not, and in view of the uncertainty, the administration does not want to commit either itself or the corporations any further than is necessary.

Most of the cars already turned out have been delivered to the roads that did not object to their allocation. Most of the other roads have filed formal protests and many of them are understood to be awaiting the final decision in the Clover Leaf case, which comes up on the question of a permanent injunction on December 16. Less difficulty exists as regards the new locomotives, as they are in greater demand, while the fact that the railroads this year have handled a greater traffic than ever before with very few new cars has strengthened the argument of the roads that claim they do not need them now.

Limit to Wage Increases

That there is a limit to the wage advances to be made by the Railroad Administration is made clear in a letter written by Director General McAdoo under date of November 27 to G. H. Sines, chairman of the Board of Railroad Wages and Working Conditions, in reply to a letter enclosing communications and petitions signed by railroad employees protesting against Supplements Nos. 7 and 8 to General Order No. 27 on the ground that the increases for shop and maintenance of way employees were not made retroactive to January 1, instead of September 1.

"As I have previously stated," Mr. McAdoo said, "I am obliged to consider, not only the interests of the employees of the railroads, but also the interests of the people of the United States, in determining questions of wages and working con-

ditions. The officers and employees of the railroads are no longer servants of private railroad corporations; they are now servants of the public. The director general is also a servant of the public, owing a duty to the public as well as to the employees. I cannot be indifferent to the interests of the public, any more than I can be indifferent to the interest of the employed, and my constant effort has been to find the line of justice as represented by fair wages and working conditions, and square it with the interest of the employees and the interest of the public.

"I have not hesitated to announce decisions which involved immense increases in the wages of railroad employees throughout the country, estimated at over \$500,000,000. These increased wages must be paid by the people of the United States, and in order to pay them I sometime ago announced large increases in freight and passenger rates. Numerous protests against these have been made by shippers and farmers and other organizations throughout the country, and warn us all that we must keep our demands within reasonable limits, because there is a point beyond which the public will not sustain us in raising wages.

"At my direction, on May 25, 1918 (General Order No. 27), railroad employees in all crafts were granted increases in rates of pay, and for reasons with which you are familiar, these rates of pay were made retroactive to January 1, 1918. The employees named in Supplements 7 and 8 received increases in their rates of pay at that time; and, as stated in General Order 27, no problem so vast and intricate as that of doing practical justice to the two million railroad employees of the country could be regarded as completely settled and disposed of by any one decision or order. Therefore, your board was established to take up, as presented, any phases of the general problem relating to any class of employees or any part of a class of employees which still justly call for further consideration. At my direction, the claims of employees mentioned in Supplements 7 and 8 to General Order 27 were given further consideration by your board, and after an exhaustive investigation, decisions embodied in Supplements 7 and 8 were rendered.

"It is true that wages in excess of those provided for in Supplements 7 and 8 are paid in some localities and by some industries, but these are of a transient character, such as shipyards, munition plants, etc., and their work will cease or be greatly reduced upon the return of peace. It is, however, undeniably true that the wages established in Supplements 7 and 8 compare as a class favorably, and perhaps much more favorably, with those paid elsewhere.

"When we consider these railroad wage questions, it must be remembered that the railroad business is not temporary, such as referred to above, but of a permanent character, and offering to employees steady work. It must also be remembered that the revenues of the railroads are not affected by the varying conditions which permit private enterprises to earn high profits, but, on the contrary, are limited by rates fixed by lawful authority and measured by the ability and willingness of the public to pay them. Railroad employment is also not affected to the same extent as are other industries, by fluctuations and uncertainties, due to dull periods. Railroad employees not only have steady work and, generally speaking, more favorable living conditions as against temporary and uncertain employment, and frequently less satisfactory living conditions in war industries, but they also have a reasonable amount of free transportation for themselves and their families, as well as other privileges and advantages which are everywhere recognized as of substantial benefit to them.

"Contrasting the permanency of railroad employment, the opportunities for promotion and other privileges enjoyed, the bases established in Supplements 7 and 8, in my judgment, are fair and reasonable. From reports, communications

and resolutions I have received from railroad employees in various parts of the country since Supplements 7 and 8 were promulgated, the vast majority of railroad men appear to be satisfied with those orders, and I am sure that they are willing to give loyal, faithful and efficient service to their government at the rates of pay prescribed therein. We cannot justify to the American people the great increase in wages and the immense improvement in working conditions already granted unless every employee proves by his work that he is worthy of it. I want the men to prove themselves worthy of it, and I believe that they will.

"Your board has given all the time and thought to this particular matter which it is right and proper for them to do, and it is essential that they should now give consideration to the matters arising with respect to other employees.

"I cannot, therefore, see my way clear at this time to direct that the board should reopen this particular matter, as there has never been a time when the public interest demanded more urgently the devotion and unselfish services of all classes of railroad employees.

"It is necessary that the employees of the railroad should understand that the decisions made in Supplements 7 and 8 cannot now be reviewed, as it is not practicable at this time, with the reconstruction period before us, to consider the matter, and it was not my intention following the promulgation of General Order 27, in granting further increases in rates of pay, that they should be retroactive to January 1, 1918."

Wages of Telegraph Operators

In connection with protests and threats on the part of telegraphers in various parts of the country to strike because of dissatisfaction with the wage order, Director General McAdoo sent the following telegram to H. B. Perham, president of the Order of Railroad Telegraphers:

Telegrams received from individual members of your organization indicate that they do not understand that when a wage order affecting all employees of a class is thought to be detrimental to certain employees of this class, a rule has been established whereby the representatives of that class are privileged to again appear before the Board of Railroad Wages and Working Conditions and present the claim of such individuals. Other classes of employees have already availed themselves of this privilege. It would be unfortunate if you did not communicate to the men who represent that they have this privilege and suggest to them that their claims should be submitted to the Board of Railroad Wages and Working Conditions, which will give them prompt consideration.

Interpretation of Wage Order for Shop Employees

Director General McAdoo has issued the following interpretation No. 1 to supplement No. 7, to general order No. 27, the supplement applying to the wages of shop employees:

OVERTIME, MONTHLY, WEEKLY OF DAILY PAID EMPLOYEES.

ARTICLE I.

Eight consecutive hours, exclusive of the meal period, constituting a day's work from the effective date of Supplement No. 7 to General Order No. 27, the increases provided for therein and applicable to monthly, weekly and daily paid employees, specified in Articles I, II and VI of Supplement No. 7, are based upon the recognized number of working days constituting a calendar year (including Sundays or holidays where they have been considered a part of the employees' assignment) and the rate of pay in effect January 1, 1918, prior to the application of General Order No. 27, exclusive of overtime. The following examples illustrate the method to be used in establishing the straight time hourly rate, as the basis of payment for overtime service.

Example (a).—Employees working 30 days per month at a wage amounting to \$60 per month on January 1, 1918, prior to the application of General Order No. 27, would on September 1, 1918, under Supplement No. 7, Article I-(a) automatically advance to the basic rate of \$62.50 per month, plus \$25 increase, establishing the rate of \$87.50 or \$1,050 per year. In computing the pro rata rate per hour for overtime pay for monthly, weekly or daily paid employees, take the number of working days constituting a calendar year, multiply by eight and divide the annual salary by

the total hours, exclusive of overtime and disregarding time absent on vacations, sick leave, holidays, or for any other causes. In determining the hourly rate, fractions less than one-fourth of one cent shall be as one-fourth of one cent; over one-fourth and under one-half, as one-half cent; over one-half and under three-fourths, as three-fourths; over three-fourths, as one cent.

Example (b). Yearly wage, \$1,050 ÷ 2,880 hours = 36.45, or 36.5c. per hour.

Example (c). Yearly wage, \$1,200 ÷ 2,880 hours = 41.66, or 41.75c. per hour.

Example (d). Yearly wage, \$1,300 ÷ 2,880 hours = 45.14, or 45.25c. per hour.

Example (e). Yearly wage, \$1,500 ÷ 2,880 hours = 52.1, or 52.25c. per hour.

Example (f). Yearly wage, \$1,800 ÷ 2,880 hours = 62.5c. per hour.
NOTE.—It is to be understood that 2,880 hours is illustrative only; the hours per year will vary as the assigned work days per year vary.

ARTICLE II.

On February 21, 1918, the director general issued General Order No. 8, paragraph 3 thereof reading as follows:

The broad question of wages and hours will be passed upon and reported to the director general as promptly as possible by the present Railroad Wage Commission. Pending a disposition of these matters by the director general, all requests of employees involving revisions of schedules or general changes in conditions affecting wages and hours will be held in abeyance by both the managers and employees. Wages, when determined upon, will be made retroactive to January 1, 1918, and adjusted accordingly. Matters of controversy arising under interpretations of existing wage agreements and other matters not relating to wages and hours will take their usual course, and in the event of inability to reach a settlement, will be referred to the director general.

If employees coming within the scope of Supplement No. 7 to General Order No. 27, were paid a punitive rate for overtime after the regular day's work, Sundays and or holidays prior to February 21, 1918, the same conditions should apply on the eight-hour basis. Any punitive overtime rate established for employees under this interpretation since February 21, 1918, except as established by the director general is unauthorized and cannot be recognized.

Example (a). Employees working 10 hours per day January 1, 1918, prior to the application of General Order No. 27, and who were, prior to February 21, 1918, paid at the rate of time and one-half for overtime, should be paid as follows:

8 a. m. to 12 noon.....	4 hours work.
12 noon to 1 p. m.....	1 hour for meal excluded.
1 p. m. to 5 p. m.....	4 hours work.
5 p. m. to 7 p. m.....	2 hours at rate of time and ½ time.

Elapsed time.....	11
Time for meal.....	1 hour deducted.
Overtime.....	2 hours.
Total time to be paid for.	11 hours.

Example (b). Overtime commences immediately following the eighth consecutive hour of continuous service, after deducting the meal period. On the basis of pro rata time for the 9th and 10th hour.

8 a. m. to 12 noon.....	4 hours.
12 noon to 1 p. m.....	1 hour for meal excluded.
1 p. m. to 5 p. m.....	4 hours work.
5 p. m. to 7 p. m.....	2 hours overtime, pro rata rate.
7 p. m. to 9 p. m.....	2 hours overtime, 1½ times pro rata rate.

Elapsed time.....	13 hours.
Time for meal.....	1 hour deducted.

Continuous service.....	12 hours.
Total time to be paid for.	13 hours.

Example (c). Employees working more than eight consecutive hours.

6 a. m. to 2 p. m.....	8 hours work.
2 p. m. to 4 p. m.....	2 hours overtime, pro rata rate.
4 p. m. to 6 p. m.....	2 hours overtime, 1½ times pro rata rate.

Elapsed time.....	12 hours.
Continuous service.....	12 hours.
Total time to be paid for.	13 hours.

HOURLY RATES.

ARTICLE III.

The employees coming under the provisions of Article III, IV and V of Supplement No. 7 to General Order No. 27, who were on January 1, 1918, prior to the application of General Order No. 27, paid on a basis of 10 hours or more to constitute a day, for whom hourly rates have been

established, as per the above specified Articles, shall, on and after September 1, 1918, the effective date of Supplement No. 7, receive one-eighth of the wages received for 10 hours on January 1, 1918, prior to the application of General Order No. 27, as their basic hourly rate, to which shall be added 12 cents per hour, provided the hourly rate thus obtained shall not exceed the maximum rate specified in the respective articles.

Example (a). Employees coming under the provisions of Articles III, IV and V of Supplement No. 7 to General Order No. 27, on a ten-hour basis, rate \$2.50 per day; one-eighth of 250 equals 31.25 cents per hour, adding the increase of twelve cents produces a rate of 43.25 cents under Article III and IV. Under Article V (a), the rate would revert to the maximum of 43 cents; under Article V (b), the rate would revert to the maximum of 40 cents.

NOTE.—To determine the hourly rate to be paid employees on the hourly basis and for whom ten hours or more were the established hours of service, use the method and example (a) of above Article III; for classes specified in Supplement No. 7, Articles III, IV and V, working less than ten hours, and over eight hours, one-eighth of the wage received for the number of hours recognized as a day's work.

PAY FOR CALLS.

ARTICLE IV.

Employees who are notified or called to work outside the eight consecutive hours, exclusive of the meal period and continuous service, constituting their regular assignment, shall be paid a minimum allowance of three hours for two hours' work or less; if held over two hours, time and one-half will be paid, computed on the minute basis.

Example (a).	
8 a. m. to 12 noon.....	4 hours work.
12 noon to 1 p. m.....	1 hour for meal excluded.
1 p. m. to 5 p. m.....	4 hours work.
6 p. m. to 7:30 p. m.....	1 hour at rate of time and ½ time.
Elapsed time.....	11 hours.
Time for meal.....	1 hour.
Break in continuous service	1 hour.
Time for call.....	3 hours, minimum guarantee.
Total time to be paid for.	11 hours.

ARTICLE V.

Exclusive of employees whose regular assignment includes Sundays and or holidays, employees notified or called to work on Sundays and or holidays, will be paid not less than the minimum allowance of three hours, and where no existing agreement or practice is more favorable, such employees will be paid as per Examples (b) and (c) of Article II.

ARTICLE VI.

Payment of overtime at a rate in excess of pro rata will be computed from and added to the pro rata rate.

ARTICLE VII.

Unless acceptable to a majority of employees in a department or subdivision thereof, the meal period shall not be less than 30 minutes or more than one hour.

ARTICLE VIII.

Where unjustifiable inequalities develop or exist in the rates of pay for relatively the same service and responsibility, as between employees of the same class within the respective groups, as specified in Supplement No. 7 to General Order No. 27, the regional directors are hereby authorized to establish uniform rates of pay by zones or districts throughout their respective regions, under the following conditions:

(a) The maximum rates established by Supplement No. 7 to General Order No. 27, must not be exceeded.

(b) Rates established by Supplement No. 7 to General Order No. 27 must not be reduced.

(c) The specified differentials in the established minimum rates for hourly workers, to be preserved.

(d) All rates herein provided for shall be filed by the regional directors with the Board of Railroad Wages and Working Conditions.

Weekly Traffic Report

According to the report on traffic conditions for the week ended December 2 there has been a steady improvement in both freight and passenger movement in nearly every section of the country. The shipment of foodstuffs overseas, for use in the stricken European sections, continues unabated, being given preference over all other commodities. A summary follows:

Eastern Region.—Movement of freight traffic has increased in some districts, but general results indicate decrease in total movement. Change in overseas program has confused movement of export freight somewhat, and efforts are being made, with success, to secure storage facilities. Thirty-five steamers now loading at New York—foodstuffs being given preference. Rail service on frozen beef and provisions placed on three-day basis Chicago to New York to hurry movement. Stockyard facilities consolidated at East Buffalo. Ticket sales indicate considerably heavier travel than for several weeks past, both as to short-haul passengers and through passengers on limited trains.

Allegheny Region.—Passenger travel normal; war workers' travel falling off rapidly, and seven special workmen's trains withdrawn from service. Expected this character of service will be further decreased in December. Further progress in arrangement of interchangeable tickets between the different railroads. Coal production shows increase over previous week, which has resulted in a reduction of stored empty cars. Heavy movement of grain on the way for Baltimore and Philadelphia. Movement of freight generally satisfactory, and no longer necessary to divert traffic from regular gateways. Resumption of car-lot movement from Eastern territory to the South by rail reported.

Pocahontas Region.—Regular travel continues good; passenger earnings showing substantial increase. Large movement of discharged soldiers from camps reported. Unrest among shippers of coal, iron and other materials over uncertainty as to result of cancellation of government contracts. Grain movement via Newport News discontinued to relieve eastern end of the Chesapeake & Ohio. General movement of traffic shows decrease from previous week.

Southern Region.—Passenger travel fairly heavy. Movement of laborers from the powder plants has been quite heavy. Extension of sleeping car service reported to care for winter tourist travel. Movement of demobilized troops from the various camps quite heavy. Prospects seem bright for large winter tourist travel. Through sleeper and coach service arranged to the west coast of Florida. Cotton continues to move slowly, the farmers generally holding for higher prices. Lumber traffic not moving well, with indications of some slowing down of orders. Supply of box cars continues in excess of requirements; supply of flat cars normal; refrigerator car situation easy.

Northwestern Region.—Movement of loaded freight cars shows considerable decrease, particularly in coal and ore. Grain and livestock movements show increases. Decreased activity of Spruce Production Division being felt on the coast. Heavy movement of fruit continues from the Wenatchee and Yakima Valleys, with car supply and service entirely satisfactory. Export situation at Puget Sound ports shows decided improvement. Passenger travel about normal. Heavy soldier travel expected as a result of demobilization.

Central Western Region.—Movement of loaded cars generally shows decrease, but grain and livestock show increases. Permit system for movement of hogs working satisfactorily. Passenger travel on some lines shows improvement, but is below normal for the region as a whole. C. B. & Q. discontinues sleeping car between Denver and Casper, Wyoming. Wabash Railway eliminated local train service with annual saving of 197,974 train miles.

Southwestern Region.—Grain movement to gulf ports con-

tinues heavy. Congestion on T. & P. considerably improved; freight otherwise receiving prompt movement. Forest products increasing in volume. Passenger travel now about normal. Demobilization of troops proceeding actively. Good effect reported as a result of arrangement of passenger schedules for better connections. Work of calling upon representative business men proceeding, and helpful suggestions are being received and acted upon.

War Department.—At New York the accumulation of overseas freight is somewhat above normal, but the unloading during the week exceeded the arrivals by 601 cars. Good progress being made in returning to interior storage points the tonnage which had arrived at the ports, and is not now to be shipped overseas. Transportation conditions generally throughout the country are satisfactory. There is still a little delay in unloading, due to labor conditions, but this is showing some improvement.

Navy Department.—Transportation situation good. Temporary movement of navy traffic is heavy owing to speeding up of contractors in filling their contracts. Congestion in Washington Navy Yard and Indian Head continues, but it is hoped will be absorbed.

Fuel Administration.—Full car supply, and transportation ample. Coke movement good. Production still short of requirements. Bituminous coal production adequate, except in P. R. R. territory. Anthracite still short.

Fuel Administration—Oil Division.—Supply of equipment and transportation conditions remain satisfactory. Not possible yet to make any more definite estimate of the change in volume of traffic.

Food Administration.—Frozen meat and packing house products movement shows considerable improvement, and complaints materially decreased. Live stock—only difficulty reported in regard to car supply of L. & N. R. R., which is having attention. Fruit and vegetables—Florida car situation is being taken care of, but some complaints as to car shortage in New York State and Virginia apple territory, which is being given attention. Heavy movement of export flour being arranged for January shipping. Hog permit system will require some adjustment so that embargo against certain markets will not overtax the free markets.

Exports Control Committee.—Allied governments arranging storage of freight not now wanted overseas. U. S. War Department has made good progress along the same lines. Export freight held at North Atlantic, South Atlantic and Gulf ports shows decrease. Pacific coast situation shows slight increase of cars on hand for Puget Sound ports, and also for the San Francisco district. There is some disturbance of the sailing schedules from those ports.

Troop Movement.—During the past week about 25,000 men have been discharged from camps, and with the exception of one case at Camp Lee, the men have been handled without any inconvenience. Arrangements being made to satisfactorily deal with the troops arriving from overseas shortly.

Provision for Return Journey of Discharged Soldiers

Instructions have been issued by Director General McAdoo to furnish discharged soldiers and sailors, traveling to their points of enlistment, with so-called military meals at the special rate of 75 cents, as granted to men in the service under an arrangement made with the several military departments sometime ago. Special reduced fares accorded discharged soldiers and sailors are on the basis of two-thirds of the normal coach fare applying via route traveled, or two cents per mile, except that the rate per mile would, of course, be higher in those states where the basic fare is more than three cents per mile. By the reduction of the fare and the special meal rate made, it is believed they have been amply provided for, particularly in view of the fact that the additional passage charge for occupancy of space in parlor and

sleeping cars is cancelled on December 1, so that such discharged soldiers and sailors, who are allowed 3½ cents a mile, will have at their command at least a half cent per mile more than they actually need to cover their total expenses in reaching home.

Jurisdiction of Allegheny Region Extended

Director General McAdoo has issued an order extending the jurisdiction of the Allegheny region, under Regional Director C. H. Markham, to include the lines of the Pennsylvania and Baltimore & Ohio, west of Erie, Pa., Pittsburgh, Pa., and Parkersburg, W. Va.

District Director H. A. Worcester, with office at Cincinnati, Ohio, will continue in this capacity for both the Allegheny and Eastern regions, reporting, respectively, to Regional Directors Smith and Markham, in respect to the lines belonging in their region.

The Allegheny region was created because of the vital necessity for stimulating, in every way, the production of coal and coke for war purposes, and, to this end, the Western lines were required to divert the greater volume of their through traffic from the Pittsburgh gateway to the Northern trunk lines, thereby releasing the Pennsylvania and Baltimore & Ohio eastern lines for the handling of their vastly important local traffic. This emergency having passed, it is now possible to restore the integrity of these trunk lines.

The order was issued in Circular No. 66 as follows:

Effective this date the following railroads are transferred from the Eastern to the Allegheny region:

1. Pennsylvania Lines west of Erie and Pittsburgh, Cincinnati Lebanon and Northern Railway and Lorain, Ashland & Southern Railroad, G. L. Peck, federal manager, Pittsburgh, Pa.
2. Baltimore & Ohio Railroad west of Parkersburg and Pittsburgh, and Dayton & Union Railroad, C. W. Galloway, federal manager, Cincinnati, Ohio.

Until otherwise advised by Regional Director Markham, H. A. Worcester, district director, will in respect of these properties continue in his present capacity, reporting to Mr. Markham, and in respect of the lines under his jurisdiction in the Eastern region reporting to Regional Director Smith.

Advances to Railroads

Since April 1, 1918, according to a statement authorized by Director General McAdoo, the United States Railroad Administration has advanced to the railroad and other transportation properties under government control, including loans and payments made to railroad corporations to meet their needs, advances made for operating deficits, and payments on account of the new standardized equipment, the sum of \$515,690,060. Of this sum the amount secured from the \$500,000,000 revolving fund was \$316,206,536. The balance was obtained from the surplus earnings of certain roads and from the American Railway Express Company, \$199,483,524. Of the \$500,000,000 revolving fund, the amount remaining after deducting the above advances to the railroads was \$183,793,464.

Of the \$199,483,524 deposited with the director general from time to time by various railroad lines from their surplus earnings, very much the larger portion was returned to the railroads which had temporarily made the deposits, and the only railroads which have turned over, in individual cases, surplus earnings to the director general up to December 1, 1918, of as much as \$1,000,000 in excess of the amount advanced to them by the Railroad Administration, were the following:

Lou. & Nash. & Atl. Coast	\$12,355,168	Chic. & Burlington & Quincy	\$2,250,000
Line	11,200,000	Duluth & Iron Range	3,400,000
Atch., Toneyka & Santa Fe	11,200,000	Chic. & N. W.	3,370,000
Duluth, Missabe & North	10,000,000	Central R. R. of N. T.	2,500,000
Union Pacific System	7,300,000	Del. & Maryland	1,500,000
Northern Pacific	6,777,933	Pullman Car Lines	1,500,000
Elgin, Joliet & Eastern	6,000,000	Rich. & Pot.	1,540,000
Bessemer & Lake Erie	4,000,000	Los Angeles & Salt Lake	1,500,000
		Atlantic S. S. Lines	1,500,000

The aggregate sums advanced by the United States Rail-

road Administration to all the transportation systems from April 1 to December 1, 1918 (including 121 railroad properties) are shown in the following list:

Penn. R. R. Lines	\$7,700,000	Nor. Southern	\$548,000
N. Y. Central Lines	5,450,000	N. Y. & N. E.	864,775
N. Y. N. H. & H.	50,450,000	Atlantic Coast Line	800,000
Balto. & Ohio	24,075,000	Texas & Pac.	750,000
Chic. M. & St. P.	21,675,000	Ann Arbor R.	761,800
Ill. Central	16,225,000	Central Vermont	735,000
Ind. Harb.	14,000,000	Ind. Harb.	707,660
Southern Pacific Lines	12,500,000	Chic. & Grt. Western	700,000
Southern Railway Lines	10,542,650	Wheeling & Lake Erie	700,000
Chic. Rock I. & Pac.	7,700,000	Grand Trunk Western	621,000
Ches. & Ohio	7,050,000	N. Y. O. & W.	575,000
Delaware & Hudson	6,790,000	Chic. & E. Ill.	537,000
Chic. Bur. & Quincy	6,550,000	Phg. & Shawmut	528,500
St. L. & San Francisco	6,020,000	Lehigh & New England	525,000
Mo. Pac.	5,650,000	Hocking Valley	500,000
Chic. & N. W.	5,610,000	Chic. Jct. Ry.	500,000
Union Pacific Lines	5,000,000	Wabash	470,000
Denver & Rio Grande	4,800,000	Int. & Grt. Nor.	407,215
Phila. & Reading	4,400,000	Gulf, Mobile & Nor.	400,000
Wabash Railroad	4,345,000	Chic. Birm. & Atlantic	387,913
Northern Pacific	4,100,000	Chic. T. H. & S. E.	387,913
M. K. & T. Lines	3,995,000	Cinn. Ind. & Western	350,000
Buff. Roch. & Phg.	3,600,000	Ft. Worth & Denver City	340,000
Lehigh Valley	3,500,000	Atla. Birm. & Atlantic	339,000
Boston & Maine	2,817,000	Old. Dom. S. S. Lines	315,000
Great Nor.	2,800,000	Georgia R. R.	309,000
N. Y. Western	2,500,000	Central New England	300,000
Del. Lack. & Wash.	2,400,000	Ph. & Del. W. Va.	300,000
Western Maryland	2,372,999	Belt Ry. of Chic.	290,000
Chic. St. P. M. & O.	2,350,000	Midland Valley	270,000
Minn. St. P. & S. S.	2,052,000	Rutland R. R.	266,000
Chic. & St. L.	1,995,000	Ph. & Del. W. Va.	262,775
Chic. & Alton	1,635,000	San Ant. & Aransas Pass	253,000
Chic. Ind. & Louisville	1,525,000	Ft. Dodge, Des M. & Sou.	266,000
Louisville & Nash.	1,500,000	V. S. & W.	218,000
Fla. R. Coast	1,400,000	Chic. & N. Ind.	215,000
St. Louis & S. W.	1,370,000	Chic. P.	200,000
Maine Central	1,300,000	Texas Mex. T. Ry.	190,000
Pullman Car Lines	1,200,000	N. O., Tex. & Mex.	176,100
Ches. & Hudson	1,060,000	Ill. Sou.	160,000
Hudson & Manhattan	1,013,000	Chic. Ind. & Western	150,000
Virginian Railway	1,100,000	Portland Terminal	150,000
Term. R. R. Assn. of St. L.	1,081,000	Monongahela R. R.	150,000
Fla. R. Coast	1,050,000	Amer. Ref. Trans. Line	132,000
Denver & Salt Lake	990,648	Camb. & Shawmut	127,000
Colo. & Southern	975,000	N. O. & Tex. & Mex.	126,000
		Balto. & Ohio Ch. Tml.	100,000
		Toledo Terminal	100,000

26 roads receiving in each case less than \$100,000..... \$130,000
Payments on account standardized engines and cars..... 87,715,225

Total.....\$515,690,060

In the following list are shown the amounts advanced by the director general to various railroads during the month of November, 1918:

Penn. Railroad Lines	\$21,050,000.00	Ft. Worth & Den. City	\$255,000.00
Southern Pacific	5,000,000.00	Florida East Coast	240,000.00
Chic. M. & St. P.	4,750,000.00	Ft. Dodge, Des M. & S.	240,000.00
N. Y. Central Lines	4,550,000.00	Minn. & St. Louis	225,000.00
Southern Ry. Lines	3,294,650.00	Old Dom. S. S. Line	220,000.00
Delaware & Hudson	2,000,000.00	Wabash Railroad	220,000.00
Boston & Maine R. R.	1,892,000.00	Chic. Ind. & Western	200,000.00
Balto. & Ohio R. R.	1,825,000.00	Cinn. Ind. & Western	200,000.00
Louisville & Nashville	1,500,000.00	Norfolk Southern	188,000.00
Mex. Kan. & Texas Ry.	1,350,000.00	N. Y. Ontario & W.	175,000.00
Pullman Car Lines	1,200,000.00	Pittsburgh & Shawmut	170,000.00
Maine Central	1,000,000.00	N. O., Texas & Mexico	176,100.00
Erie Railroad	1,000,000.00	Colorado & Southern	170,000.00
Chic. St. P. Mpls. & Omaha	1,000,000.00	Atl. Birm. & Atlantic	150,000.00
Missouri Pacific	800,000.00	Rutland Railroad	150,000.00
Ches. & Ohio	800,000.00	Chic. Bur. & Quincy	150,000.00
Atlantic Coast Line	800,000.00	Monongahela R. R.	150,000.00
Texas & Pac.	800,000.00	Seaboard Air Line	150,000.00
Illinois Central	630,000.00	San Antonio & Aransas Pass	140,000.00
Buff. Roch. & Phg.	630,000.00	N. Y. Central	130,000.00
Western Maryland	560,000.00	Amer. Ref. Trans. Line	132,000.00
Lehigh & New England	520,000.00	Chic. T. H. & S. E.	130,000.00
Central Vermont	450,000.00	Chic. Ind. & Western	108,461.68
N. Y. N. H. & H.	450,000.00	Cumberland & Penn.	102,900.00
Denver & Rio Grande	400,000.00	Central of Georgia	100,000.00
Ches. & Hudson	400,000.00	Chic. & E. Ill.	100,000.00
Virginian Railway	300,000.00	Toledo Terminal	100,000.00
Great Northern	300,000.00		
Terminal R. R. Assn. of St. L.	1,081,000.00		

15 railroads receiving sums amounting in each case to less than \$100,000..... \$130,000
Payments on account of standardized locomotives and cars..... 29,281,496.00

The total amount of advances to all railroads in the month of November, 1918, including the above, was..... \$515,690,060

on account of surplus earnings and including \$10,422,968 from loans to R. R. \$515,690,060

Excess of advances to railroads for the month of November, 1918, over the above amounts received for same period as above was..... \$10,422,968

All loans to railroad companies by the director general have been made at the uniform rate of 6 per cent per annum interest.

Committees of Freight Traffic Control Discontinued

C. R. Gray, director of the Division of Operation, announces in circular No. 23 that the emergencies under which

the Committees of Freight Traffic Control at Washington, D. C., having charge of traffic passing through Potomac Yard, Va., Hagerstown, Md., and Hampton Roads, Va., and at Cincinnati, Ohio, having control of traffic passing through various Ohio river gateways, having passed, and there being no longer any necessity for continuance of such committees, they are discontinued, effective December 1. In disbanding these committees, Mr. Gray expressed cordial appreciation of the efficiency and zeal with which they have handled the work assigned to them.

Export Situation

According to the report of the Exports Control Committee for the week ended November 25, owing to the large amount of ocean space available for the clearance of frozen beef and provisions, the rail movement, Chicago to New York, has been placed on a three-day schedule. This arrangement will contribute materially to the relief work now being done by this government in the stricken European areas. Eighty cars of frozen beef were on hand at the terminals the morning of the 26th as against 204 cars on Monday, the 25th. All cars are in process of delivery.

The storage of supplies of war materials intended for the use of the allied nations will release valuable pier space much needed for other traffic. Considerable freight for the account of the British, French and Italian governments on hand at terminals and in transit, and not needed abroad, will be sent to the various storage houses. These commodities include automobile trucks, barbed wire, empty projectiles and shells and lumber.

The total arrivals of freight cars at the North Atlantic ports during the week mentioned were 12,009 as against 12,285 delivered, making an excess of deliveries over receipts at these ports of 276 cars.

There was also a decrease in the amount of freight on hand at South Atlantic and Gulf ports for the week ended November 21 of 153 cars. During the week the Southern Export Committee issued permits covering a total of 951 cars of grain, cotton, steel rails, wire, etc., from interior points to Galveston, New Orleans, Mobile and Savannah.

At the port of New York 37 cars of Russian rails which have been in ground storage have been disposed of, while 200 cars of billets have been ordered to the Erie Railroad for unloading on the ground at its terminals. Most of the commodities held in the cars and on the piers other than recent arrivals are temporarily held up awaiting definite decision from the allied governments as to their final disposition.

At the port of Savannah, Ga., there is an accumulation of approximately 90,000 bales of cotton on the terminals, with six ships in port taking on cargoes, including 70,000 bales of cotton.

For the week ended November 21, there were 391,470 tons of grain in elevators at the North Atlantic ports, while 98,340 tons had cleared. For the same period there were stored in elevators at the Gulf ports 263,076 tons of grain, while 23,074 tons had been cleared.

The situation in the Puget Sound district shows a net increase of 167 cars on hand over last week and an excess of arrivals over deliveries of 189 cars. The San Francisco district shows a net increase of 13 cars on hand, the increase in cars on wheels being 19, in storage 1, while there was a decrease of 7 cars in ground storage. There is also an excess of 13 cars in arrivals over deliveries. This increase is due to the commandeering by the government of Pacific Mail boats and to the order of the Netherlands government to give priority to Java freight on Java Pacific boats.

The changed condition in the war situation has complicated the port situation somewhat, as a great deal of traffic will not now be needed abroad, but all War Department property for overseas will now be sorted out at inland junction

points, and only such traffic allowed to go to ports as is wanted for overseas shipment.

Employees Want McAdoo to Stay

Mr. McAdoo has received hundreds of letters and telegrams expressing regret because of his resignation as director general of railroads and appreciation of the work he has accomplished, from all classes of railroad service, from employees to managers and corporation officers. The employees, however, are most expressive of their desire to retain him as boss and many of them have backed up their words by concrete evidence. In addition to the numerous offers to "chip in" toward an adequate salary, four employees of the St. Louis-San Francisco enclosed certified checks for \$1 each as a Christmas present.

The executive council of the railway department of the American Federation of Labor called on Mr. McAdoo on Saturday after his return from his southern trip, to present resolutions asking him to retain his office, and also another resolution, which was transmitted to the President, proposing legislation which would "provide a salary in keeping with the services rendered." The resolutions also protested against any plan to return the roads back to private control.

Replying to a telegram from J. H. Kirkland, O. E. Summer and H. J. Harrigan, pledging employees of railroads operating out of St. Louis to contribute \$2,000 per month as part of his salary, Director General McAdoo has sent the following letter:

I am immensely touched by your telegram of the 24th of November, in which you tell me that the employees of the various railroads operating out of St. Louis desire to pledge two thousand dollars per month as part of my salary if I will remain as director general of railroads.

It would be difficult for me to express adequately my appreciation of this evidence of the friendship and regard of the employees of the railroads centering at St. Louis, but I would not permit them to contribute any part of their hard-earned pay toward my salary as director general of railroads. It would not be just to these generous employees for me to accept their kind offer, as I could never in any circumstances permit myself to become a burden upon them or upon any of my friends.

For the reasons stated in my letter to the President it is necessary for me to resign as director general of railroads as well as secretary of the treasury. It is with genuine regret that I part from my friends in the railroad service of the United States. I have enjoyed laboring with them in the service of the country, and I am proud of them for the loyalty and patriotism with which they have worked for their country in this great war.

While after the first of January I shall no longer be their "boss" I shall always be their friend.

In reply to another letter from employees Mr. McAdoo said:

I deeply appreciate your kind telegram of the 25th in which you express regret that I have found it necessary to resign the director generalship of railroads, and I especially appreciate your expression of thanks for what I have done "in behalf of the railroad men, especially the railroad shop foremen."

It has been my earnest effort since I have been responsible for the direction of the railroads of the United States to give all the employees just wages and working conditions. While it is not possible to satisfy every man, nevertheless it is possible to reach a fundamental basis which is satisfactory to the vast majority.

It is with very great regret that I sever the pleasant relationships I have established with the railroad employees of the United States. I have been glad to work with them for our country in this great period through which we have just passed and are passing, and while I am obliged to return to private life and shall no longer be their "boss," I shall always be their friend.

Rules for Inspecting and Testing Stationary Boilers

The Division of Operation has issued Mechanical Department Circular 11 dealing with the rules and instructions for the inspecting and testing of stationary boilers. These rules apply to all steam boilers except those of locomotives or boilers used solely for heating which carry a pressure not exceeding 15 lb. Under the rules the chief mechanical officer of each railroad will be held responsible for the design, construction and inspection of the boilers. The working pressure of the boiler is to be determined by the mechanical engineer and the minimum factor of safety allowed is four. The maximum allowable stress for staybolts is 7,500 lb. and for round or rectangular braces supporting flat surfaces 9,000 lb.

Each boiler is to have at least one safety valve of sufficient capacity to prevent an accumulation of pressure more than 5 per cent above the working pressure and it is to be set at a pressure not to exceed 6 lb. above the working pressure. The working safety valves are to be tested each day the boiler is in use and all safety valves are to be tested every three months and any necessary adjustments made.

The boiler steam gages are to be graduated to at least 50 lb. above the working pressure and they are to be tested once each three months, or whenever necessary. Three gage cocks and one water glass are to be provided, so located that the lowest reading shall be at least 3 in. above the lowest safe water line.

Each boiler is to be subjected to a hydrostatic pressure 25 per cent greater than the working pressure before being placed in service, and not less than once each 12 months thereafter, careful inspection being made during the time the pressure is applied and after. A certified report of the inspection and repairs (Form M D-27) is to be filed with the chief mechanical officer of the railroad and a copy sent to the Division of Operation at Washington. Locomotive type boilers working under a pressure of 125 lb. or more shall have the staybolts tested at least once each month. Those working under a pressure of less than 125 lb. shall have the staybolts tested every three months. Vertical boilers having a working pressure of 100 lb. or less will have staybolts tested at the time of hydrostatic test. No boiler is to remain in service with five or more broken staybolts. The boilers are to be washed once each month or oftener if water conditions require.

An inspection of the boiler under steam shall be made by a competent inspector each six months, who will report to the division and local officer in charge, a certified report of the inspection and repairs (Form M D-26) to be filed with the chief mechanical officer of the railroad and a copy sent to the Division of Operation at Washington.

Fusible plugs must be cleaned of scale not less than once each three months. Suitable valves must be placed between the boiler and steam header where boilers in batteries are connected to the same header. Each steam outlet for the boiler is to be equipped with a suitable valve in operative condition. Feedwater heaters are to be cleaned and inspected once every three months or oftener if water conditions require. The boiler room shall be kept in a clean and sanitary condition. Old clothes, waste, etc., must not be allowed to accumulate in or around the boiler room.

The rules are to become effective January 1, 1919, as minimum requirements, and shall be put in full force on every railroad under Federal control on that date. When a railroad has in effect additional rules which provide greater safeguards, such additional rules may be continued in effect.

Railroad Administration's Embargo Policy

The Railroad Administration has issued a statement explaining its policy with respect to embargoes as follows:

"The difficult experiences of railroads in recent years with serious traffic congestions which clogged transportation, resulted in the Railroad Administration early in the year making comprehensive plans to prevent the movement of freight in the areas where congestion was threatened. This policy was then extended with respect to numerous sorts of traffic destined to difficult areas to prevent the loading of shipments except upon the issuing of permits which would only be granted upon showing that the shipments could be unloaded at destination.

"The consistent carrying out of these policies has resulted in an exceptional degree of freedom from congestion during the period of heavy business this fall and there are now outstanding no general embargoes against the free movement of

traffic. In this respect transportation conditions are much better than for several years past at this season of the year.

"In view of the greatly improved conditions it is the policy of the Railroad Administration to employ embargoes in the most sparing manner possible and with the greatest possible consideration of the public, and it is hoped that the necessity for such steps will be comparatively small. At the same time, if difficult conditions do unexpectedly arise, the only way to deal effectively with them will be through the prompt use of measures which will prevent railroads being clogged through having thrown upon them shipments which cannot be promptly moved and which would only serve to impair the current transportation capacity.

"Due to improved transportation conditions, it is not expected that embargoes will be necessary during the coming winter to anything like the extent to which they were used a year ago. With the experience gained during the past year, and the system which has been worked out during that time, the Railroad Administration is in a position to direct the operation of the roads in such manner as to result in the handling of a maximum amount of tonnage with the least practical interference.

"There is now outstanding a list of standard exemptions to embargoes, which was carefully worked out and issued in February, 1918, with accompanying instructions that commodities listed should be exempted in the order shown where the use of embargo in varying degrees might be necessary. The effect of this has been that much unnecessary work and delay in making shipments has been avoided by the elimination of applications for and issuance of permits in connection with such commodities the nature of which made it necessary that transportation should be arranged. This list, for instance, has recognized in the first instance the necessity of moving live stock and perishables, following in turn have been fuel in its varying forms, food and feed for human and animal consumption, government freight, etc. Experience has proven that this list should be maintained substantially as at present, as it is satisfactorily protecting the public interest."

Judge Lovett Resigns

The appointment of Carter Glass as secretary of the treasury was announced Thursday noon, effective December 16. Mr. McAdoo announced that no decision had yet been reached on the appointment of director general of railroads and the appointment may not be made until next January 1. It is apparent that some difficulty has been experienced in getting the right man to accept the office and Mr. McAdoo may stay a few days after January 1 to complete his work and make his report.

President Wilson had not fully made up his mind when he sailed, and is said to be hesitating as to whether to appoint a railroad man or some other. Mr. McAdoo announced Thursday that he had accepted with great reluctance the resignation of Judge Robert S. Lovett as director of the division of capital expenditure, effective January 1. He will return to the Union Pacific after two months' rest, as president, succeeding C. B. Seger, who has resigned, and his leaving may have had something to do with the delay in appointing a director general, as he was being considered for the appointment. Judge Lovett issued a statement that upon cessation of hostilities he had resolved to relinquish as early as practicable, without inconvenience, his position with the Administration, which he had taken only for the period of the war, and take a rest which his health demands, and that Mr. Seger had received an attractive offer which it was necessary for him to act on without delay. He added: "I should like to say, even at the risk of appearing fulsome, that in my judgment no business agency, public or private, has been more absolutely free from political influences and considerations or more completely dominated

solely by what was conceived to be right and in the public good, than the railroad administration, due to the inspiring example and superb firmness of character of the Director General himself."

Mr. McAdoo said: "No commendation, however strongly expressed, could do justice to him. Judge Lovett has not only had charge of one of the most important divisions of the railroad administration, but has also been an invaluable co-adjutor and counsel in connection with the great problems of unified operation and Federal control of the railroads during the past year."

Bills of Lading for Cotton

The Railroad Administration has issued instructions providing for the resumption of the issue of thorough export bills of lading for cotton under the following conditions:

1. Through export bills of lading will not be issued until and unless a definite contract for ocean carriage has been made with specified sailing date.
2. Representatives of ocean carriers shall secure from the export committee having jurisdiction, the necessary permit for the forwarding of the shipment from point of origin to point of export.
3. Upon receipt of this permit by the forwarding agent, through export bill of lading will be issued, but shipment should not be accepted (and of course the bill of lading not issued) until a reasonable period to move the shipment to the port in time for the specified sailing.
4. Tariffs should be supplemented to provide that the payment of demurrage and storage charges at port shall apply to traffic moving under through bills of lading, commencing the day following the sailing date as fixed in the contract; permits should not be granted to ocean carriers or their representatives except upon their agreement to pay these charges to rail carriers.

Opening of New Coal Mines

D. C. E. Circular No. 15 advises that in view of the discontinuance by the Fuel Administration of control over the opening of new coal mines, it is understood that the question of constructing tracks and other necessary railroad facilities

sought in connection with the opening of new coal mines will be handled in the first instance by the federal manager; if the federal manager recommends the project, he will so report to the regional director; if the regional director so recommends, he will so report to the director of the Division of Operation, who will transmit the papers to the Division of Capital Expenditures with his recommendations.

Explosive Bureau Recognized

The Bureau for the Safe Transportation of Explosives and other Dangerous Articles, according to Circular No. 63, is a recognized agency of the United States Railroad Administration, and the instructions issued by this bureau are with the approval of the director general. Operating railroad officials must take prompt and adequate action to remedy any conditions on their lines that are not in accord with the requirements of the federal regulations as shown by the reports of the inspectors of the bureau.

First Short Line Contracts Signed

Director General McAdoo on December 4 signed the first of the special contracts with the short line railroads, by which they are taken under a modified form of federal control without guarantee of compensation. It was in the case of the Missouri & North Arkansas. He has also signed with the Western Allegheny and the South Georgia.

Committee on Car and Locomotive Appliances

The Committee on Standard Appliances for Cars and Locomotives held its monthly meeting in Washington, beginning Tuesday. The meeting was devoted largely to the consideration of designs for the proposed standard passenger cars.

Women in the Service of the Railways*

Used on a Great Variety of Work; a Large Proportion
of Them Will Remain in Service

By Pauline Goldmark

Manager, Women's Service Section, U. S. Railroad Administration.

WOMEN's employment in the railroad service on a large scale is new. It has really been a wartime innovation due to the shortage of man power—especially in the shops and roundhouses. Last January the total number of women employed was 60,000. By July it had increased to 81,000 with the following geographical distribution: 45,000 in the Eastern district, 8,000 in the Southern and 27,000 in the Western district. By October 1 these numbers were probably increased to a total of approximately 100,000.

Naturally the greatest number are in the clerical and semi-clerical occupations. Of the 81,000 employed July 1, 61,000 were working as clerks of all kinds, stenographers, accountants, comptometer operators, etc. In this class appear women ticket sellers and bureau of information clerks who served the public for the first time; they were found well fitted for this type of work, and special instruction agencies were opened by the government in various states to train them in the intricacies of tariffs and routes.

The next largest group of 4,000, it is not surprising to learn, appears in woman's time honored occupation of cleaning. Women have long been cleaning stations, offices, etc., but now they are employed in the yards to clean coaches and Pullman, both inside and outside, and in the roundhouses

doing the heavier work of wiping locomotives; 800 were so employed. In personal service, including work in dining rooms and kitchens, as matrons and janitresses, 2,000 were found. In the railroad shops, women entered the greatest variety of new occupations. Three thousand were employed ranging at one end of the scale from common laborers, at the other end of the scale to skilled mechanics earning the machinist's or carmen's rate of pay.

Owing to these increases and to the need of caring for the special interests of women, the Women's Service Section was created on August 27, under Mr. Carter, director of the Division of Labor. Women's interests had already received attention in the first orders of the director general. He specified (1) that where women are employed their "working conditions must be healthful and fitted to their needs"; (2) that "the laws enacted for the government of their employment must be observed"; and (3) "their pay when they do the same class of work as men shall be the same as that of men."

These general directions were taken over by the Women's Service Section as its first sailing chart. The scope of its work, it will be noted, is drawn on broad lines, and includes supervision of all the factors affecting the industrial welfare of the women employees. The field agents of the Women's Service Section have been making inspections on the railroads both in the East and West. They are reporting on the exact character of the work required, its suitability for

*Address before Labor Reconstruction Conference, Academy of Political Science, New York, December 6, 1918.

women, the observance of the state labor laws as to hours of work, and, most important, the application of wage rates insuring equal pay for equal work irrespective of sex.

It is perhaps not fully known to this conference that the rates of pay for all the diversified occupations of the great transportation service of this country have been standardized and new increases adjusted for every class of employee. This is now true for positions of the highest skill and responsibility down to the humblest scrub woman. To give a concrete example:—under a special order the pay of coach cleaners was raised 12 cents per hour, the present minimum being 28 cents and the maximum 40 cents. In a conference on women in industry such as this, no point it seems to me needs to be more emphasized than the equality of pay for both men and women in this service. The Railroad Administration put itself squarely on record in its first wage order on this fundamental principle, and is living up to it in regard to every occupation.

Women were undoubtedly first engaged about a year and a half ago, before the railroads were put under federal control, because they could be obtained for less pay than men. They were, for instance, engaged as common laborers at 20 cents=22 cents an hour, at a time when men were receiving 28 cents=30 cents for the same class of labor. With rare exceptions where adjustments are still necessary, the wage orders have absolutely stopped this undercutting of men's wages by women. The Women's Service Section receives many complaints regarding wages, but in the large majority of cases, the grievances are due to incorrect application of the wage orders or to a wrong calculation of the wage increases, rather than in discrimination between men and women.

Soon after women began to be largely employed it became apparent that some of their work was neither profitable nor appropriate. The use of women as section laborers, for instance, in a gang of men working along the tracks at a distance from any house or station was judged to be unsuitable. This was also found to be the case where women were employed as truckers in depots and warehouses on account of the extraordinary physical exertion required of them. In view of the wages now paid it was believed possible to secure men and to transfer the women to some class of work suitable to their strength and with proper regard to their health. The railroads were accordingly asked to discontinue their employment in both these positions.

Similarly, the work of calling train and engine crews was found to be undesirable. The service requires that the caller must find the train or engine man for whom he is looking, who is often asleep at his home, hotel, or boarding house or caboose, where he must be awakened and his signature secured as acknowledging the call. For obvious reasons the railroads were requested to dismiss women from this occupation. Under these orders, on one railroad employing more than 2,000 women, 223 employed as laborers and 193 employed as truckers were transferred to other jobs. To those of us who are accustomed to methods of factory inspection and the difficulty and delay of securing the enforcement of labor laws, it is a new and welcome experience to secure the kind of concerted action which now exists under the federal control of the railroads. The publicity which is needed to secure support for the labor laws, is not required when the government itself is the employer and specifies the conditions of work which it wishes to have maintained.

It does not mean, however, that the Women's Service Section is not busily engaged in securing improvement of conditions of work. The sudden growth in the number of women employed has not been accompanied in many places by proper supervision for health and comfort. It has therefore proved necessary to secure proper equipment and better supervision of all the conditions of work where women are employed. If, for instance, they are working in isolated posi-

tions at night in the round houses or telephone offices, it has been necessary to secure the transfer, especially of young girls, to day time shifts. Owing to seniority rights among railroad employees the last comers are given the most undesirable hours. Last fall there was some indication that women might be employed on night shifts as watch-women. The Women's Service Section has, however, taken the position that older men who may be incapacitated for more active work should be employed on these shifts and the employment of women restricted to the day time hours.

There can be no question that women working as laborers have been doing work involving too great muscular exertion. They have handled lumber, loading and unloading it in the yards. They have also lifted great weights of iron scrap—all work of this kind is now being discontinued.

The variety of occupations is surprising. One of the railroads reports the employment of women in 99 different operations. It follows that the conditions of work show wide variation and the adjustment of local conditions in case after case must be taken up. It is obviously difficult to frame rules of general application at once for such diversity of conditions.

Comparisons with other industries can probably best be made in respect to the women employed in the shops. They are operating a number of machines such as bolt threaders, nut tappers, drill presses, for which no great skill or experience is needed, and which is classed as "helpers work," and rated at the specified pay of 45 cents an hour. They are also employed for highly skilled work. A number have succeeded as electric welders and oxyacetylene burners. They have been found well adapted for work on the air brake equipment and are cleaning, testing and making minor repairs on triple valves. In some places they are now working in a separate group on the lighter weight valves, weighing not more than 40 pounds. After a period of training they are giving satisfaction without the help of any man operator. This is an exceptional achievement which is the result of careful training and the selection of the proper type of worker, as well as a real desire to develop women as a new source of labor. They have responded to this treatment, take a pride in their work and are doing it well. In other places, however, the introduction of women into these trades has been reluctantly undertaken, and they have been given the least possible instruction. Given this spirit, the employment of women at new and unaccustomed tasks is not a success and results only in indifferent and uninterested workers.

Women are found now performing the duties of crane operators, and hammer operators in the shops, of turntable operators in the round houses and of packers of the journal boxes in the yards; they are acting as attendants in tool rooms and storehouses; they are doing block signal work and acting as lever women in the signal towers. This list covers in general the more highly skilled operations in which women have become proficient. The scarcity of male labor has not been sufficient to cause the employment of large numbers in any one of these jobs. On the railroads, as elsewhere in industry, the women of the United States have not felt the compelling pressure experienced in England to leave their wonted occupations and enter new lines of work, but the attraction for the most part lying in the opportunity to earn higher wages than women can usually obtain. A remarkably fine type of woman is now to be seen in many of the shops, who enjoys the greater freedom of her work as compared with factory routine, although in many cases the discomfort, the dirt and exposure is far greater. It remains to be seen whether the women will remain in these jobs to any great extent. The railroads will of course recognize the seniority rights of all their employees returning from military service, but as far as the new employees are concerned, women will have the same privileges as other new employees in retaining their positions or being assigned to other jobs. There can be no doubt that in the clerical and semi-clerical positions, they

have proved their worth and will to a great extent be retained. It has, in fact, seemed questionable under any circumstances to have women working as laborers in yards and round houses in the immediate neighborhood of offices which depend to a great extent on men's labor for their inside force.

One further point must be mentioned in regard to the privileges which the women enjoy. They have been given fair treatment not only in regard to pay, but in regard to complaints. A woman is given a hearing according to specified procedure and can appeal her case respectively to the director of labor or to the adjustment boards at Washington. The representatives of the brotherhoods are members of the boards. Thus the women share the gains secured through years of collective bargaining on the part of the men.

In the post war period, while there is federal control of the railroads, the women will retain their own seniority rights, including the privileges of promotion. The present indications are that they will remain as a permanent part of the great army of clerical workers, rather than in the out of door occupations and in the shops and roundhouses where the environment is oftener unavoidably unsuitable.

In the recognition given to the labor of women, the policies regulating their employment on the railroads forms a new chapter in the industrial history of our country. It may be considered one of our great gains of the war, hastening the day of uniform recognition in all industries of these principles.

Report on Birdsell Collision

THE REPORT OF W. P. BORLAND, chief of the Bureau of Safety of the Interstate Commerce Commission, on the disastrous collision on the Chicago, Burlington & Quincy at Birdsell, Neb., September 10, last, is dated November 23. This collision was reported (as occurring near Alliance, Neb.), in the *Railway Age* of November 15, page 858. Six passengers and five employees (not on duty) were killed, and 27 persons were injured.

Alliance is the point where time is changed from Central standard to Mountain standard. Birdsell is six miles east of Alliance, and Hoffland is 5 miles east of Birdsell. The collision occurred at 2:55 p. m. The trains involved were westbound passenger No. 43 and work train extra No. 714. The passenger train held a clearance card, received at Hoffland, and also a permissive card, received at the same place, directing it to "proceed expecting to find a train in the block between this station and Alliance." The work train had two train orders, neither of which referred in any way to train 43, and therefore, according to the rule, should have cleared the main track (at Birdsell) ten minutes before train 43 was due there. The collision occurred on a curve to the left in a cut about 900 ft. long, with a bank about 15 ft. high on the left, or inside of the curve. The engineman could have seen the work train from a point about 4,000 ft. distant, but nearing the cut his vision was limited to about 400 ft. The fireman could have obtained a good view at a distance of 2,200 ft., and a still better view at a point 1,550 ft. away. The weather was clear. All of the fatalities, with one exception, occurred in the smoking car (wooden), which was between two cars having steel underframes and of much heavier construction.

The testimony of witnesses, as summarized in the report, shows that six or seven men were grossly negligent in this case, not to mention the officers, who, if the discipline was as bad as is here indicated, must have tolerated much loose practice.

Conductor Penninger of the work train admitted that he entirely overlooked train No. 43, saying it was "just a lapse of memory on my part." He received his last train-order at Alliance, about 2 o'clock, when he had only about 33

minutes before the time when he must clear No. 43, and yet he handed the order to the engineman and said nothing. He had with him a telephone which he was intending to set up at the point where the work train was taking gravel from a pit and the telephone seems to have occupied his mind. He had checked the register at Alliance, but without consulting his timetable.

Engineman Ellis of train 714 worked both east and west from Alliance and he carried a watch with two hour-hands, one showing Central time and the other showing Mountain time. The orders received by Ellis in the morning were shown to the fireman but not to the front end brakeman; while those received in the afternoon were not shown either to the fireman or the brakeman. The reason that he did not clear No. 43 was that he was calculating on Mountain time, and thus acting as though it were one o'clock when it was two o'clock. He and the rest of the crew had eaten their dinner at Alliance, where the town uses Mountain time as its standard, and he seems to have gone to work after dinner without giving a thought to the difference in time. He had seen the conductor talking with the trainmaster at Alliance and assumed that they were consulting as to when and where No. 43 should be met; he then looked at his watch and noted that it was 1:15, Mountain time, and calculated that he had one hour and 18 minutes to go to Birdsell and clear the main track. Not until No. 43 came in sight and he had tried to move forward to get out of the way did he realize that he had made a mistake in reading the time. He said that mistakes of that kind were not unheard of and mentioned two cases of enginemen (with watches like his), who had taken the side track an hour earlier than was necessary, to meet trains, not realizing that they had made a mistake of an hour until the conductor called their attention to the fact. He himself had never had an experience of this kind.

Alliance is not the end of a division and is not, said the engineman, the best place to change the time. He and many other trainmen used watches with two hands so as to obviate the necessity of setting the watch each time a transfer was made from one side of Alliance to the other side. His fireman had neither watch nor timetable, and he did not recall having said anything to the fireman about No. 43.

Fireman Peters of this train had made only ten trips, and had had no previous railroad experience. When examined, on entering the company's employ, he had received a book of rules but no timetable. He did not know what time train 43 was due at Birdsell.

Brakeman Howard of the work train understood that they were working on Central time and knew that No. 43 was due; he knew that his train was on the main track on the time of No. 43, but assumed that the conductor and engineman had in their possession an order giving them some right over 43.

Brakeman Ogle of the work train was making his second trip as a brakeman and had had no previous railroad experience, except six months in the bridge gang. At his examination he had received a book of rules but no timetable.

Conductor Cotant of train 43 thought there were no rules restricting the speed of a train running on a permissive card, but thought that an engineman in such case should proceed with caution, particularly in approaching stations and at places where the view was obscure.

Engineman Fitzpatrick of train 43 said that he was running about 45 miles an hour and that he first saw the work train when he was within 125 ft. of it. His understanding of the rule concerning permissive cards was that he and the fireman "should keep a good lookout and still keep the train going in good shape." He showed the permissive card to the fireman but did not tell him to keep a good lookout around curves. He said that "at one time it had been the practice to slow down absolutely at obscure places when

running on a permissive card; but this resulted in constantly losing time and they were instructed to go ahead with their trains and only look out for a flag or an indication from the train in the block."

Fireman Ogden of train 43 first saw the work train when only 100 ft. from it, and after the engineman had called to him. The reason that he did not see it sooner was that he had gone into the tender to dig down coal. He admitted that it was his duty to keep a lookout on curves.

Conclusions. The report gives the cause of this collision as the presence of the work train on the main track without authority and without flag protection, for which Conductor Penninger and Engineman Ellis are responsible. It is held that if the conductor had examined his timetable while checking the register at Alliance, he would not have overlooked No. 43; and if the engineman had consulted his timetable, prominently inscribed "Central time east of Alliance, Mountain time west of Alliance," these words must have attracted his attention. Brakeman Howard was familiar with the rules and his failure to call the attention of the conductor

and the engineman to train No. 43 was inexcusable. Fireman Peters and Brakeman Ogle, inexperienced men, were apparently working without proper supervision or instruction.

"The evidence indicates that the manual block system, as operated on this division, affords little or no protection against collisions between trains moving in the same direction. * * * Engineman Fitzpatrick, in running at full speed, apparently was following the prevailing custom on this division; though a rule on the timecard says that moving a train under caution or under control means that the speed must be such that the engineman shall be able to stop within the range of vision. "This rule obviously has application to the movement of a train when running under a permissive card notifying it of the presence of a train in the block ahead. There is urgent need of a change in block signal practice so as to make it conform to the principles of safety which are intended to be embodied in the block system."

Conductor Penninger and Engineman Ellis were experienced men with good records. None of the men had been on duty more than 8¼ hours.

A Double Track Cut-off Line Completed by the A.E.F.

By Its Operation Much Time Is Saved in Transportation
Between the Base Ports and the Front

A DOUBLE TRACK CUT-OFF line by means of which much valuable time is being saved in the transportation of men and supplies in France was one of the many projects in the construction program of the American Expeditionary Forces. The cut-off is approximately 5.75 miles in extent and it is located in the zone of the Services of Supply. Its construction involved 160,000 cu. yd. of cut,

of the French tracks, was avoided and the connections were taken off from opposite sides of the right of way. On one side the new line was carried up on a fill to a sufficient height to permit of an overcrossing of the main line by means of a steel girder bridge. Beyond the bridge the two tracks converge to standard double track construction.

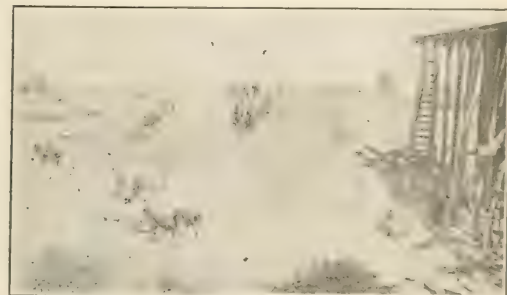
The largest fill on the line contains 180,000 cu. yd. of material. The placing of this fill involved the construction of a timber trestle 40 ft. in height, the material for which was practically all secured by detachments of forestry regiments working French timber lands hundreds of miles from the site. The great part of the fill was secured from a cut to the west of the embankment, being moved by steam shovels and transported to the site in American made side dump cars. The remainder of the fill was secured from borrow



Derrick Placing One of the Sixteen 50-ft. Steel Girders

414,000 cu. yd. of fill in addition to a bridge one-half mile long spanning an important French river. Its principal purpose was to provide the means for running trains around the city of Navarre, where several French railroads converge, thus avoiding delays in train movements arising from the congestion of traffic in the city. The cut-off effected the important saving of 6 to 8 hours on every train in addition to five miles in distance between the base ports and the rail heads, back of the front, and in operation east and west-bound trains will skirt the terminal and yards passing the city in a direct line, avoiding a long loop into the city which had to be followed prior to the improvement.

In planning the connection between the cut-off line and the existing double track main line a double track turnout which would have made necessary a crossover cutting one



Wheel Scrapers Were Used Extensively in Filling

pits near the base of the embankment and moved to place with wheel scrapers. Approximately 300 horses were employed in the scraper operations.

The bridge portion of the cut-off, 2,190 ft. long, is made up of ninety-nine 14-ft. timber spans and sixteen 50-ft. steel girder spans. This is the longest bridge which engineers of the American Expeditionary Forces have built in France.

The timber spans are supported by pile trestle bents, while the longer steel girders rest on clusters of 43 piles. Two pile drivers of the steam-hammer type worked from each end of the bridge toward the center of the river, while a drop hammer worked westward from the shore end. In this structure nearly 2,000 piles 50 ft. or so in length had to be driven.

While the 180,000 cu. yd. fill and the river bridge are the outstanding features of the job, other smaller structures had to be built. For example, there is a canal which had to be spanned by a steel girder bridge, several highways where overhead and undergrade crossings had to be built, and a number of roads which called for relocation and rebuilding.

This project was completed early in October. The construction was carried on under the direction of the chief engineer, American Expeditionary Forces, through the Division of Construction and Forestry, by the 16th Engineers (Railway), the regiment recruited in Detroit, and under the direct charge of Lieut.-Col. G. H. Webb, formerly chief engineer of the Michigan Central.

Freight Train Operation

THE RAILROADS under federal control during the month of September handled 9.5 per cent more revenue ton miles than were handled during September, 1917, according to the monthly report of freight train operations compiled by the Operating Statistics Section of the Railroad Administration, and for the nine months, January to September, inclusive, the increase in revenue ton miles was 2.1 per cent. The report shows continued increases in the tonnage

per train and per loaded car both for September and for the nine months, and while the average miles per car per day showed an increase of 1½ per cent in September, the average for the nine months shows a decrease of 6.7 per cent.

PERCENTAGE INCREASE IN REVENUE TON MILES, FREIGHT TRAINS AND FREIGHT CAR MILES, MONTH OF SEPTEMBER, 1918, COMPARED WITH THE SAME MONTH OF 1917

Item	Region	1918	1917	Change	Per Cent of Increase	Per Cent of Increase	Per Cent of Increase	Per Cent of Increase	Per Cent of Increase
					10	5	0	5	10
TOTAL REVENUE TON MILES (Inclusive)	New England	914,454	840,990	73,464	8.7				
	Central	4,692,443	4,076,469	615,974	15.1				
	Ohio-Indiana	5,951,649	5,154,000	797,649	15.5				
	Western Region	11,753,994	10,087,125	1,666,869	16.5				
	Allegheny	9,071,649	8,154,000	917,649	11.3				
	Pennsylvania	2,218,074	2,117,928	100,146	4.7				
	Southern	2,107,150	2,054,000	53,150	2.6				
	Northeastern	8,707,000	8,125,400	581,600	7.2				
	Central Western	2,107,150	2,054,000	53,150	2.6				
	All Regions	28,880,121	26,858,548	2,021,573	7.5				
FREIGHT TRAIN MILES (Inclusive)	New England	2,147	2,095	52	2.5				
	Central	7,278	7,848	-570	-7.3				
	Ohio-Indiana	14,410	14,075	335	2.4				
	Western Region	28,880	28,880	0	0.0				
	Allegheny	1,384	1,384	0	0.0				
	Pennsylvania	1,384	1,384	0	0.0				
	Southern	1,384	1,384	0	0.0				
	Northeastern	8,071	8,000	71	0.9				
	Central Western	10,150	10,150	0	0.0				
	All Regions	60,004	60,004	0	0.0				
TOTAL FREIGHT CAR MILES (Inclusive)	New England	444	415	29	7.0				
	Central	1,097	1,097	0	0.0				
	Ohio-Indiana	1,097	1,097	0	0.0				
	Western Region	2,194	2,194	0	0.0				
	Allegheny	1,097	1,097	0	0.0				
	Pennsylvania	1,097	1,097	0	0.0				
	Southern	1,097	1,097	0	0.0				
	Northeastern	1,097	1,097	0	0.0				
	Central Western	1,097	1,097	0	0.0				
	All Regions	1,097	1,097	0	0.0				

The average miles per locomotive per day decreased from 65.5 to 65 in September and from 66.8 to 65 for the nine months, a decrease of 2.7 per cent. The percentage of loaded car miles continues to show a decrease both for September and for the nine months. There was an increase in ton

OPERATING STATISTICS

Item		1918	1917	Amount	Per Cent	1918	1917	Amount	Per Cent
Average miles operated freight train		226,608.30	226,608.30	135.40	228,692.30	228,692.30	228,692.30	228,692.30	228,692.30
Average miles operated freight car		52,998.036	52,998.036	37,063	481,386.409	491,614.845	481,386.409	481,386.409	481,386.409
Loaded freight car miles		1,209,365.739	1,209,365.739	25,697.297	11,261,398.155	11,995,324.502	7,339,926.347	7,339,926.347	7,339,926.347
Empty freight car miles		563,772.820	563,772.820	78,956.156	5,314,972.149	5,171,811.099	143,161.140	143,161.140	143,161.140
Total freight car miles—loaded and empty		1,942,094.715	1,942,094.715	1,888,835.856	16,576,370.304	17,167,335.511	590,765.207	590,765.207	590,765.207
Freight locomotive miles		61,458.876	61,458.876	61,088.176	359,312.091	359,312.091	567,483.604	567,483.604	567,483.604
Revenue ton miles		35,700,000	35,700,000	3,097,342.226	300,327,201.897	294,127,393.178	6,199,808.719	6,199,808.719	6,199,808.719
Non-revenue ton miles		2,801,966.284	2,801,966.284	25,790.234	25,979,630.234	26,625,964.513	646,334.279	646,334.279	646,334.279
Total ton miles		38,502,137.371	38,502,137.371	3,123,132.519	326,306,832.131	320,753,357.691	5,553,474.440	5,553,474.440	5,553,474.440
Average number of freight locomotives in service		31,512	31,040	422	31,544	31,126	418	31,126	31,126
Average number of freight locomotives in or awaiting shop		4,469	4,469	11	138,501	138,501	4,463	235	235
Average number of freight cars in service		2,414.218	2,414.218	2,414.218	2,434,144	2,434,779	87,415	87,415	87,415
Average number of freight cars in or awaiting shop		139.817	139.817	7.6	138,501	138,697	4,804	3,697	3,697
Tons per loaded car		29.7	29.7	26.8	29.0	26.7	26.7	26.7	26.7
Average miles per locomotive per day		65.0	65.0	65.3	65.0	65.0	66.8	66.8	66.8
Average miles per car per day		66.9	66.9	67.0	67.0	67.0	69.9	69.9	69.9
Per cent of loaded car miles		66.9	66.9	67.0	67.0	67.0	69.9	69.9	69.9
Per cent of freight locomotives in or awaiting shop		14.8	14.8	1.1	14.0	14.3	14.3	14.3	14.3
Per cent of freight cars in or awaiting shop		6.2	6.2	0.3	5.7	5.7	5.7	5.7	5.7
Total ton miles		38,027	38,027	7.3	37,795	37,747	148	148	148
Per freight locomotive per day		533	533	496	501	501	10	10	10
Per freight car per day		5,680	5,680	468	5,227	5,144	83	83	83
Per mile of road per day									

* Decrease.

miles per mile of road per day amounting to 8.9 per cent for the month of September and to 1.6 per cent for the nine months. The total ton mileage per freight locomotive per day shows a slight increase for nine months and an increase of 7.3 per cent for September. The ton miles per freight car per day showed an increase for September but a decrease for the nine months. The statistics are reported both by regions

and districts and by the combined totals. The largest increase in revenue ton miles for September was shown by the Northwestern region, an increase of 14.2 per cent. For the nine months' period the largest increase was shown in the Southern region, 8.3 per cent. The combined figures for September and the nine months' period as compared with the corresponding periods of 1917 are shown in the table.

Railway Fire Protection Association Convention

First Meeting Since Federal Control Addressed by Manager Fire, Loss and Protection Section

THE FIFTH ANNUAL MEETING of the Railway Fire Protection Association took place at the Hotel Sherman, Chicago, on December 3, 4 and 5, with an attendance of nearly two hundred. The convention was the first since the inauguration of government control as well as the first since the unification of railway fire prevention work under the Fire Loss and Protection Section of the Railroad Administration. B. S. Mace, superintendent of insurance of the Baltimore & Ohio and president of the association, presided. In the enforced absence of G. L. Ball, secretary and treasurer, R. R. Hackett, insurance inspector of the Baltimore & Ohio, acted as secretary. By far the most important feature of the program was an address by Charles N. Rambo, manager of Fire Loss and Protection Section, who spoke on the co-operation expected of the individual railway fire protection organizations by the Railroad Administration. Following is an abstract of his remarks:

Rambo Outlines Plans of his Section

In operating the railroads, the director general, as an economic matter, instructed that the carriers should not renew any fire insurance on property under federal control or any liability in connection with the operation or use of such property. This meant that the former average annual insurance carried, amounting to slightly over two billions of dollars has, or will eventually expire. This insurance indemnity did not represent the full value of the properties owned by the railroads or of their liabilities to others for property in transit. In the majority of instances, the railroads insured only a percentage of actual value and in other instances did not purchase or carry any insurance whatever, so that the measure of insurance value does not represent to any degree the value of railroad properties which might be subjected to fire loss or damage.

The director general in ordering the termination of insurance, however, called particular attention to the inspection of properties with the observance of measures for prevention of loss which it would be desirable to adopt, as the insurance companies had, to a large extent, heretofore performed inspections as a part of their service as insurers and for the mutual protection of themselves and the railroads insured.

A questionnaire was sent out by the director general to all railroads, calling for statistics and information, including the organized work incident to fire protection. From the many replies received it was indicated that there was no uniform or well defined method and that with the exception of a few of the larger roads, fire prevention work and its supervision was being given very little attention unless the insurance companies happened to present suggestions through which they believed the properties should benefit.

The director general recognized the large annual fire waste in the United States, estimated at approximately \$300,000,000 per year and especially the annual fire waste on railroad

properties which, from statistics furnished from 160 Class I roads and 83 switching and terminal roads averaged \$7,056,500 per year over a three-year period, this figure including amount of losses experienced in excess of insurance carried.

With the figures reported on the roads under federal control, the average annual fire loss for the last three years has meant that approximately twenty-seven dollars has been lost by fire per mile of railroad and that for every day in the year there was an average fire waste of \$19,333 on railroads, the average annual loss to property value insured being 34.3 cents per \$100.

Recognizing that a large majority of fires are preventable and are due to carelessness or failure to provide adequate fire protection measures, he brought about the establishment of the Insurance and Fire Protection Section of the United States Railroad Administration, now known as the Fire Loss and Protection Section in order to standardize practices as far as possible and co-ordinate the work.

A comparison of international fire losses in the year preceding the war proves to us that we have been a wasteful nation in permitting the destruction of our properties and materials by fire as we have in many other directions, and it would appear that there has been no greater needless and heedless waste than that produced by fire. The average loss of seven European nations and the United States was a little less than 50 cents per capita. Our per capita fire loss was approximately \$2.10, so that the average of seven European countries without the United States was less than 27 cents.

These statistics emphasize our nation's carelessness. We must be awakened to the fact that the fire menace and fire losses mean an absolute waste, and insurance is merely a means for distributing the loss, not of replacing the actual physical property destroyed, as the wealth destroyed has actually passed out of existence.

At the outset the director general issued in the form of a fire prevention poster, a notice or request which I believe, in a nutshell, places the guarding of the properties against loss by fire very clearly before the officers and employees of railroads, and which I believe is of sufficient importance for me to quote as follows:

1. All railroad employees are responsible for the prevention of fire losses, and constant vigilance, accent their responsibility toward the elimination of the unnecessary fire loss to railroad properties.
2. Let each employee consider himself a fire inspector or warden as far as his particular duties are concerned, and in so far as any dangerous condition may come to his notice; and let each one have in mind constantly that through no act of his, or through no lack of action on his part, will he create a fire hazard or allow one to pass unnoticed.
3. If you know of or see a fire danger or hazard, report it immediately to your superior in charge of your department.
4. Remove the causes of fire. The most important of the destruction of fire waste is good housekeeping—meaning cleanliness. Remove accumulations of rubbish and waste, and guard inflammable property and materials from all sources of danger by fire. Guard against not only physical defects but neglects brought about through carelessness, indifference, ignorance, or willfulness on the part of any person. Smoking is a general habit; guard carefully against hazards and careless practices incident to it.

5. Railroad operation is in its nature so continuous that destruction of property used in it leaves marked consequential losses. The acceptance of individual responsibility will prevent not only large waste of property which cannot be replaced today, but temporary loss of employment through the destruction of facilities, and serious interference with operations.

ORGANIZATION FOR FIRE PREVENTION UNDER FEDERAL CONTROL

Primary attention to fire prevention is to be given by each railroad under federal control through its operating officers and under them, if the railroad is of a sufficient size to warrant it through the establishment of fire protection and fire prevention departments, under the supervision of men trained in the study of those questions and under whom will be the individual railroad's staff of fire prevention inspectors. These inspectors will travel over the railroad's properties, giving careful study to the fire dangers and making periodical inspections of all properties with frequent inspections of the larger properties, seeing that everything is being done that can possibly be done to eliminate fire dangers.

These departments of the railroad are the educational channels, doing their work directly under the management of their road and with the officers, agents and employees; recommending, suggesting and conferring in connection with the correction of bad practices or the reduction of dangers. The training of the human element is the great problem to be contended with and a constant vigilance is necessary to overcome the frequent thoughtless, careless, or even negligent habits so often found. With the officers of the railroads giving the fire prevention work their active co-operation, regarding it of prime importance to the safeguarding of their operations, much may be accomplished.

The fire protection organizations of the railroads, through the federal or general managers, will come under the direction and authority of the regional directors of their district. The Fire Loss and Protection Section of the Central Administration will deal primarily through the regional directors, but will be of such co-operation through the federal or general managers and the various fire protection departments as may be necessary or desirable. The staff of general inspectors of the Fire Loss and Protection Section will act in an advisory and co-operative way through visits to the various regions and the large and important properties therein to assist the local forces in the proper protection of the properties.

PREVENTIVE MEASURES

The essential features to be considered by those who study the problems of fire protection are:

First: Construct buildings on fire-resisting lines so as to minimize the possibility of fire starting and prevent its unrestricted spread and opportunity for serious loss. The proper time to guard buildings against loss by fire is during their construction.

Second: Prevent fires from starting through the reduction and safeguarding of common hazards and those inherent to the particular property.

Third: Provide adequate private and public facilities for extinguishing a fire, should it start, and be prepared to fight a small fire before it becomes dangerous. All of the expense met with in the installation of fire fighting equipment, water supplies, etc., can be counted as naught if the men to promptly use it are not trained and ready, and if it is not properly cared for and kept in serviceable condition.

One of the first demands in connection with the study of fire prevention is that of good housekeeping, involving such detailed enforcements as will insure cleanliness throughout a property as a matter of daily duty and through which means the possibility of fires may be largely avoided. This can be accomplished by the appointment of employees in each portion of a property with such authority as may be necessary to see that cleanliness is observed and through the posting of official notices in prominent places requiring the carrying out of fire protection rules so prepared as to meet conditions usually found in railroad properties. . . . Approximately seventy-five per cent of the fire loss could be prevented by the general exercise of constant care and by seeking out and removing unnecessary hazards.

FIRE FIGHTING APPARATUS

The subject of fire extinguishing apparatus is necessarily one of great detail and brings out the study of the extent and character of the properties and the natural conditions surrounding them, and their use and occupancy. The class of appliances will necessarily cover a wide range, starting however, with the idea of having an ample supply of water to meet the maximum of conditions that might arise. Careful study is necessary to determine the specific character of fire extinguishing devices required to meet the demands of each class of property. These include the use of automatic sprinkler protection which is the best class that may be considered and which is recognized as the only one producing the maximum of efficiency and success in controlling fires; water mains and fire hydrant systems under ample volume and pressure from public or private reservoir or other source of supply, with incidental fire pumps, elevated tanks, standpipes, fire hose, fire extinguishers, steam jets, sandpails, water barrels and pails; all of which must be studied and installed with a due regard to their relative values. An important fire fighting agency on railroad properties is the locomotive and yard engine used at terminals and large yards remote from public protection, so equipped for supplying water under pressure with the aid of fire hose as to give good service in event of fires in rolling equipment and its lading. Tug boats equipped with fire pumps are also a valuable factor in fighting fires on waterfront properties. . . .

Rigid and systematic inspection of all fire apparatus should also be made by specially delegated employees on each property, preferably members of fire brigades, at least once a week; everything, including the smallest piece of apparatus, should be in its place and in good order ready for use, and a report of such inspection should be made to those in authority on each property. In connection with fire extinguishing apparatus, a study of its utility should be given, as well as the care of appliances, that we may be assured of it being an approved and well tested and tried device, the durability to be studied in connection with the economies.

Fire alarm systems are an important factor, particularly in large properties, to obtain prompt use of fire appliances, through the immediate summoning of drilled employees and municipal departments.

The success of fire prevention must be due entirely to well-organized forces. The organization of the fire prevention and protection work on railroads must be undertaken with intelligence and a due regard to local conditions. It is necessary that the importance of the work be recognized, by all in authority, and in charge of property. Fire prevention requires thorough publicity that all employees may be advised of its scope, and that education respecting it should penetrate all parts of a system in order that the old and prevalent idea of "security" against fire dangers may be eliminated. . . . Fires, like accidents, happen at unexpected times. Continued vigilance is therefore essential and without a general co-operation and knowledge of dangers, we cannot escape their consequences. . . . There has been sent to the various railroads a form giving the causes or origin of fire losses, that they may be studied by the inspectors and others and used as a guide for compiling the losses that may be incurred. A knowledge of the causes of losses is essential to the proper comprehension of fire dangers.

Report of Committee on Statistics

The report of the Committee on Statistics was read by E. B. Berry, supervisor of fire protection, Southern Railroad, chairman. It follows in part:

Of the 75 railroads (representing 186,540 miles) holding membership, 49 railroads (representing 141,149 miles) reported 5,701 fires in 1917, with a total loss of \$4,889,146, an average loss per fire of \$857.59, and an average loss per

mile of road of \$34.47. This compares favorably with \$921.28, average loss per fire, and \$38.71, average loss per mile of road, reported for the year 1916.

It is practically impossible to present for your consideration comparative figures owing to the fact that although the same number of roads sent in statements, the mileage reported in 1917 is 21,044 miles greater than reported in 1916. The information is sufficient, however, to show that the average fire loss on railroads is being maintained with a very unsatisfactory degree of consistency.

In respect to the origin report for 1917, you will again find five origins caused 65.02 per cent of the total number of fires, locomotive sparks causing 22.04 per cent; unknown causes accounting for 21.05 per cent; heating appliances, 11.37; adjacent property, 6.14; locomotive hot coils, 4.42. The amount of loss charged to these origins is \$2,971,727, or 60.59 per cent of the total.

As in the past, the property subject to the most consistent and uniform loss is rolling stock, which suffered 38.72 per cent of the number of fires and 19.74 per cent of the loss. Bridges and trestles sustained 9 per cent of fires and 2.97 per cent of the loss, merchandise in transit 8.91 per cent of fires and 15.26 per cent of the loss. Piers, wharves, etc., sustained .23 per cent of fires with 23 per cent of the total loss. While the increased tonnage handled by the railroads in 1917, as well as the increased value of tonnage and building cost, gave a relative increase to the carriers' liability for fire loss, the only encouraging feature of this report is the reduction of \$4.24 in loss per mile of road.

Inspection Bureaus and Inspectors

R. H. Newbern, superintendent of insurance and safety of the Pennsylvania Railroad, read a paper on What Inspection Bureaus Should Do and What Inspectors Should Be. He stated that all plans for the construction work which will be undertaken by the railroads now that the war is over, should be submitted to the insurance departments for criticism to insure proper location of fire lines and hydrants, to specify the size and class of mains and fittings, to lay out watchman's service, fire alarm systems and to safeguard exposures by the installation of cut-offs, fire doors and fire shutters, etc. All requisitions for fire equipment should be submitted to the insurance department by the purchasing department for approval, to permit standardizing the equipment as well as to effect economies in its purchase.

He emphasized the importance of employing high grade fire inspectors and enumerated essential qualifications which such officers must have. He cited the records of the Pennsylvania Railroad as justifying the development and maintenance of a well-organized, fire inspection bureau. For many years the road has issued annual statements showing the number of fires extinguished by the employees with the company's fire apparatus. In 1917, there were 334 fires so extinguished with a loss of but \$12,500 in properties having a valuation in excess of \$10,000,000. For a long period the Pennsylvania Railroad has had an average fire loss of less than 10 cents per \$100 risk. It is estimated that the annual expense for fire protection on the Pennsylvania System is about \$400,000, which is slightly greater than the annual fire loss.

Other Reports and Addresses

A paper on Guarding and Watchmen Problems at Terminals and Yards was presented by H. A. Bruck, Superintendent of Insurance, Western Maryland. An abstract of this paper will appear in a later issue.

Robert Scott, superintendent of insurance and safety of the Atlantic Coast Line, read a paper on how to maintain interest in fire prevention, an abstract of which will be published later.

R. H. Aishton, regional director of the Northwestern region, addressed the convention on Wednesday morning. He

pointed out the fact that fire losses are operating charges which the United States Government and therefore the public rather than private corporations must bear. From this position, it should be to the interest of the public to co-operate in the reduction of these losses by proper preventive measures. Mr. Aishton also urged increased interest in the enforcement of rules which past experience has shown advisable to eliminate unnecessary hazards. It is the duty of the insurance inspectors to see that these instructions are followed. Mr. Aishton stated further that the director general and the regional directors are much interested in the work of fire prevention and intend to get behind it just as they have the movement of munitions and troops.

L. F. Shedd, superintendent of safety and fire prevention of the Rock Island Lines, delivered an address on The Advantages of Having a Fire Loss and Protection Section.

C. P. Beistle, chemist of the Bureau of Explosives, read a carefully prepared technical discussion of the various types of portable extinguishers which do not require special skill or knowledge in maintenance and use.

J. E. Martin, Jr., engineer, insurance department, Emergency Fleet Corporation, read a progress report of the Committee on Fire Protection in Passenger Equipment in the absence of G. L. Ball, chairman. There was considerable general discussion of this report. While there was unanimous condemnation of hand grenades and dry powder as extinguishers, there was divergence of opinion regarding the relative merits of carbon tetra-chloride and acid and soda machines. Among the objections to the acid and soda machine was that it was subject to corrosion and freezing and was not absolutely safe, occasionally bursting and resulting in injuries to employees or passengers. The carbon tetra-chloride machine, on the other hand, is criticized because of its small capacity, its small discharge openings which are subject to clogging and the tendency of its working parts to clog after long use. Considerable difficulty has also been experienced in protecting the latter type of machine from theft by automobilists.

Robert Scott, vice-chairman of the Committee on a Hand Book on Railroad Fire Prevention and Protection, reported that Mr. Rambo, the chairman, had undertaken to prepare a handbook in his capacity of manager of the Fire Loss and Protection Section of the Railroad Administration, and that this publication would soon be distributed among fire prevention officers of the railroads.

W. F. Hickey, superintendent insurance department, New Haven, read the report of the Committee on Fire Prevention and Protection of Wharves and Piers, of which he is chairman. It was a comprehensive and detailed discussion of proper construction of piers and extinguishing equipment and of the organization which should be maintained to prevent fires.

E. Wanamaker, electrical engineer, Rock Island Lines, read a paper on handling acetylene welding outfits in shops. An abstract will appear in next week's issue of the *Railway Age*.

Hale Holden, regional director, Central Western Region, addressed the association in the afternoon of the second day's session. He stated that it was fortunate that the fire protection association was organized several years ago, as it offers the Railroad Administration an opportunity to disseminate information and secure unified action through an agency already well established. He commended the work of the association, saying that next to safeguarding life and limb the conservation of railroad property from loss through fire was the most important duty of railroad men, the director general and the regional directors will energetically assist in promoting fire prevention. Regardless of the final solution of the railroad problem the elimination of fire losses will receive increased attention. It is a permanent part of railroad work.

C. N. Rambo was given the chair for a time to answer inquiries of members regarding work of the fire loss and protection section. He explained the two types of report forms he has prepared to be filled out and sent him monthly, one covering inspections made and other fire losses incurred.

The Membership of the Association

The report of the Executive Committee, read by Robert Scott, chairman, showed an increase in members during the past year of 14 and a loss through resignations of 10 members. The total membership to date is 122 men representing 67 railroads, one electric line, also the Railroad Administration, the Emergency Fleet Corporation, and the U. S. Steel Corporation. Nine members were reported with the colors.

Encouragement from the Director General

A telegram was received during the first day's session from Director General McAdoo commending the Association for its past work and pointing out its great opportunity for increased usefulness in the future as an agency for reducing the irretrievable economic loss resulting from fires on our railroads. In reply the Association telegraphed the director general its appreciation of the words of encouragement contained in his message and the assurance that every effort would be made by the organization and its members individually to make the program of the Fire Loss and Protection Section successful.

The report of the Committee on Fire Prevention and Protection in Terminal, Classification and Storage Yards, read by P. A. Bissell, general fire inspector of the Railroad Administration, was an elaboration of a report on the same subject submitted last year and abstracted in the *Railway Age*. In the discussion of the report, fire cars were highly recommended by those who have used them. E. W. Osborn, insurance inspector of the Northern Pacific, stated that but for fire cars the road's loss in the recent forest fires in northern Minnesota would have been a half million more. They did especially good service in the large yard in Duluth. This yard, containing 2,000 cars, was attacked by the fire at one extremity, and by dropping a suction hose into the bay from a fire car, the yard forces were able to cut off the conflagration. A progress report of the Committee on Oil Burning Appliances, B. S. Mace, chairman, was read. It contained tentative rules for storage and use of fuel oil and for construction and installation of oil burning equipments in railroad shops. Robert Scott, Atlantic Coast Line, was elected president of the association for the coming year; E. B. Berry, Southern Railroad, was elected vice-president, and G. L. Ball, Frisco, was re-elected secretary-treasurer.

Aero Alarm Company, New York and Seattle, had an exhibit of automatic fire alarms at the Hotel Sherman for the benefit of members of the association.

Convention of Railway Telegraph Superintendents

Censoring of Messages and Question of Standards for Railroad Administration Considered

THE ANNUAL MEETING of the Association of Railway Telegraph Superintendents was held at the Hotel Sherman, Chicago, on December 5 and 6. M. H. Clapp, manager of the Telegraph section of the United States Railroad Administration and president of the association, occupied the chair, and W. L. Connelly (N. Y. C.) acted as secretary of the meeting.

The president, in his opening address, discussed the changed conditions which began to occur after the last annual meeting which was held at St. Paul, Minn., in 1916. (*Railway Age Gazette*, June 30, page 1157.) These conditions which became more abnormal after the entrance of this country into the war entailed extra work on the members as railroad officers, which resulted in but few being able to find time to devote to association affairs. The annual meeting which was to have been held in Washington, D. C., in 1917, was finally postponed to conserve time and resources. The executive committee, however, issued a call for a special meeting, which was held at Chicago on November 22 and 23, 1917. At this meeting brief reports from the different special committees were considered, as was the conservation of telegraphing and telephoning over commercial and railroad wires. The shortage of operators, plans for schools of instruction and the emergency use of facilities in the operation of railroads to meet the war situation were also discussed. The president outlined the conditions brought about by the government assuming control of the railroads the first of the year and spoke of the proposed amalgamation of the various railroad associations. He further stated that while the association had not made much progress during the last two years the outlook for the future was decidedly bright.

Committee Reports

Reports were submitted by special committees 1, 2, 5, and 7, while committees 3, 4, and 6 also presented brief reports. Special committee No. 1, reporting on The Construction and Maintenance of Outside Plant, wished to decide certain fundamental principles for use in writing pole line specifications and the following questions were presented for decision:

(a) Shall the pole lines be designed to have a factor of safety in construction under certain assumed loadings of ice and wind for the territory in which they are located, and the ultimate number of wires to be placed on them?

(b) The committee recommended that the different wind pressures to be assumed be 2, 4, 6, and 8 lb., which are produced by wind velocities of 33.5, 49, 61.5, and 72 miles, respectively. The different ice loads recommended were $\frac{1}{2}$ in., $\frac{3}{8}$ in., $\frac{1}{4}$ in., $\frac{1}{8}$ in., and no coating of ice on the conductors.

(c) The factor of safety to be used in connection with pole line structures was recommended as two, except where the poles are located within striking distance of main tracks, in which case there shall be a factor of safety of three.

(d) The classes of poles recommended for use are class "AA," "A," "B," "C" and "D" (present Western Union standards).

(e) It was recommended that the lowest wire on pole lines should clear the ground by at least 10 ft.

(f) It was recommended that pole lines having capacities for 6, 10, 20, 30, 40, and 50 aerial wires be considered standard, and that specifications for 60, 70, and 80 aerial wires be provided but not to be used except in special cases.

(g) It was recommended that the minimum spacing between poles be 75 ft. and the maximum 130 ft.

(h) The committee recommended that storm guys should not ordinarily be considered a part of the pole line structure when figuring the necessary strength for carrying the different wire loads, but should be used in order to keep down the vibration of the lines when they are subjected to storm conditions.

Committee No. 2, reporting on The Construction and Maintenance of Inside Plant, submitted to the meeting a report covering the location, installation and wiring of equipment for the ordinary way station.

Committee No. 5, reporting on Protection Against Lightning and High Tension Circuits, made the following recommendations:

(a) All wires should enter the stations through line fuses of 7 to 15 ampere capacity with cutout of the so-called self-cleaning air gap or vacuum type on the office side of the line fuses. Reports on vacuum arresters indicate that for the present it would be advisable to use an air gap arrester in multiple with each vacuum arrester. This recommendation is based on information that vacuum arresters now in service on railroad telephone lines do not maintain their low voltage breakdown at all times. Future developments may eliminate the necessity of air gap arresters in parallel with vacuum types.

(b) Low ampere fuses, $\frac{1}{2}$ to one ampere, should be used between the arresters and the telephone equipment.

(c) After installation, reasonable maintenance being assumed, protectors used at telephone stations owned by railroads shall not break down on voltages below 350 volts d.c., but should break down at 750 volts d.c.

Committee No. 7, reporting on Railroad Message Traffic, presented to the meeting a report and recommendation of the requirements that must be met in order to justify the installation of the printing telegraph.

Elimination of Unnecessary Telegraph and Telephone Business

The president, as manager of the Telegraph section of the Railroad Administration, in speaking of Circular No. 61 issued by the director general under date of October 25 with reference to relieving the railroad telephone and telegraph facilities from unnecessary business, stated that the circular was based on a resolution adopting a report of the special committee at the meeting held at Chicago on November 22, 1917. A brief comparison was then made between Circular No. 61 and the special report. In this connection the form of traingram envelope and blank was discussed and the president announced he was working on the compilation of a cipher code for the Railroad Administration for use in obtaining brevity in telegraphic transmission, and that he has already recommended that the symbol system be made the standard.

A plan for the establishment of a standard system of censoring was presented and discussed, also the question whether telegrams should be censored before or after transmission.

With reference to the establishment of a standard system of censoring, which has been started but not yet completed, it is the intention to place a censor in the office of the Telegraph section at Washington as well as in the offices of the regional directors and on the various railroads. The work of each censor should be done under authority given by the highest officer of the organization to which he is assigned. It shall be their duty to go over messages sent over railroad wires, and it will be necessary for them to visit different offices as occasion arises. Censors should be furnished with copies of messages sent over commercial wires by railroad employees, and it is to be the duty of the censors to take up with the officers and employees over whom they have jurisdiction any violations of Circular No. 61. It has not been

definitely decided whether telegrams should be censored after transmission or before they are sent.

Adoption of Standards

Referring to standards the president stated it to be his intention as manager of the Telegraph section to develop and fix certain standards in conjunction with the Association for the use of the railroads under federal control in connection with telegraph and telephone facilities; this subject being brought up to obtain the views of the members of the Association. In considering the establishment of standards it was felt that they could be listed under the three heads of outside plant, inside plant and traffic.

Some of the standards suggested for establishment in connection with outside plant are pole lines, underground construction, wire crossings, transpositions, installations of cables, terminal pole construction, maintenance rules for linemen and gangs, and specifications for different items of material.

Under inside plant some suggested standards cover such subjects as switchboards of all classes and sizes for telegraph and telephone circuits, single line telegraph circuits, concentration units, equipment arrangement in railroad telegraph and telephone offices, wiring of telephone sets, selector telephone circuits and systems, jack boxes for telegraph and telephone circuits, phantom telephone circuits, block telephone circuits, general specifications for location and wiring of equipment and a handbook of standard telegraph and telephone circuits. In connection with inspection and manufacturers' specifications and instructions for telephone and telegraph material it was felt that consideration should be given to such items as batteries, concentration units, telephone receiver and transmitter cords, jack boxes, telephone and telegraph selectors, desk and wall telephone sets, telephone sets for blind sidings, cables for office and outside use and wire.

Under the head of traffic, subjects for consideration were operating rules, symbol system, mailgram system, standard message blank, the placing of the initials of the railroad after the signature on messages, plan for numbering messages and standard wire signals.

The president, in suggesting the subjects outlined above, wished to obtain the views of the association as a guide and stated it was his intention to include in his lists, in so far as practicable, such standards and specifications as were agreed upon by the association.

There were registered at the opening sessions 86 active members, 14 associate members and 34 visitors and guests. Recommendations on pole lines were amended to make the maximum spacing of poles 140 feet. The subcommittee of Committee Number One, on underground conduits, submitted amendments to the recommendations. During the discussion of the report of Committee Number Two, the importance of proper protection for office equipment was brought up. This matter was also considered by Committee Number Five in connection with protection against lightning in high tension circuits. It is particularly necessary that proper protection be furnished where high tension lines parallel telegraph and telephone lines, one railroad having had seven stations destroyed in four years, due to inductive surges.

The report of Committee Number Five shows that 46 different types of lightning arresters are used on railroads with ampere fuse capacity ranging from one-half to 20 amperes. A number of types of grounds are in use and investigations show that no regular method of testing these grounds are adopted by the various railroads. It was recommended that standard grounds be presented, as well as standard methods of testing them, and that some standard form of systematic inspection be adopted in order to provide standard practice for the roads.

General News Department

The governor of Florida, in a message to a special session of the Legislature on November 29, recommended the abolition of the State Railroad Commission. The governor suggested that if and when the railroads shall be returned to their owners, the commission can be re-established.

The landing place for the airplane mail carriers, flying from Washington to New York, has been changed from Belmont Park, 20 miles east of New York, to Elizabeth, N. J., 12 miles west of New York. The post office department expects to have airplanes carrying mail regularly between New York and Chicago on and after December 1.

A recommendation of army engineers that the Interstate Commerce Commission be required to exercise the same supervision over water carriers that it does over rail carriers, is contained in a report on the development of transportation on the Ohio river, forwarded to Congress by the Secretary of War. The engineers also recommend that the commission be authorized to fix minimum and maximum rates for freight movement by water.

Correction

In the list of firms to whom space had been allotted for the 1919 Annual Exhibit of the National Railway Appliances Association, published in our issue of November 22, page 936, the name of the Ramapo Iron Works, Hillburn, N. Y., was omitted. This company was allotted space at the same time the other firms received their allotments and its name should have appeared in the original list.

Transportation Conference

The Chamber of Commerce of the United States has called a conference representing the various interests of the nation—financial, commercial, industrial, agricultural, labor, civic, social, and governmental—affected by transportation, to meet in Washington December 12 and 13. The purpose is an exchange of views with respect to future control and ownership of the transportation agencies. This is only the first of a series of conferences which it will be necessary to hold before any declaration can be made.

Railway Engineers to Be Demobilized

The department of military railways, like many other war activities, is winding up its affairs as rapidly as possible. While many of the railway forces abroad will undoubtedly be required there for some time, certain units have been assigned to early convoys for return to this country, according to an announcement by General March, chief of staff, and he included also 38,000 men in railway engineers and special units as among the troops designated for demobilization in the United States. S. M. Felton, director general of military railways, hopes to be able to complete his work in Washington and to return to Chicago in about two months.

To Assist Discharged Soldiers in

Obtaining Employment

Representatives of the United States Employment Service are to be stationed in all army camps and stations in this country to assist discharged soldiers in securing suitable civilian employment, according to an arrangement made effective between the War Department and the Department of Labor. Under this arrangement, agents of individual companies will not be allowed to enter the camps to recruit labor for any particular enterprise or solicit or make contracts with discharged soldiers. All employers desiring to

employ discharged men should communicate at once with the federal directors for the states in which their work is located. It is also provided that the railroad and fuel administrations, the Shipping Board and the post office department may send accredited representatives to the camps to furnish the camp commanders with information as to opportunities for employment, but such representatives will not be permitted to deal directly with the men themselves.

Tie Producers

The proposed meeting of Railroad Tie Producers' Association has been again postponed, because of a renewed outbreak of influenza. The meeting will probably be held at St. Louis in the fourth week in January, in connection with the convention of the American Wood Preservers' Association.

Yardmasters Form New Association

At a meeting held in Cincinnati on December 1, six organizations of yardmasters and terminal officers were consolidated to form the "Terminal Railroad Yardmasters of America," intended to be a national organization. Among the associations represented are the National Association of Yardmasters, the Terminal Officers' Association of America, the Brotherhood of Railroad Yardmasters and the Railway Yardmasters' Association of America. F. N. Mason, C. M. & St. P., Milwaukee, Wis., formerly grand president of the National Association of Yardmasters, was elected president, and Frank X. Luxman, "Soo Line," St. Paul, Minn., was elected first vice-president. The promoters say that the new organization represents a membership of 2,500 men. Headquarters will be established at Columbus, Ohio.

Banker Modifies Stand on Government Ownership

John J. Mitchell, president of the Illinois Trust & Savings Bank, Chicago, whose espousal of government ownership was quoted in the *Railway Age* of November 29, has since modified his attitude toward the solution of the railroad problem. In an interview made public on December 3, he recommends the operation of the railroads through an organization similar to that of the federal reserve banking system. According to his plan, a board of control, with headquarters at Washington, would be appointed in a manner to be determined by Congress and would consist of the foremost men in the country. This board might be made up of seven members with either three railroad men as a minority or four railroad men as a majority. There should then be appointed regional directors, seven in number, possibly, covering the entire country. The properties might remain under their present ownership for operation, but subject to the supervision of the regional directors and in turn to the final authority of the government board at Washington.

"Soldiers First!"

This is a new slogan on the Canadian Pacific. A. D. MacTier, vice-president, has posted a bulletin which reads in part: "It is desired that all officers and employees concerned shall, in so far as possible, place themselves in the position of the father, mother, wife, sister or other relative of the returning soldiers, and deal with them as they would wish to be dealt with under similar circumstances. . . . Troop trains are to be given every possible despatch . . . and are to be given preference over all other trains including regular passenger trains.

"Station staffs at destination points should be fully and promptly advised of the expected time of the arrival of troop trains, with all particulars available as to the names of steamships from which the passengers come, and any other known details. Operators should keep in close touch with the movements of the trains so that the information posted may be up to the minute. Train inquiry clerks as well as all other station staff concerned will be expected to deal courteously and patiently with all inquiries, giving them correctly and clearly the fullest information possible in response to their inquiries."

The Railway of the Forty-fifth Parallel

The railway across Europe following the forty-fifth parallel which for many years has been a favorite subject of discussion by various French interests has again been brought up for consideration. Press despatches from Paris under date of November 24 tell of an interview in L'Information with Jules Cels recently appointed Under Secretary of Public Works and Transport in which in speaking of the work of his department, he says:

"Studies are being made of a plan for a great international railway route from Bordeaux to Odessa. There is also a committee studying the project of constructing a tunnel under the English Channel and another through the Vosges Mountains, west of Alsace."

The general line suggested follows the forty-fifth parallel of latitude and runs from Bordeaux to Lyons, then to Milan, Venice and Trieste, thence by way of the Save Valley to Agram, the Jugo-Slav center, and thence to Belgrade, Bucharest and Odessa. Most of the railway links in this chain are already constructed, but they are under various administrations, and there are unfinished links, chiefly across Jugo-Slav districts.

Records of Passenger Train Performance in the Northwestern Region

Although unnecessary duplication of passenger service has been eliminated by the Railroad Administration, the rivalry which formerly existed between the roads in the matter of maintaining published schedules has not been abolished. In the Northwestern region the performance of passenger trains is summarized in monthly reports, showing for each road the number of trains operated, the number on time and those arriving at destination from 15 to 30 minutes, from 30 to 60 minutes and one hour or more behind the schedule. Similar data are shown for the trains received from connecting lines.

The reports show that during the month of September the total number of trains operated was 7,574, of which 5,711, or 75.4 per cent, arrived at the destination on time; 659 were 15 to 30 minutes late; 686 were 30 minutes to one hour late, and 518 more than one hour late. This included 419 trains received late from connecting roads. In October the total number of trains was 7,862, of which 5,938, or 75.5 per cent, arrived on time. There were 674 from 15 to 30 minutes late; 703 from 30 minutes to one hour late, and 547 one hour or more late. The trains received late from connections numbered 435. Among the individual roads, one of the best showings was that of the Chicago, St. Paul, Minneapolis & Omaha. This road operates about 800 passenger trains each month, and during September and October 88 per cent of these arrived at the terminal on time.

Campaign Against Car Thieves

Reports from the secret service of the Railroad Administration indicate that the campaign for the apprehension of car thieves is progressing with very satisfactory results. Last week, Monday, merchandise valued at \$4,006 was recovered at Bessemer and Blue Creek, Ala., from a "fence" there and several arrests were made. At Halifax, N. C., an employee of the Atlantic Coast Line and five citizens of local prominence were arrested in connection with a series of car robberies extending over a long period. One of the defendants

committed suicide. Several thousand dollars' worth of goods were recovered. At Detroit, last Friday, four "receivers," having in their possession 4,930 half pints of whiskey, stolen from the Wabash Railroad, were arraigned. On Saturday an 18-year-old express messenger between Washington and Philadelphia was arrested by the railroad inspectors. He had been stealing property from trunks in express cars mounting into the thousands of dollars. His method was to break open trunks, rifle the contents, and then throw the trunks into a river while the train was crossing the bridge. Much of the property stolen in this manner was recovered in Washington and returned to its owners.

Airplane Activities in Time of Peace

The latest revision of the Post Office Department's announcement concerning the establishment of an airplane line for carrying letters between New York and Chicago shows the date for beginning the service as December 15. The rate for letters by airplane, which now is 16 cents, is to be reduced to six cents an ounce; but the change is a reduction only in name as the present rate includes ten cents for special delivery which, under the new arrangement, will be optional with the sender. It is planned to have the airplanes deliver letters, both at the terminals and at way stations, at the proper time to be taken out by the regular letter carriers; and this applies to the New York and Washington as well as to the New York and Chicago line. Faster machines are to be put in use between New York and Washington, with the intention of insuring arrival of the mail in time for the regular delivery in the afternoon.

The airplanes take only first-class mail, but this includes packages, sealed, measuring not over 30 inches in length and girth combined.

The New York-Chicago air route will be divided into three legs. Starting from Elizabeth, N. J., the first regular stop will be Bellefonte, Pa., with an emergency landing field at Lehighton, Pa.; the next regular stop will be at Cleveland, Ohio, with an emergency landing place at Clarion, Pa., and the final leg from Cleveland to Chicago, with a stop at Bryan, Ohio, to take on and discharge mail.

A new type of seaplane, which is now being tried by the navy department, designated N. C. 1, made a flight at Rockaway, L. I., near New York City, on November 27, carrying 50 men. This machine was equipped with three Liberty motors, with a combined energy of 1,200 hp.

An army airplane of 400 hp., a "De Haviland Four," arrived at New York on November 30 from Dayton, Ohio, in four hours, 10 minutes from the time of starting, no stop having been made. The air line distance is calculated at 550 miles, making the average rate of speed 132 miles an hour. This machine arrived at Mineola, about 20 miles east of New York City Hall, at 3:10 p. m., with only half its gasoline used up.

The War Department has turned over to the Post Office Department 100 De Haviland No. 4 and twelve Handley-Page airplanes. The De Haviland fours will carry 400 lb. and the others are large bombing planes, capable of carrying a ton or more.

Investment Bankers

The seventh annual convention of the Investment Bankers Association of America will be held at St. Louis, Mo., next Monday, Tuesday and Wednesday, December 9, 10 and 11. John E. Oldham, of Boston, Mass., will present the report of the committee on Railroad Securities, of which he is chairman, on the first day.

New England Railroad Club

The December meeting of the New England Railroad Club will be held at the American House, Boston, next Tuesday evening, and the subject for discussion is fuel conservation, with an address by Robert Collett, assistant manager of the Fuel Conservation Section of the United States Railroad Administration.

Traffic News

Grain loading up to November 9, this year, has amounted to 568,565 carloads, as compared with 437,550 in the corresponding period of 1917.

Free storage of I. c. l. freight, after December 17, will end 24 hours after arrival, according to notices which have been circulated at Baltimore, Md.

Bituminous coal production and distribution are now so satisfactory that abolition of all price and zone restrictions are likely to be removed on December 15. Anthracite distribution, however, remains a problem.

In order to permit the full utilization of cars in the shipment of tobacco, a plan for the adoption of a so-called "standard hoghead" which will allow double tiering in box cars used for this purpose is being worked out by the Railroad Administration in conjunction with the War Industries Board. Tobacco to be used in the manufacture of cigarettes, chewing and smoking tobacco, is carried in hogheads 48 in. by 52 in., 48 in. by 56 in. or 48 in. by 60 in., which does not permit of full utilization of car room. An effort is being made to have adopted a standard hoghead 46 in. by 48 in., which it is hoped will save one third of the cars now used.

Standard Ticket Forms Approved

The report of the Railroad Administration Ticket Committee has been completed and approved to be effective December 1. The report covers standard forms of passage tickets, conductors' cash fare receipts and exchange tickets, ticket orders, furlough fare certificates, clergy certificates, sleeping car tickets, parlor car tickets, and baggage checks.

The club car has been restored on the Congressional Limited between New York and Washington.

Export Bills of Lading

The Trans-Pacific Export Bill of Lading Agency is to be established December 15, at 143 Liberty street, New York City. C. H. Morehouse, agent, to attend to the issuance of export bills of lading, for goods going across the Pacific ocean. The shipper will be required to make all necessary copies of bills of lading, and he must himself see to all bookings with steamship lines. Railroad permits are required in all cases and may be obtained by the exporter or shipper through his Pacific coast representative. Advices of clearances at ports of exit, when required, must be obtained by exporters or shippers through the agency with whom the booking was made.

Soft Coal Production Improves

The steady decline in the production of bituminous coal from 13,000,000 tons a week in September to less than 10,000,000 tons seven weeks later, has come to an end. The Fuel Administration reports that in the week ending November 23, production rose to nearly 11,000,000 tons, a gain of 12.5 per cent. The total production of bituminous coal and lignite, including coal coked, from April 1 to November 23 is estimated at nearly 400,000,000 net tons, a gain over the corresponding period of 1917 of 40,000,000 tons, or 11 per cent. For the first time this year there is a drop in production because of no market. The transportation change in the period of a few weeks is declared to be significant because it is indicative of the possibility of a reversal later with a return of unfavorable conditions. This condition has been brought about by the accumulation of stocks made possible by the heavy shipments during the last four months, the possession of which has taken the keen edge off the industrial demand.

The railroads during the week ending November 16 loaded 195,423 cars of all kinds of coal, as compared with 245,317 during the corresponding week of 1917. The total increase in coal loading for the year up to November 23 is estimated at 630,539 cars.

Commission and Court News

Interstate Commerce Commission

C. C. McCain, agent, has filed a fifteenth section application for increased class and commodity freight rates from stations in New England and Trunk Line territories subject to New York, Philadelphia, Baltimore, Scranton, Williamsport, Cumberland, Albany or Syracuse rates, or points basing thereon, to points in Trunk Line Association territory, St. Paul, and points taking the same rates or rates basing thereon, and to points in Trunk Line territory where rates are made with relation to New York to Chicago rates, also increased class rates from Norfolk, Va., and other points to Buffalo, St. Paul, and points basing thereon, and points in C. F. A. territory, to restore differentials and relationships temporarily disarranged under the blanket 25 per cent supplements.

Personnel of Commissions

John A. Shirley, who has been district inspector of locomotive boilers for the Interstate Commerce Commission at San Antonio, Texas, since 1911, has been nominated by the President for appointment as assistant chief inspector, succeeding Garland P. Robinson, resigned.

Court News

Removal of Industry Tracks

In a suit in equity to enjoin the removal of a spur track in Pawtucket, R. I., which was being done under the Rhode Island grade crossings, act of 1911-12, the Supreme Court of that state holds that the power to eliminate grade crossings at a certain point includes the power to remove spur tracks at such point to another location; such power being necessary to enable the railroad to continue serving the public as a carrier. Such removal without compensating the merchants and industries using such spur tracks for their loss in being deprived thereof, is not in violation of their constitutional rights; the custom of railroads in furnishing such facilities gives the merchants no property rights therein. The statute is not unconstitutional as taking property of the railroads without compensation therefor, no property being taken, and the right given to the railroad by the state to have a track at the location of such crossing is subject to the police power of the state to require abandonment of a crossing when public safety demands it. The bill was therefore dismissed.—*Armour v. New York, N. H. & H. (R. I.)*, 103 Atl. 1031. Decided June 19, 1918.

"Doing Business"—Effect of

Government's Taking Over Railroads

The Federal District Court for the Southern District of New York holds that a foreign railroad corporation which had formerly maintained an office in New York where it solicited business cannot be deemed "doing business" in that state during the period when it was dismantling the office and preparing to abandon it, pursuant to order of the United States Director of Railroads. Whatever in the way of "doing business" in the state had theretofore gone on ceased on April 25, 1918, as the result of the taking over of the railroads by the government and the order that was given. It also holds that where a Virginia railroad company which maintained no lines in New York solicited passenger and freight business in New York, it was not thereby "doing business" there, as the solicitors merely sought to obtain business, received no money for freight, and issued no tickets for transportation of passengers; hence service of process on one of the company's New York solicitors would not give the New York court jurisdiction.—*Partola Mfg. Co. v. Norfolk & Western*, 250 Fed., 273. Decided July 2, 1918.

Equipment and Supplies

Locomotive Deliveries

A total of 52 new locomotives were shipped to railroads under federal control during the week ending November 23, of which 49 were of the U. S. R. A. standard types, as follows:

Works	Road	Number	Type	Individual engine No.
American	Wabash	17	USRA Mikado	2047
	Pa. Lines West.	3	USRA 6 W. Switch.	7047, 52, 55
	Pa. Lines West.	1	Switch	7049
	Col. N. J.	4	USRA 6 W. Switch.	104-7
	H. V.	4	Mallet	221-2
	E. P. & S. W.	3	USRA Mikado	204-1
	N. Chatt. & St. L.	4	USRA Mikado	57-1, 3
	N. Y. C.	2	USRA W. Switch	477, 479
	Southern	3	USRA W. Switch	178-1, 2
	Total	39		
Lima	N. Y. C.	5	USRA Mikado	5152-6
	C. C. C. & St. L.	6	USRA Mikado	600-10
	A. C. L.	1	Mikado	7-2
	G. N.	1	Mikado	136
Baldwin	Total	8		
	Grand total	52		

Ten USRA Mikado numbers 2211-20 constructed for the Wabash and three USRA Mikado 391-3 constructed for the El Paso & Southwestern were sent to Cleveland, Ohio, to be stored as part of an emergency pool.

Cars Built in Railroad Shops

A total of 765 new freight cars and 2 passenger cars were constructed in railroad shops during October, according to a statement by the Railroad Administration. The details follow:

Class of cars	Steel	Steel underframe	Steel center sills	Wood	Total
Passenger:					
Passenger luggage	1	1	1	1	2
Total passenger equipment	1	1	1	1	2
Freight:					
Stock	2	1	1	60	64
Hopper	2	1	1	144	151
Gondola	7	1	1	22	29
Flat	3	1	1	17	22
Coke rack	1	1	1	1	4
Work cars	4	1	1	8	12
Miscellaneous freight cars	1	1	1	1	4
Caboose	1	1	1	1	4
Box	1	1	1	186	190
Refrigerator	1	1	1	1	4
Total freight equipment	13	14	17	447	491
Total passenger and freight	15	16	17	447	491

Locomotives

THE UNITED STATES RAILROAD ADMINISTRATION, as briefly reported in last week's issue, has reinstated the orders for 500 locomotives from the American Locomotive Company and 100 from the Lima Locomotive Works, which had been held up for about a week. Director General McAdoo announced the execution of the contract with the American Locomotive Company on December 4, stating that the contract with the Lima company would be signed in a few days. The announcement stated that these two contracts involve about \$40,000,000 and have been awarded on a basis to yield the locomotive builders approximately 6 per cent on cost. The locomotive builders guarantee the government against any increase above the stipulated price on account of wages or overhead expenses, while the cost of the principal materials will be regulated by the government through the price-fixing committee. The delay is explained as having been due to the uncertainty of conditions as they appeared immediately after the signing of the armistice. Director General McAdoo directed that the orders be held up pending an investigation to ascertain whether the railroad corporations would pay for the engines, but after the operating department had reported that they were needed it was decided to authorize that the work be again taken up.

Freight Cars

THE RUSSIAN GOVERNMENT has recently reinstated orders for 4,000 of the freight cars it had previously ordered and later cancelled. The American Car & Foundry Company will build 2,600 and the Standard Steel Car Company 1,400.

Miscellaneous

COLORADO & SOUTHERN.—This road has awarded a contract to Fairbanks, Morse & Co., Chicago, for the construction of a 300-ton capacity bucket-conveyor type, coaling station at Seventeenth and Champa streets, Denver, Colo. The plant will deliver coal to engines on two tracks and will be operated by a 15-h. p. oil engine, Fairbanks-Morse type Y. The station will have a concrete foundation and a wooden superstructure, and the engine house will be constructed of concrete.

Signaling

PENNSYLVANIA RAILROAD, Eastern Lines.—An electro-mechanical interlocking machine is to be installed at Gunpowder, Md. It has been ordered from the Union Switch & Signal Company.

MISSOURI, KANSAS & TEXAS.—Automatic block signals are to be installed between New Franklin, Mo., and Sedalia, 39 miles. The material will be furnished by the Union Switch & Signal Company.

NEW YORK CENTRAL.—A 36-lever style "A" mechanical interlocking machine is to be installed at New Durham, N. Y. The interlocking machine will be furnished by the Union Switch & Signal Company.

LEHIGH VALLEY.—A 20-lever, style "A," mechanical interlocking machine has been ordered from the General Railway Signal Company for Glendon, Pa.; also a 16-lever electro-mechanical interlocking for Park Place, Hazelton, Pa.

PENNSYLVANIA, Western Lines.—A contract has been awarded to the Union Switch & Signal Company, Swissvale, Pa., for the installation of automatic block signals on five miles, double track, between Clymers, Ind., and Logansport.

CHICAGO, ROCK ISLAND & PACIFIC.—Three 16-lever and one 12-lever mechanical interlocking machines and 17-d. c. style "S" signals have been ordered from the Union Switch & Signal Company, to be installed by railway signal forces at Clio, Iowa; Paxico, Kan.; Tindall, Mo., and Bishop, Kan.

CHICAGO, BURLINGTON & QUINCY.—An order has been given to the Federal Signal Company for automatic block signals at various points as follows: South Aurora, Ill., to Savanna, 104 miles; Creston, Iowa, to Pacific Junction, 82 miles; Pacific Junction, Iowa, to Gibson, Neb., 24 miles; Napier, Mo., to Table Rock, Neb., 48 miles; Guernsey, Wyo., to Wendover, 8½ miles. All signals on single track will be operated under the absolute permissive block system.

VIRGINIAN.—The necessary signal material has been ordered for an installation of a c. automatic block signals on 13 miles, double track, between Gilmerton, Va., and Sewall's Point. In this district two new a. c. electric interlocking plants and one mechanical interlocking plant with power signals will be installed. The present interlockings, consisting of three mechanical and two d. c. electric plants will be enlarged and remodeled. Material has also been ordered for the installation of 15 miles of a. c. automatic block signals, on account of double tracking, between Clark's Gap, W. Va., and Mullens.

THE DANISH STATE RAILWAYS for a long time have been in need of more freight cars and have now ordered 750 from the "Scandia" factory in Randers, Denmark. This will give work to 500 people who have been unemployed. A set of wheels for a freight car before the war cost \$40, while now they cost \$348.—*Commerce Reports.*

Supply Trade News

William T. Van Dorn, president of the Van Dorn Automatic Coupler Company, Chicago, died at his home in that city on November 29.

William Casey, formerly manager of the Canadian Locomotive Company, Ltd., Kingston, Ont., has been appointed to the position of general manager.

L. C. Sprague, district manager of sales of the Chicago Pneumatic Tool Company, at New York, has been appointed assistant secretary, with headquarters at 52 Vanderbilt avenue in that city.

William M. Kinney, inspecting engineer for the Universal Portland Cement Company, Chicago, has been appointed general manager of the Portland Cement Association, with headquarters at Chicago.

The Walter A. Zelnicker Supply Company, St. Louis, announces the appointment of **Joseph Meyerson** as secretary to the president. Mr. Meyerson was associated for 10 years with the Southwestern Tariff Bureau, latterly as secretary to F. A. Leland.

C. B. Matthal, an attorney for the Union Pacific corporate organization, has been elected secretary of the McKeen Motor Car Company, of Omaha, Neb. He succeeds **C. W. Y. Loucks**, who resigned recently as secretary and sales manager to enter the officers' training camp at Plattsburg, N. Y.

J. K. Mahaffey has been appointed sales manager of the Pittsburgh district for the Edison Storage Battery Company, with office at Pittsburgh. Mr. Mahaffey has been with the Edison Company for the last two years. He served for several years with the General Electric Company, and a number of other electrical concerns.

George T. Cooke has resigned as eastern sales manager of the Vapor Car Heating Company, Inc., to accept the presidency of the Union Metal Products Company, with office in the Singer building, New York. Mr. Cooke was born in Chicago on May 28, 1883. After receiving a technical and mechanical training he entered the employ of the Pullman Company in 1901 as draftsman. Later he was made chief draftsman of the Calumet repair shops, and subsequently was promoted to chief inspector and finally mechanical inspector. In 1911, he left the Pullman Company to become southern manager for the Chicago Car Heating Company, at Atlanta, Ga., and in 1913, he was transferred to this company's New York office as eastern manager. When the Chicago Car Heating Company and the Standard Heat & Ventilation Company, Inc., were absorbed by the Vapor Car Heating Company, Inc., in 1917, Mr. Cooke was made eastern manager, in charge of sales and mechanical matters in the eastern territory, which position he held until the first of this month, the date of his connection with the Union Metal Products Company as president.

John E. Galvin has been elected president of the Ohio Steel Foundry Company, of Lima, Ohio. Mr. Galvin has been operating vice-president since the organization of the

company in 1907. In 1916 he built a converter and electric foundry at Springfield, Ohio, for the manufacture of small steel castings, and later sold it to the Ohio Steel Foundry Company. This plant is now known as the Springfield works of that company.

Bertram Smith, heretofore district sales manager at Detroit, has been appointed assistant general sales manager of the Edison Storage Battery Company, with headquarters at the main office, Orange, N. J. Mr. Smith is one of the old-timers of the storage battery business, having formerly been with the National Battery Company.

R. W. Burnett has resigned as master car builder of the Delaware & Hudson to become associated with the Joliet Railway Supply Company as assistant to the general manager, and with the National Car Equipment Company as vice-president, with headquarters at Chicago. Mr. Burnett was born at Farmer City, Ill., in 1868, and in 1890 became connected with the Union Pacific in the car department at Denver, Colo. In 1892 he went to the Pennsylvania as a car inspector at Chicago, and from August, 1892, to July, 1899, was successively foreman and general foreman of the car department of the Lake Shore & Michigan Southern, at Chicago. During the early part of 1900 he was employed as general foreman of the car department of the Long Island, going to the Central Railroad of New Jersey the latter part of the year as general foreman of the car department at Elizabeth, N. J. From 1904 to January, 1907, he was successively assistant master car builder and master car builder of the Erie at Meadville, Pa. On the latter date he went to the Canadian Pacific as assistant master car builder, being made general master car builder in 1909. He left the latter road in November, 1915, to become vice-president of the National Car Equipment Company, returning to railway service on September 1, 1917, as master car builder of the Delaware & Hudson.

R. W. Burnett



G. T. Cooke

William P. Dalton, formerly for many years chief engineer of the Schenectady plant of the American Locomotive Company, has been appointed assistant manager of the Schenectady works of the General Electric Company. For the last three years, Mr. Dalton has been with the Washington Steel & Ordnance Company, engaged in war work. He was graduated from Cornell University in 1890.

Lieutenant Clarence E. Holborn was instantly killed in an airplane accident at Call Field, Wichita Falls, Texas, on December 3. Lieutenant Holborn, previous to entering the military service, had been in the advertising department of the Hyatt Roller Bearing Company, New York. After leaving school he entered the service of the Simmons-Boardman Publishing Company, publisher of the *Railway Age*, and for a number of years was connected with it in various capacities in the business and advertising departments.

W. C. L. Lamot, of Antwerp, advises that he is about to return to that city and would like to get in touch with any American firms who desire to establish an agency in Belgium. Mr. Lamot was established in Antwerp from 1907 until the outbreak of the war, as an importer, exporter and shipping agent on his own account and had extensive business connections in both the industrial and commercial world. Since 1914 he has been acting as general merchant and commission agent in London, supplying many Belgian and British airplane, munition, and engineering works. To facilitate matters he has given the *Railway Age* a list of his connections

as well as references. His present address is 22 Northumberland avenue, London, W.C.2.

L. E. Schumacher, who for the past eight years has been chief inspector of the Westinghouse Electric & Manufacturing Company, at East Pittsburgh, Pa., has been promoted to works manager of the Krantz Manufacturing Company, of Brooklyn, N. Y., the latest subsidiary of the former company. Mr. Schumacher has been with the Westinghouse Electric & Manufacturing Company, 18 years prior to which he was with the Niagara Falls Power Company. The Krantz concern makes safety switches, panel boards and floor boxes.

Trade Publications

BOILER TUBE CLEANERS.—A general catalogue, X-4, has been issued by the Lagoda Manufacturing Company, Springfield, Ohio, describing in detail the boiler tube cleaners, and accessories and other boiler room appliances manufactured by this company, and stating the work for which each type of cleaner is best adapted. All are illustrated and a number of sectional views are shown with the parts named.

IRON AND STEEL PRODUCTS.—A new edition of the Interstate Blue Book has been published by the Interstate Iron & Steel Company, Chicago. This book contains 204 pages and gives complete information regarding all Interstate products. Bars, bands, angles, channels, tees, flats and special shapes are shown with sizes listed for both wrought iron and high or low carbon steel, and the many other products of the company, including wire and wire products, staples and rivets are fully illustrated and described. The book contains the National Iron & Standard Steel classifications of price extras, as well as a number of weights and gages and other valuable information conveniently arranged for ready reference. The alloy and special analysis steels from the South Chicago plant are also described.

RAILROAD WATER SOFTENING.—The Wm. Graver Tank Works, Chicago, has issued a treatise on the subject of water softening which consists of a collection of 31 reprints of full-page advertisements appearing in the *Railway Age*. These advertisements are unusual in that little or no reference is made to any particular make or type of water softener, the material being almost entirely in the nature of a comprehensive exposition of the entire subject. Of particular note are 12 sheets presented in the form of articles covering various phases of this subject, prepared by W. R. Toppan, manager of the railroad department of the W. Graver Tank Works. These appear with such titles as "Operating Efficiency Increased by Purifying Water," "Water Softening in Relation to Ton Mileage," "The Method of Water Treatment Determines the Uniformity of Results." In addition to these 31 pages there is an 8-page appendix on the chemistry and economics of water softening. This service to combine in a very short space a large amount of information required by the water service engineer in solving the problems arising in his work.

PROPOSED BRANCH TO PUKOW RAILWAY.—Last year the merchants of Chinkiang, China, and Yangchow petitioned the Ministry of Communications to extend the Pukow-Sinyang Railway to Kwachow, which is near Yangchow and opposite Chinkiang. It is proposed that the extension should be effected by building a line from Wuyi, on the Tientsin-Pukow Railway, to Kwachow, a distance of some 60 odd miles. Owing to the impossibility of securing necessary funds for the work no progress is being made with the Pukow-Sinyang Railway, and seeing that the government is unable to do anything at the present moment with their project the chambers of commerce of Yangchow and Chinkiang have decided to raise the necessary funds themselves and start the building of the connecting line at once. The two chambers of commerce are now planning the issue of debenture bonds to secure the capital. Kwachow, Yangchow and Chinkiang are important trading centers through which the abundant products of the Eastern Kiangpei must pass, and it is believed that as soon as rail connection is completed which will make these three cities accessible to the Tientsin-Pukow line, and the Pukow-Sinyang line, the trade development of these localities will be materially quickened.—*The Far Eastern Review*.

Railway Officers

Railroad Administration

Central

Luther M. Walter has resigned as assistant director of the Division of Public Service and Accounting of the Railroad Administration to return to his law practice in Chicago as a member of the firm of Borders, Walter & Burchmore, and he will also become one of the general counsel for the National Association of Owners of Railroad Securities, which is planning to conduct an active campaign for the return of the roads to their owners. For this purpose he will also have an office in Washington. Mr. Walter was formerly an attorney for the Interstate Commerce Commission and later commerce counsel for Morris & Co., of Chicago. He was also counsel for the National Industrial Traffic League.

Regional

W. A. Hopkins has been appointed supervisor of stores for the Southwestern region, with headquarters at St. Louis, Mo., effective December 1.

W. Rogers has been appointed telegraph and telephone engineer for all lines in the Southwestern region, with headquarters at St. Louis, Mo.

J. T. King has been appointed acting operating assistant to the Southern regional director, with headquarters at Atlanta, Ga., succeeding **George R. Loyall**, resigned to become assistant federal manager of the Southern Railroad and associated lines.

J. L. Haugh, whose appointment as engineering assistant to the Northwestern regional director, with headquarters at Chicago, has been announced in these columns, was born in



J. L. Haugh

1887. He took a two years' course in special engineering work at the University of Michigan and one year at the University of Wisconsin. Mr. Haugh commenced railway work with the Chicago & North Western in 1905 as a draftsman on maintenance work. The following year he was employed as instrumentman on construction on the Manitowoc, Green Bay & Northwestern, and the next two years was successively topographer on railway location and instrumentman on maintenance on the Chicago

& North Western. He was then for a year locating engineer on the Milwaukee, Sparta & Northwestern, and the following two years was assistant to the engineer in charge of construction on the same line. Subsequently for two years he was assistant to the engineer in charge of construction of the St. Louis, Peoria & Northwestern from Peoria, Ill., to Gerard, and later for six months was engineer on heavy grade reduction between Manlius, Ill., and Radnor on the Chicago & North Western. He was then for 2½ years assistant engineer on valuation work, and then became assistant to the chief engineer of that road. He served in the latter capacity for one year, when he was made engineer of capital expenditures in the office of the Northwestern regional director at Chicago, which position he held until his recent appointment, as mentioned above.

Federal and General Managers

The jurisdiction of **P. R. Todd**, general manager of the Bangor & Aroostook, with office at Bangor, Me., has been extended over the Van Buren Bridge Company.

The jurisdiction of **E. M. Rine**, federal manager of the Delaware, Lackawanna & Western, with office at New York, has been extended over the Lackawanna & Montrose.

F. C. Batchelder, general manager of the Baltimore & Ohio Chicago Terminal and the Chicago Heights Terminal Transfer, has been appointed assistant to federal manager of the Baltimore & Ohio, Western Lines, with headquarters at Chicago.

G. R. Loyall, operating assistant to **B. L. Winchell**, regional director of the Southern Region, has been appointed assistant federal manager of the Southern Railroad Lines and associated railroads, with jurisdiction over all lines, and headquarters at Washington, D. C.

Operating

R. B. Coleman, general manager of the Georgia, Florida & Alabama, with office at Bainbridge, Ga., has been appointed general superintendent.

G. B. Small has been appointed supervisor of the fire loss and protection department for the Great Northern and will report to the general manager.

J. C. Snively will return as superintendent of the relief and pension department of the Norfolk & Western, effective December 1, 1918, and **V. A. Riton** will be assigned to other duties.

H. F. Burch, assistant to the general manager of the Delaware & Hudson with office at Albany, N. Y., has been appointed superintendent of the Saratoga division, with office at Albany, vice **M. F. Leamy**, transferred.

J. D. Beltz, trainmaster of the Baltimore & Ohio Railroad, Eastern Lines, with office at Pittsburgh, Pa., has been appointed acting superintendent of the Pittsburgh division, with headquarters at Pittsburgh, vice **T. J. Brady**, promoted.

John Wynn, trainmaster of the Northern Pacific, at Dickinson, N. D., has been appointed assistant to the general manager, with headquarters at St. Paul, Minn. **S. A. Wilder**, trainmaster at Jamestown, N. D., also has been appointed assistant to the general manager, with office at St. Paul.

R. E. Landis, superintendent of the Spokane division of the Great Northern, with office at Spokane, Wash., has been appointed superintendent of the Fergus Falls division, with headquarters at Melrose, Minn., vice **B. Lantry**, who has been appointed superintendent of the Spokane division at Spokane, vice Mr. Landis.

B. S. Mace, superintendent of insurance of the Baltimore & Ohio, has been appointed superintendent of fire prevention of the Baltimore & Ohio Railroad, Eastern Lines; the Coal & Coke, the Wheeling Terminal Railroad, the Western Maryland, the Cumberland Valley, and the Cumberland & Pennsylvania, with headquarters at Baltimore, Md.

H. R. Barton has been appointed general fire prevention inspector of the Missouri Pacific, the St. Louis Southwestern, the Louisiana & Arkansas, the Memphis, Dallas & Gulf, the Arkansas Central, the Natchez & Southern, the Natchez & Louisiana Railroad Transfer, the Southern Illinois & Missouri Bridge and the Coal Belt Electric railroad, with headquarters at St. Louis, Mo., reporting to **H. R. Carpenter**, chief engineer.

William Mack Thurber, whose appointment as superintendent of the Dubuque division of the Chicago, Milwaukee & St. Paul, with office at Dubuque, Iowa, was mentioned in the *Railway Age* of November 29, was born at Muscoda, Wis., on March 14, 1881. He graduated from the Muscoda high school in 1898, and commenced railway work in October of that year on the Prairie du Chien division of the Chicago, Milwaukee & St. Paul. From March 15, 1899, to May 26, 1902, he was telegraph operator on the Illinois division, and from the latter date to June 11, 1902, was clerk in the

dispatcher's office on the same division. He was then assistant train dispatcher until September 15, 1908, when he was advanced to chief dispatcher on the Illinois division. On September 1, 1917, he was promoted to trainmaster on the Dubuque division, which position he held until December 1, when his appointment as division superintendent, as noted above, became effective.

Arthur Theodore Mercier, whose appointment as superintendent of the Southern Pacific, with headquarters at Portland, Ore., was recently announced in these columns, was born at New Orleans, La., on December 11, 1881. He was graduated from Tulane University in 1903, and was assistant engineer on the New Orleans Levee Board until 1904. He was then employed by the Southern Pacific on the Los Angeles division as roadmaster's clerk and transitman, being assigned to work in connection with reconstruction necessitated by the overflow of the Salton sea. From 1906 to 1908 he was general foreman and engineer in charge of terminal construction at San Pedro, Cal., and during 1909 was assistant division engineer on the Los Angeles division. He was then made assistant district engineer of the Southern district, and in November, 1912, was appointed division engineer on the San Joaquin division. The following year he was transferred to the Los Angeles division, as division engineer, serving in that capacity until February, 1917, when he was made assistant superintendent of the Shasta division, with headquarters at Dunsuir, Cal. He held the latter position until his recent appointment as superintendent of the Southern Pacific lines north of Ashland, Ore., as noted above.

Financial, Legal and Accounting

E. A. Wigen, assistant auditor of the Michigan Central and secretary of the Chicago, Kalamazoo & Saginaw, has been appointed federal auditor of both roads with office at Detroit, Mich.

W. M. Montgomery has been appointed acting auditor of the Silverton Railway and the Silverton Northern Railroad, with office at Silverton, Colo., vice **C. W. Montgomery**, deceased.

G. C. Butler has been appointed auditor of the Georgia, Florida & Alabama, and **L. G. Papy**, secretary and treasurer, with office at Bainbridge, Ga., has been appointed acting federal treasurer.

L. C. Wilds has been appointed acting federal treasurer of the Fort Worth & Denver City, the Wichita Valley, the Ft. Worth Belt and the Abilene & Southern, with headquarters at Ft. Worth, Texas, effective December 1.

W. O. Hamilton has been appointed acting federal treasurer of the Missouri, Kansas & Texas of Texas and the Union Terminal of Dallas, with headquarters at Dallas, Texas, in place of **R. P. Roach**, resigned, effective December 1.

M. Eckart, auditor of receipts of the New Orleans, Texas & Mexico; the St. Louis, Brownsville & Mexico; the Beaumont, Sour Lake & Western, the Orange & Northwestern, and the New Iberia & Northern, with office at Kingsville, Tex., has been appointed auditor, with headquarters at Houston, Texas, vice **J. W. McCullough**, resigned to accept service with the corporation.

Traffic

F. C. Francis, chief clerk to the general passenger agent of the Chicago, Rock Island & Pacific, has been appointed division passenger agent at Chicago.

E. C. Hoag, assistant industrial commissioner of the St. Louis-San Francisco and the Missouri, Kansas & Texas, has been appointed industrial commissioner, with headquarters at St. Louis, in place of **R. W. Hockaday**, resigned. **J. E. Springer** succeeds Mr. Hoag, with office at St. Louis.

Engineering and Rolling Stock

J. E. O'Hearne has resigned as superintendent of motive power of the Chicago & Alton.

Charles W. Weaks has been appointed road foreman of engines on the Toledo division of the Pennsylvania Railroad, Western Lines, at Toledo, Ohio, in place of **R. Palmer**, promoted.

W. C. Burel has been appointed master mechanic of the Pittsburgh division of the Baltimore & Ohio, Eastern Lines, with headquarters at Glenwood, Pa., succeeding **A. H. Hodges**, transferred.

F. L. Nicholson, consulting engineer of the Virginian Railroad, with office at Norfolk, Va., has been appointed chief engineer, vice **H. Fernstrom**, resigned to accept service with the Virginian Railway Company.

B. Wheelwright, acting signal engineer of the Grand Trunk, Canadian lines, with headquarters at Montreal, Que., has been appointed engineer maintenance of way of the New England lines, with office at Portland, Me.

G. R. Galloway, master mechanic on the Baltimore & Ohio, at Lorain, Ohio, has been appointed general master mechanic of the Baltimore & Ohio, Western Lines; the Dayton & Union, and the Dayton Union Railroad, with office at Cincinnati, vice **P. H. Reeves**, assigned other duties.

J. A. Tschour, general foreman in the locomotive department of the Baltimore & Ohio, Western Lines, with office at Willard, O., has been appointed master mechanic of the New Castle division, vice **M. A. Gleeson**, who has been appointed master mechanic of the Cleveland division, vice **G. R. Galloway**, promoted.

J. O. Enockson, master mechanic on the Chicago, St. Paul, Minneapolis & Omaha, with office at Sioux City, Iowa, has been appointed superintendent of motive power and machinery with headquarters at St. Paul, Minn., and **J. L. Riley**, general foreman at Sioux City, Iowa, has been appointed master mechanic, succeeding Mr. Enockson.

Edwin G. Chenoweth, whose appointment as mechanical engineer of the Rock Island Lines, in charge of both locomotive and car design, with headquarters at Chicago, has already been noted in these columns, was born on



E. G. Chenoweth

December 18, 1873, at Union City, Ind. He graduated from Purdue University in 1895, and entered railway service as a special apprentice on the Erie, at Huntington, Ind. After completing his apprenticeship he was employed as machinist for five years. During this time he took a post-graduate course at Purdue University and subsequently was air brake instructor and foreman of the air brake department of the Erie at Huntington. In 1901 he went to the Pennsylvania as a draftsman at Altoona, Pa., and later was employed in a similar capacity on the Pere Marquette, the Lake Shore & Michigan Southern and the Philadelphia & Reading. He returned to the Erie in 1906, as mechanical engineer, with headquarters at Meadville, Pa., and in July, 1912, he became connected with the Rock Island Lines as assistant superintendent of the car department. One year later, Mr. Chenoweth was promoted to mechanical engineer, in charge of car design, which position he held until his recent appointment, as mentioned above.

W. I. Jefferds, formerly assistant chief draftsman of the Erie, with office at New York, has been appointed resident engineer and assigned to Meadville, Pa., to take charge of the engine terminal facilities now being constructed there which will consist of a 56-stall engine house, machine shop, storehouse, coaling plant and ash handling facilities.

George E. Murray, whose appointment as electrical and mechanical engineer of the Grand Trunk Western Lines, with headquarters at Battle Creek, Mich., has been announced in these columns, was born on December 8, 1884, at Decatur, Ill. He began railway work with the Wabash in 1903, and two years later went with the Peoples' Gas & Electric Company, of Defiance, Ohio. He returned to the Wabash in 1906 to install the machinery and equipment in the new car shops at Decatur, remaining with that road until 1910. He then became connected with the Chicago & North Western, where he had charge of electrical equipment in shops, and, subsequently, was made chief electrician of that road, which position he held until his recent appointment with the Grand Trunk Western Lines, as noted above.

Richard Mather, whose appointment as district engineer on the Baltimore & Ohio, of the consolidated territory comprising the Huntington districts and the Baltimore district,



R. Mather

with headquarters at Baltimore, Md., has already been announced in these columns, was born on October 3, 1877, at New Haven, Conn. He was educated in Sheffield Scientific School, Yale University, graduating in 1897. He began railway work as axeman on construction with the Chicago & North Western in April, 1898. Subsequently he served as instrument man and resident engineer, and in January, 1902, he resigned to become a resident engineer with the Chicago Great Western on the extension of the Macon City & Fort Dodge from Ft. Dodge to Omaha. On completion of this project he accepted a position of assistant engineer with the Chicago, Burlington & Quincy, with headquarters at Chicago. In May, 1905, he went to the Erie in charge of the construction of the Genesee River Railroad, a low grade cutoff between Cuba, N. Y., and Hunts. On the completion of this work he entered the employ of the Baltimore & Ohio as assistant engineer in charge of surveys and studies of the Eastern Kentucky and Southern West Virginia coal field in connection with the Baltimore & Ohio entry into that territory. On January 1, 1916, he was appointed district engineer at Huntington, where he remained until the consolidation of this territory with the Baltimore district.

J. T. Carroll, mechanical assistant to **Charles H. Markham**, regional director of the Allegheny region, United States Railroad Administration, has been appointed general superintendent maintenance of equipment of the Baltimore & Ohio, Eastern Lines; the Coal & Coke, the Wheeling Terminal, the Western Maryland, the Cumberland Valley and the Cumberland & Pennsylvania, with headquarters at Baltimore, Md., succeeding **F. H. Clark**, resigned.

Corporate

Executive, Financial, Legal and Accounting

S. M. Felton, director general military railways, will resume his duties as president of the Chicago Great Western shortly after the first of January.

R. Ross, assistant treasurer of the Nevada-California-Oregon, with office at New York, has been elected treasurer, succeeding **R. M. Cox**, resigned. **O. R. Belcher**, superintendent, with headquarters at Alturas, Cal., has been elected assistant treasurer.

W. H. Wright, auditor and superintendent of the Wisconsin

sin & Michigan, has been elected vice-president and general manager, with headquarters at Menominee, Mich., succeeding **S. N. Harrison**, who has resigned to join the Railway Board of Adjustment in the Division of Labor of the Railroad Administration at Washington, D. C.

Malcolm Hugh MacLeod whose appointment as vice-president in charge of operation, maintenance and construction of the Canadian Northern, with headquarters at Toronto, Ont., was announced in the *Railway Age* of November 8, has had his authority extended over all the Canadian Government Railways. Mr. MacLeod was born at Isle of Skye, Scotland, on July 13, 1857, and received his education at Franklin, Pa. He entered railway service as a chainman and rodman with the Victoria Railway in 1878. From 1879 to 1881, he was rodman and assistant engineer on construction on the Credit Valley Railroad, now a part of the Canadian Pacific. He then became a transitman on location surveys with the Ontario & Sault Ste. Marie, and in 1882, was assistant engineer on construction with the Toronto & Ottawa. He entered the service of the Canadian Pacific in 1883, and was employed on various construction and location projects. He was appointed chief engineer of the Temiscamingue Railway in 1894, and held that position until 1897, when he became assistant chief engineer of the Crow's Nest Pass Railway of which he was later chief engineer. In 1909, he was appointed chief engineer of the Canadian Northern, lines west of Port Arthur, Ont., and in 1907, became also general manager. He continued in these positions up to the time of his appointment as vice-president with headquarters at Toronto.



M. H. MacLeod

C. A. Hayes, general manager, eastern lines, of the Canadian Government Railways, with office at Moncton, N. B., has been appointed vice-president in charge of traffic, with jurisdiction over all lines, of the Canadian Northern Railway System, and the Canadian Government Railways, with office at Toronto, Ont. The jurisdiction of **R. C. Vaughan**, assistant to the president of the Canadian Northern Railway System, with headquarters at Toronto, Ont., has been extended to include all the lines of the Canadian Government Railways. **S. J. Hungerford**, general manager of the Canadian Northern, lines east of Port Arthur, with office at Toronto, Ont., has been appointed assistant vice-president, with jurisdiction over all lines of the Canadian Northern Railway System and the Canadian Government Railways, with office at Toronto, Ont.

Operating

S. H. McCartney, secretary and auditor of the Nevada-California-Oregon Railway, has been appointed general manager, with headquarters at Alturas, Cal., succeeding **R. M. Cox**, resigned.

W. E. Bell has been appointed acting division superintendent of telegraph of the Grand Trunk Pacific, Lines in Alberta and British Columbia, with office at Edmonton, Alta., vice **W. J. Rooney**, granted leave of absence.

F. P. Brady, general manager of the Canadian Government Railways, Western Lines, has been appointed general manager of the Canadian Northern Railway Lines East of Port Arthur and all Canadian Government Railway Lines East of O'Brien, with headquarters at Montreal, Que., and the jurisdiction of **A. E. Warren**, general manager of the Canadian Northern Railway, Western Lines, has been extended to include all Canadian Government Railway Lines West of O'Brien, with headquarters at Winnipeg, Man.

S. Worth has been appointed superintendent in charge of operations of the Algoma Central & Hudson Bay, with office at Sault Ste. Marie, Ont., and **W. C. Paul** has been appointed trainmaster, reporting to the superintendent.

Obituary

Michael J. Clark, who had been secretary of the Chicago & Western Indiana since March, 1885, died at his home in Chicago on November 27, aged 77 years.

Horace Ellsworth Andrews, president of the New York State Railways, the Mohawk Valley Company and the Rochester Railway & Light Company, died at his home in New York, on December 1, at the age of 55. Mr. Andrews was also a director of a number of other railroads including the New York Central and the Michigan Central.

Samuel Nathan Harrison, who had just been appointed a member of Board of Adjustment No. 3 of the Railroad Administration, died of pneumonia at Washington, D. C., on December 1. Mr. Harrison was born at Trenton, Ont., on February 20, 1867, and entered railway service in 1881 with the Wisconsin Central. He remained with that road for eight years, successively as messenger, telegraph operator on the Northern division, clerk and operator in the mechanical department at Stevens Point, Wis., and train dispatcher. He was then train dispatcher on the Chicago & North Western until 1894, and from the latter date to 1898 was with the Wisconsin & Michigan as train dispatcher and superintendent of transportation. The following year he was train dispatcher on the Minneapolis, St. Paul & Sault Ste. Marie and the Chicago & North Western, and from 1899 to 1900, was chief clerk in the president's office of the Chicago Terminal Transfer Railroad. During 1900 he was superintendent of the Chicago Heights Terminal Transfer Railroad at Chicago Heights, Ill., returning to the Wisconsin & Michigan in January, 1901, as superintendent of transportation. Two years later he was made superintendent of that road, and on May 1, 1911, was promoted to general manager. On February 1, 1912, he was appointed receiver, with office at Menominee, Mich., which position he held until his recent appointment on the Board of Adjustment, as mentioned above.



S. N. Harrison

F. W. Taylor, mechanical superintendent of the Missouri, Kansas & Texas, of Texas, and other lines under the jurisdiction of Federal Manager **J. S. Pyeatt**, with headquarters at Dallas, Texas, died on November 14, aged 43 years. He was born at Water Valley, Miss., on October 24, 1875, and began railway work in 1893 with the Illinois Central as a machinist apprentice. Subsequently he was roundhouse foreman at Water Valley, general foreman at Jackson, Miss., and Louisville, Ky., until October, 1908, when he was made master mechanic at Mattoon, Ill., being transferred four years later to Waterloo, Iowa. On January 1, 1915, he became connected with the International & Great Northern as superintendent of motive power, where he remained two years. He then went to the Missouri, Kansas & Texas, of Texas, as superintendent of motive power, with office at Denison, Texas, and later was appointed general manager, with headquarters at Parsons, Kan. He held the latter position until August last when he was appointed mechanical superintendent of that road and other lines under the control of J. S. Pyeatt, federal manager.

EDITORIAL

Railway Age

EDITORIAL

One of the first things that happened after the government took control of the railroads was an entire disorganization of the traffic departments of the different roads. It was stated that under unified operation there was no need of retaining freight and passenger traffic solicitors and much was said about the savings that were made possible by eliminating a large proportion of the men employed in the traffic department. That there is exceedingly important work to be done by men of this kind is indicated by the instructions which have been issued by the Southern regional director outlining the duties of representatives in the so-called traffic service work. It would appear that the plan is to go even beyond the demands that were formerly made upon the traffic solicitors. If men are selected who are capable of carrying out the suggested activities, the cost of conducting the work of the traffic department promises to be even more expensive than it was under private operation of the railroads.

The Traffic Service Department

A considerable amount of the business sent over the railroad telegraph wires could be handled to as good advantage by the proper use of the mailgram. A feeling seems to exist among those using these facilities that it is much easier to dash off a message and turn it over to an operator to handle than it is to send the same information by mail. It is natural to feel that information sent by wire will be received sooner and that more prompt action may be expected upon its receipt than if handled by train mail. As a consequence the wires are burdened with messages that should not have been sent. Such a condition has a tendency to lessen the importance that should be placed upon messages. The Railroad Administration has issued instructions governing the proper censoring of all messages and insuring more general use of the mails. This should place on the message the importance it deserves.

Censoring Telegraph Messages

Not one of us but outwardly or inwardly grumbled when we had to pay the extra half cent a mile to travel on a Pullman car. It will be recalled that the Railroad Administration raised passenger fares to a flat three cents a mile—an increase in the East, in many instances, of 50 per cent—but also added a new charge of half a cent a mile for the passenger traveling in a parlor car or sleeper. The administration has now abolished this extra half cent charge. Annoying as the charge was, it was in the line of justice. It could be fully justified either by the cost of service or the value of service. A parlor car holds about 28 persons, with possibly a few extra in the drawing room. A coach, even where everyone occupies a seat by himself, holds 40, and twice this number if two people occupy each seat. The weight of a coach loaded to capacity is not as great as a corresponding type of parlor car with 28 people in it. As to value of service, the proof lies in the fact that, grumblingly or not, the same class of passengers who have been traveling in Pullman cars continued to do so after the half cent supercharge had been imposed. If it had not been worth a half cent to them they would have traveled in coaches and the Pullmans would have been deserted.

The Extra Half Cent

A telegraph line is so necessary a part of the operating machinery of a railroad that it ought to be built according to the best wisdom available; and yet the American railroad world has waited until this year 1918—three quarters of a century—to have its experience formulated in simple specifications calling for rational provision against wind and sleet. These specifications, adopted by the Railway Telegraph Superintendents at Chicago last week (*Railway Age*, page 1024) call for a factor of safety of two; or, in case of poles which, if weakened, might fall on a main track, fifty per cent greater. The adoption of these specifications should do away with a great amount of rule-of-thumb practice in this field. The committee is expected also to furnish, in its final report, a provision regarding safe maintenance; a clause to the effect that poles must be renewed when they have weakened 40 per cent (reducing the factors of safety to 1.2 and 1.8). The association might well have added a strong declaration concerning the importance of setting all pole lines far enough from the nearest track so that they never could hit or obstruct a train, for the 40 per cent deterioration rule is not capable of precise application. Keeping weak poles in service has been a widely prevailing sin, against which no specifications will fully guard. And yet nearly every winter furnishes examples, somewhere, of very costly delays to trains and losses of traffic because of lines destroyed by wind and ice.

Making Telegraph Lines Safe

The railroads under private management were severely criticised at different times because, when periods of business depression threatened and traffic began to fall off, they restricted their purchases instead of going out into the markets and restoring confidence by the liberal buying of equipment and supplies. With the ending of the war some departments of the government have continued contracts for materials that will never be used in order to bridge over the period during which the readjustment of industrial activities to peace pursuits must be carried out. The railroads have been suffering for the lack of equipment and materials for several years and yet we find the purchasing department of one road sending out the following instructions: "Any further shipments made us on unfilled orders after this date will be made at your own risk. And materials so shipped will in all probability be returned to you with transportation charges collect. Within the next few days we will communicate with you, giving reference to unfilled orders that we want cancelled and deferred shipments arranged on other orders. Too great importance in the strict observance of this letter cannot be given." The wording of this communication was exceedingly injudicious, even if the facts concerning it are correct, as related elsewhere in this issue. The Railroad Administration, because of the uncertainty as to its continued existence, naturally hesitates to make capital expenditures that may not meet the approval of the railroad corporations, but there is a great amount of deferred maintenance which should be attended to at once and which is an operating charge over which the railroad corporations have no control. Is the government, through its Railroad Administration, going to "rock the boat" at this critical

Stop Killing Prosperity

time by not doing the very things it is asking the industries to do in order to insure continued prosperity and high wages?

W. S. Carter, director of the Division of Labor of the United States Railroad Administration, is to be congratulated upon the address which he made

Railway Labor and Wall Street

before the Academy of Political Science last week, and which appears on another page of this issue. It is unfortunate, however, that it was necessary to make the statement that the employees felt that Wall Street was responsible for the fact that their demands were not complied with under private management. If the men had such a belief, where did they get it, if not from their leaders? What justification had their leaders for preaching that sort of a doctrine to them? Is it not true beyond question that the majority of the railroad officers were anxious to make working conditions and compensation satisfactory to the employees? On the other hand, these officers were under certain responsibilities to the stockholders and in many cases were working hard to keep the roads out of bankruptcy. Why not place the blame exactly where it belongs, recognizing that the financial interests were possibly at fault in some cases, and put the responsibility squarely up to the Interstate Commerce Commission or the state regulating bodies which would not grant the roads such rates as to make it possible for them to meet all of the demands of the men and at the same time give the railway security owners a fair return upon their investments? It is easy enough to place the blame upon the railroad managements and upon the financial interests, and it is true that in many cases they were at least partly at fault. Was it right, however, for the labor leaders and their followers to make many of the statements that they did prior to federal control and oppose increases of rates because they felt that the railroads were not giving them a square deal? It is true that the Railroad Administration was able greatly to increase the compensation of the employees, but it is just as true that this could only be done by making a corresponding increase in the rates. Is this not as clear a demonstration of the inevitable partnership between labor and capital as could be wished for? Profit and loss sharing in theory between the two may be repudiated by both, but in practice it is unavoidable.

The Master Mechanics' and Master Car Builders' conventions were omitted entirely in 1917 because of the entry of this country into the war. In June, 1918,

Splendid Prospects for June Conventions

the mechanical departments were more or less under a cloud because of the condition of the equipment and the Railroad Administration did not look with favor upon a general convention; a meeting was held, therefore, consisting of a small group of representative members from the different roads and only matters of extreme importance, or which had been held over from the previous year, were given any consideration. The changed conditions in the mechanical department require a real convention for June, 1919, and the various committees should go forward with the preparation of their reports with a view to the larger opportunities that lie before the mechanical department in the future. One feature of the convention that will deserve special attention will be the exhibits. It will be more than ever important, even after the return to normal conditions, that the roads take advantage of every design and device that will make possible greater efficiency or more economical operation. It was because of the extreme importance of this during the war that the exhibits were so effective at the Traveling Engineers' con-

vention last fall. Those who saw the way in which these exhibits were used, and who may have been skeptical as to the value of exhibits as an educational measure, were converted to their real importance. The motive power and car department officials throughout the country will not only need the inspiration of constructive and inspiring convention programs next June, but they will be equally in need of information concerning devices of the above-mentioned nature and of the improvements that have taken place in the last two years in the railway supply field. Another extremely important factor that must not be overlooked is that foreign railroads will send many representatives to this country during the next year to study our methods and arrange for the purchase of equipment. If the fact could be generally published within the next month or two that special attention will be given to making the exhibits at the mechanical conventions a feature for these representatives, many of them would undoubtedly make arrangements to visit this country at that time.

It is not too early to get busy in arranging the details both for the technical programs and the exhibits.

What Was This Understanding?

AT THE TIME the President settled the wage controversy between the railroads and the train service employees in September, 1917, the impression was created that there was an understanding between the administration and labor leaders. This impression has been strengthened by developments from time to time, none of which are more pertinent than one arising out of the recent controversy between the railroad administration and organized labor over the issuance of Order No. 42 early last fall, prohibiting all railroad employees from engaging in political activities. When the director general issued this order the impression was created, purposely or otherwise, that it was directed toward lobbying and allied activities on the part of the corporations, and it was so received by the public in general. However, the four train service brotherhoods saw at once that it also prohibited all political activities on their part and would require the elimination of their representatives at Washington and elsewhere.

They at once protested vigorously to the director general, and they have been exceedingly bitter in their attacks against the "disfranchisement" of their members in their publications. In the December issue of the *Locomotive Engineers' Journal*, published by the Brotherhood of Locomotive Engineers, there appears a statement of their negotiations with the director general on this subject signed by W. S. Stone, grand chief of the Brotherhood of Locomotive Engineers; Timothy Shea, president of the Brotherhood of Locomotive Firemen and Enginemen; A. B. Garretson, president of the Order of Railway Conductors, and W. G. Lee, president of the Brotherhood of Railway Trainmen. After referring to their conferences with the director general on September 26 and October 3, relative to the modification of Order No. 42, the letter states that this committee departed with the understanding that it would be called to Washington again to confer with Mr. McAdoo before a final decision was rendered on its protest. However, nothing further was heard from him, and Order No. 48, replacing Order No. 42, and modifying its provisions only insofar as it applied to local politics was issued on October 22.

The letter concludes with the significant statement that "this order is not in keeping with our understanding of the statement made to us by the President prior to placing the railroads under government control." In view of the numerous rumors which have existed in the past it would be interesting to know the nature of this understanding.

The Cost-Plus Contract

ONE PROBLEM which has confronted the chief engineers of American railways during the last two years of rising prices, and which may be the source of no little difficulty for some time to come, is that arising from the use of the various cost-plus forms of contract for railroad construction work. After years of experience with the unit price and lump sum forms of contracts, the provisions and the conduct of the negotiations under these types of agreement have become so thoroughly established by precedent that there remains little opportunity for legitimate contention between the contracting parties.

Following the inauguration of the European war, the growing uncertainty as to the supply and cost of labor and materials soon indicated that contracts could not be awarded satisfactorily on a unit price basis, both from the standpoint of the contractor and the railroads. To protect himself against all these contingencies, the contractor had to establish a unit price high enough to protect himself against any contingency which might arise, leading in many cases to entirely unwarranted profits where conditions developed favorably. On the other hand, contractors who had been awarded work in the early months of the war or before its inception, were not long in finding themselves hopelessly involved in a situation that promised speedy bankruptcy. Consequently many of the railroads found it necessary to come to the relief of the contractors, in many cases changing the contract so as to use one of the "cost-plus" forms of agreement for the duration of the remaining work.

While these newer forms of contracts have been in use for some years in certain classes of work, they were rather a novelty in railroad work and proved to be an untried instrument in many cases for both the railway officers and contractors. In view of this and the fact that the new form of agreement removed most or all of the contractor's incentive for economy in the conduct of the work, it is to be expected that some contentions have arisen between the contracting parties. The most fruitful source of difficulty arose with the cost-plus percentage contract since this clearly offered an incentive for extravagance.

Many contractors are, of course, sufficiently broadminded to see further ahead than the profit to be obtained from the present work and have made every effort to conduct the projects under their control with the greatest possible efficiency, but even where the responsible head of such an undertaking is so minded, it does not always follow that his subordinates in direct charge of the work are equally farsighted. The fault has in part been due to the inadequacy of the contract agreement, in that the railroad has not always been afforded adequate control over the expenditures of the contractor. In certain cases, the latter has assumed that he has had unlimited authority in this respect and has established rates of pay for his men that were not only wasteful, but created serious unrest among the railway employees, while purchases of material made with a view to securing the most favorable deliveries had little regard to price.

The cure for this is obviously a more well defined control of these matters by the chief engineer and possibly the railway purchasing agent. Another step in advance is attained through the elimination of incentive for increased cost of the work by discarding the cost plus percentage form in favor of the cost plus a fixed price or, as in the case of certain grading work done this year, cost plus a certain sum per yard of material moved. While the war is over, uncertainty as to future conditions will demand the use of contracts on other bases than a fixed unit price for some time to come and no doubt with greater advantage to the railroads than has been the case during the last year or more, for with the possibility of lower prices greater economy will accrue to the railroads than with a unit price contract based on the present

high costs. The solution of the difficulties experienced with contracts during the past year would seem rather to point the way to an improvement in the form of these contracts than an immediate return to the unit price method.

Mr. McAdoo Being Forced Into the Open

UNDER ORDINARY CIRCUMSTANCES there would be this much merit in the proposal of William G. McAdoo, director general of railroads, to pass new legislation retaining the railroads under government control and operation for a period of five years—that it faced the issue squarely and did not hide under the cloak of a war measure. The political conditions are such, however, that it would be impossible to have this question of the advisability of a five-year experiment under government operation of the railroads passed upon by representatives of present public opinion. The present majority in Congress has been overthrown at the elections. To ask this Congress to commit the country to a colossal experiment in economics foreign to American institutions and American genius is grossly unfair, both to Congress and to the public.

The President in his address to Congress, January 4, 1918, asking it to pass the legislation necessary to carry out his railroad proclamation, said:

"The common administration will be carried out with as little disturbance of the present operating organizations and personnel of the railways as possible. Nothing will be altered or disturbed which it is not necessary to disturb."

It is fair to assume that Mr. McAdoo accepted both the letter and the spirit of this pronouncement of his chief. Mr. McAdoo says in his letter to the chairman of the Senate interstate commerce committee: "There are those who may say that an extension of five years for such a test will mean government ownership. Personally, I do not believe it." He makes the statement that during the year that he has been in charge of operation of the railroads he has made no attempt to prove or disprove any theory of government ownership or any other kind of theory, and claims that the roads have been operated solely in the interest of performing the work required by war conditions and in the interests of giving the public the best service possible consistent with paramount war needs. Mr. McAdoo may honestly believe, and we have no doubt that he does, that this is the ideal which he has held fast to during the past year, but circumstances have been such that whatever the ideal of the individual director general, facts and the actions of subordinates are in contradiction to this ideal.

Not one thing, but a thousand things have been done during the past year in the working out of a railroad organization which were based, not on the necessity for performing war work and rendering the necessary public service, but of remodeling the railroad structure to conform with a theory of government operation. If any one will take the trouble to go through the files of the *Railway Age*, checking off in the weekly compilation of the doings of the Railroad Administration those things which were solely necessary to meet war conditions and then look over as many of the other orders and actions of the Administration as he has time for, no other argument will be necessary to convince him that whether he intended it or not, Mr. McAdoo's administration has been a series of steps in the tearing down of the old order of management and the establishment of an entirely different structure.

Mr. McAdoo says that President Wilson agrees with him in desiring to force upon Congress the decision either to return the roads to their owners or to enter upon a five-year experiment of government control. Mr. McAdoo also says that this latter course would take the railroad question out of politics for the present. It looks very much as if what he meant was that the momentous question of a five-year experiment

in government operation would be settled without the public having a voice in the matter and by representatives whom the public had repudiated.

No one should blind himself to the seriousness of such a step as that which Mr. McAdoo has asked Congress to take. A year of operation by the government has shaken almost to the foundation the morale of railroad officers and employees; has raised freight rates 25 per cent or more; has raised passenger rates about 50 per cent, and has left railroad credit hanging in mid-air. Reorganization now under private initiative and private capital may or may not be feasible, but five years of such a course would make the return of the roads to their owners inconceivable.

Mr. McAdoo wants to return the roads immediately if he cannot retain them for five years, because the prospect of relinquishment of the roads 21 months hence upsets the morale of railroad officers and employees and prevents a logical development of additions and betterments! And yet he believes that five years of government operation would not prevent the return of the roads to their owners, and would not necessarily mean government ownership!

The sudden cessation of the war has forced Mr. McAdoo into specifically asking for a five-year experiment of government operation. But he still refuses to acknowledge that the inevitable outcome of such an experiment would be government ownership. No one else, however, should be deceived. You can turn a diamond into charcoal, but you cannot reverse the "experiment."

The Railroads—Practice vs. Theory

ONE OF THE SPEAKERS at a recent meeting of the Reconstruction Committee of the National Civic Federation made a very distinct impression when he stated that the complicated industrial problems which must be solved in going back safely to peace conditions must be treated on the basis of practical experience rather than from the standpoint of the theorist. Ought not Congress to approach the railroad problem in the same attitude? Judging from some of the bills which are being introduced and some of the statements that are being made in the press, a number of people are riding their hobbies pretty hard and are allowing their imaginations to run rampant on this question. This country cannot afford to run the risk of applying any untried theories to the solution of the railroad problem; the fact must not be lost sight of that a successful transportation system lies at the very basis of the prosperity of this country.

Legislators and regulators have been allowed more or less free rein in applying their theories to the roads in the past, with the result that they have very nearly put them out of business. Ought we not at this time to consider only applying remedies to those conditions that have so disastrously affected the railroads in the past and at the same time take full cognizance of those things that have proved successful under government control? In the first place, the unfortunate condition in which the railroads found themselves at the entry of this country into the war is now generally recognized to have been largely due to the application of the Sherman Act, to a restrictive rather than a constructive policy on the part of the Interstate Commerce Commission and to the conflicting laws and regulations on the part of 48 states and the federal government.

First and foremost, therefore, the Sherman Act should be repealed, at least so far as it applies to the railroads, and the roads should be placed under one central regulating body which must be made to feel the grave responsibility of dealing with the railroads in such a way that they can prosper and give that service that is so necessary to promote general prosperity and serve the public acceptably.

The second large problem that has been a nightmare to the railroads is that of finances. With the costs of operation

and taxes steadily increasing over a long period of years and the regulating bodies constantly trying to decrease or hold down the rates to a very minimum, the roads have been starved. The representatives of the public have tried to justify themselves by charges of poor management or transgressions on the part of the railroads in the past; they have overlooked the fact that the railroads conducted their business at that period on about the same level as to ethics as did the other industries and on a higher plane than the politicians and demagogues, who were either clinging to them as parasites or fighting them for political reasons. The railroads must be responsible to the public and it is well that they should be subjected to wise regulation, but they must be allowed to earn sufficient returns so that the public will be encouraged to invest in their securities.

Another great problem of the railroads concerns the labor situation. As the railroads have grown larger and larger, the officers have not been able to keep in as close contact with the men as was desirable. This has led to misunderstandings on both sides. Unfortunately some railroad managers have entirely misunderstood the handling of men and have adopted narrow and bigoted policies. On the other hand, labor has often allowed itself to be led by ignorant men—men who were not always averse to exploiting those whose cause they were paid to represent. The public authorities have not been willing to recognize the needs of the employees by making it possible for the railroads to pay them as highly as might be desired. The labor situation when the railroads were taken under government control was a most serious one. Under the period of federal control both sides have had an opportunity of sizing up the situation critically. Undoubtedly both have recognized that they were in error in certain respects and are willing to try to look at the situation from the viewpoint of the other side.

It is exceedingly desirable and indeed necessary for the future success of the roads that the managements and the men should come to an understanding before the roads are released from federal control. It is important also that the managements and the men should recognize that the interests of the public must be considered. The public should insist that something in the nature of an industrial disputes act be enacted so that the men cannot strike nor the managements lock the men out without first having the merits of both sides of the question carefully investigated. Failing to agree after such an investigation a full and frank statement of the facts should be made to the public by an impartial body. The party at fault would then be forced by public opinion to take the right attitude. The application of such a law has met with good results in Canada.

There are many other aspects of the railroad problem, but those which are mentioned are the most important points to be considered. There is sufficient talent among practical railroad officers to settle in a satisfactory manner all of these questions on the basis of their combined practical experiences and without unnecessarily inviting difficulty by a lot of theorizing. Judging from the trend of events and the expressions of practical men who are versed in transportation matters, the business men of the country, who are vitally interested in a practical solution of the problem, are going to insist that it be settled on a practical basis and without any unnecessary experimentation. This means, for instance, that government ownership and a number of questionable theories that have been advanced will be thrown into the discard and that the roads will go back into the hands of their owners without any unnecessary changes and in such a way as to secure all of the advantages of private ownership and some of the advantages of closer co-operation which have been demonstrated by federal control and which the railroad managements themselves have tried for years to bring about, but have been prevented from so doing by laws and regulations which should be wiped from the statute books. Let us stop for a moment and take a sensible view of the situation.



Photo by Ben H. Hooper. Copyright, 1918, by the American Red Cross.

The American Red Cross has made a remarkable record during the war in taking care of the wounded and of relieving those who were helpless and in distress in the war zones.

It has an even larger task before it during the reconstruction period upon which we are now entering. The movement needs the support and sympathy of every red-blooded patriotic American.

During the week beginning December 16, the American Red Cross is making a drive, not for money, but for membership.

The campaign will be known as the "Red Cross Christmas Roll Call."

Railroad officers and employees should do their part in helping to make this roll call include every American—man, woman or child.

Letters to the Editor

Open to Question

YEAR 8, 17

TO THE EDITOR:

If the recent order of Director General McAdoo insisting upon all employees being courteous to those traveling upon the various lines now under government control, or transacting business with these lines in any other way, is correctly reported in a recent issue of one of our most reliable morning papers, a portion at least of the order is certainly open to criticism.

To the part of this order directing courtesy, no well-thinking person will object for a moment, and a large number of the leading railway companies of the country have always insisted upon such deportment. I can recall numerous instances which in the past have come under my observation in which employees of railways have been severely disciplined for discourteous treatment of patrons.

Of course, it is probable that the difficulty of obtaining and retaining employees in all departments during the peculiar conditions of the past two or three years has increased the tendency of some employees to rudeness in deportment, and has also compelled officials against their wishes to be more lenient than is customary in this matter.

The part of the order which, if correctly printed, to which I would take exception, is the director general's reference to remarks alleged to be frequently made by employees when questioned as to belated schedules of trains or inefficiency in service; such as "The Government's running the roads now, etc."

Reference also appears to be made in the order to an ancient remark often in the days gone by attributed to railway officials when told of the rights of the public, this remark relegating the long-suffering public to everlasting condemnation! (By the way, is anyone able to name the author of this once familiar saying definitely?)

When Rev. T. DeWitt Talmage was especially prominent among the ministers of the Gospel in Brooklyn, he was often criticized in many of the newspapers, and sometimes very harshly. Some friends once suggested to him that he have these critics called to account for their utterances, which were practically untrue. The gifted man smilingly replied that these remarks never annoyed him, so long as he knew they were untrue.

Doubtless these remarks which appear to have been deemed worthy of notice by the director general, if made at all, were only made facetiously by the employees, and if it was believed by the government officials that they had a tendency to do injury, it would have been easy to post the men quietly as to the wishes of the management, and doubtless a pleasant conformity to such suggestion would have followed at once.

It has never appeared good practice to me to pay attention to all the thoughtless remarks made by employees, and usually the official who listens to most reports of such things keeps himself and others in unnecessary hot water. Lord Palmerston, years ago, said that the freedom of speech of England was the safety valve through which many men blew off their superfluous energy, and certainly if the "pop valves" of our railway employees are not fastened down tight, they will blow off their surplus energy, and like the boilers of the engines on their lines, go on doing good and acceptable work.

In the words of an old-time superintendent, who reprimanded a subordinate for paying too much attention to

overheard remarks of the men, "It always looks as if there is a sore spot about one somewhere when such remarks hurt!"

While not on any account advocating disrespectful, or careless, service, I certainly could never approve of the idea that one holding a government position is surrounded with such a halo of majesty that his very person is sacred and dared not be mentioned except in deepest veneration, and his decisions accepted as infallible as Holy Writ. This may answer in Germany, but never in America or Great Britain. As to the supposed attitude of railway officials and their subordinates to the public, if it ever did exist, it has years and years ago passed into "innocuous desuetude!"

C. H. CARUTHERS.

Locomotive Lubrication

YEAR 17

TO THE EDITOR:

I noted on page 812 of the issue of the *Railway Age* for November 9, Mechanical Department Circular No. 6. This circular states that investigation has developed an increased coal consumption, with excessive wear of cylinders and packing, valve and valve chambers, as well as piston rod and valve stem packing, due to locomotives not being properly lubricated. This improper lubrication is attributed largely to the practice on some railroads of draining lubricators of all oil at the terminal, and putting in the exact amount allowed for the trip before leaving. It is further stated that this amount is often insufficient when excessive switching is necessary, or when any unusual delays occur, or when the feed is so regulated that the oil will not last during the trip, and on account of this, locomotives are operated to the terminal with cylinders not lubricated and yard engines are worked for hours without cylinder oil. To overcome this the circular instructs that the lubricators shall be filled before the locomotive leaves the terminal, and sufficient oil shall be carried on the locomotive to provide against any of the above contingencies.

I am afraid that there is danger of greatly increasing the cost of lubrication without realizing the economies expected, because I have never yet found a locomotive engineer, no matter how much oil he was using to make the trip, that felt that he was getting enough. In most instances, I believe they will use all the oil that is given them and still ask for more. The more oil the valves and cylinders of superheated locomotives receive beyond what they need, the more carbonization troubles will follow. Carbonization changes the oil from a lubricant to an adhering abrasive, that causes increasing wear of the moving parts and sticking of packing rings, as well as clogging of ports and exhaust nozzles. It also causes difficulty in removing valves, and often reduces cylinder clearance so as to make dangerous any lengthening or shortening of main rods, because of the likelihood of pistons knocking out cylinder heads.

The circular also states that piston rod and valve stem packing should be properly lubricated and recommends that a suitable swab be provided to retain the oil. When valves and cylinders are properly lubricated, the valve stems and piston rods are equally well lubricated. It is, therefore, inadvisable to hide the internal condition by equipping valve stems and piston rods with oil or swab cups.

This circular seems to admit the need for some reliable automatic oil feeding device that will deliver a definite amount of lubricant at every revolution of the drivers regardless of speed or pressure, that needs only to be filled, requiring no attention from the enginemen, not even turning on or off and that has no feed regulation and nothing to

W. J. SCHLACKS.

The Reconstruction Conference at Atlantic City

Co-operation the Keynote in Meeting of 4,000 Business Men
to Consider Readjustment Problems

A GREATER FEELING OF CO-OPERATION among the business men of all industries, a new regard for the laboring man's position, a new open-mindedness on the part of business men as to the meeting of the labor problem, an appreciation of the advantages of foreign trade, strong expressions of opinion in favor of private initiative and control of industry and the withdrawal of governmental war-time regulation as soon as possible, were some of the high points in the war emergency and reconstruction conference held at Atlantic City, N. J., last week under the auspices of the Chamber of Commerce of the United States. The conference was attended by about 4,000 business men, meeting in group and general sessions. The general sessions of the conference were addressed by men among the leaders of American industry and the diverse thoughts of some 375 separate industries were co-ordinated in 32 resolutions adopted practically unanimously at the last session as general expressions of opinion on readjustment problems of the business men of the country.

The success of the conference was in no small measure due to the work of one man—a railroad man—W. H. Manss, until about a year ago the assistant to the vice-president in charge of traffic and commercial development work of the Baltimore & Ohio. Mr. Manss is pre-eminently an organizer and his entire business career has been spent in organizing one work and another and in giving those with whom he works that inspiration and enthusiasm which means accomplishment and success. Mr. Manss is a native of Cincinnati. He received degrees from Whittenburg College and Yale University and spent two years and a half at Berlin University in Germany. Upon returning to this country he entered railway service and there began his organizing work by starting and building up the industrial development department of the Chicago, Burlington & Quincy, originating among other things the idea of the seed and soil special which was adopted by many other railroads, and which has done an immense amount of good for the agricultural development of the West.

Mr. Manss later left railway service for a time and served as civic industrial commissioner of the Chicago Association of Commerce. It was he who organized the National Wool Warehouse, representing the wool growers in the West. He then returned to railway service and served for a number of years as industrial expert. For a time he was vice-president and general manager of the Southern Settlement and Development Organization, following which he became assistant to the vice-president in charge of traffic and commercial development of the Baltimore & Ohio. In that position he made a record of locating two industries per day for several years with an estimated annual revenue of \$28,000,000.

He was furloughed from the railroad to act as director of

the War Service Committee of the Chamber of Commerce of the United States and as such consummated the organization of some 375 war service committees representing as many different trades or businesses, and upon receiving the approval of the appointments of the committee by the particular trade it represented certified it to the War Industries Board, whereupon it acted as the body through which the board had dealings with the trade. The Reconstruction Conference was the climax of this work and the successful accomplishment of bringing together business men of no less than 375 trades and of co-ordinating their varying ideas into a single set of resolutions which the conference could offer as the sense of the business men of the country was very largely due to the organizing ability of Mr. Manss as carried out with the enthusiasm he imparted to his assistants and co-workers.

Now that the work of the conference is completed, Mr. Manss has announced his resignation, effective January 1. He has been asked by Daniel Willard to return to the Baltimore & Ohio company, but his final plans have not been announced.

The Conference

The War Emergency and Reconstruction Conference Congress lasted four days, December 3 to 6. On Tuesday, the first day, meetings were held by the 375 or so war service committees. The conference proper had its first general session on Wednesday morning, Harry A. Wheeler, president of the Chamber of Commerce of the United States, delivering the introductory address. At the afternoon general session on Wednesday addresses were made by Charles M. Schwab, director general of the Emergency Fleet Corporation, and William C. Redfield, secretary of commerce. In the evening the war service committees met in 35 related group sessions and the suggestions made by the meetings of the previous day were correlated and passed on to the 10 major group meetings which met Thursday afternoon and evening. The delegates also met in general session Thursday morning and were addressed by John D. Rockefeller, Jr., and by Alba B. Johnson, president of the Baldwin Locomotive Works. A paper by James A. Farrell, president of the United States Steel Corporation, was read in Mr. Farrell's absence by O. K. Davis, secretary of the National Foreign Trade Council. At the final session Friday morning the conference was addressed by Paul M. Warburg, former member of the Federal Reserve Board, and the conference voted on 32 resolutions meant to express the opinions of the business men of the nation on reconstruction and readjustment.

The conference covered so much ground that it is possible to reproduce here only some of its high points, and even those can be expressed only briefly.

Mr. Wheeler's Introductory Address

In his introductory address Harry A. Wheeler, president of the Chamber of Commerce of the United States, sketched the problems that were to come before the conference. He emphasized particularly the part that business men must play in reconstruction and invited attention to the necessity of sending to Versailles a representation of business men to the end that economic matters should have their due consideration as well as diplomatic questions. He touched upon the following points as being those which should likewise receive



W. H. Manss

consideration: problems of internal readjustment; the settlement of war contracts, including the disposal of stocks now in the hands of the government, cancellations, etc.; considerations of price fixing; the protection of new industries; combinations for the development of foreign trade; the wisdom of perpetuating some industrial combinations; questions of rail and ocean transportation; the relations of labor to the new order, etc.

From Charles M. Schwab's Address

We have faced, and will face a great change in the social structure of this great country of ours, a change to my mind ultimately for the better, for the happiness of mankind and the development of human nature, a change of true democracy, a change by which the man who becomes the aristocrat of the future will not be such because of birth or wealth, but the man who has done something for the good of his country and his fellow men. The man of the future in this great country of ours will be the doer of deeds for the upbuilding of the interests and the happiness of mankind. . . .

Before this war the maximum output of ships in the United States in any one year was something less than 400,000 tons. When the Emergency Fleet Corporation started, all the shipyards of the country that were available for shipbuilding were occupied, and rightfully so, by the needs of the navy, and, therefore, it was necessary to construct the works in which these ships might and had to be built. To give you some idea of the progress we have made—and I do not speak of launchings, but of ships placed in commission, because only then are they useful—during the month of October there were placed in commission in the United States 416,000 tons of shipping. In the month of November just ended, for which we have not received the exact figures, I anticipate we have placed in commission something over 500,000 tons of ships.

This, my friends, brings me to the point, the chief thought which I have in my mind to give you today. We may construct 100,000,000 tons of ships, but they will have no value to this great nation of ours unless we do what is more important than the construction of ships, and that is to devise the ways and means for the operation of these ships. A great merchant marine for the United States is essential for its ultimate success, and its successful operation is not for the benefit of any one man or class of men or any one branch of business, but is for the good of every individual citizen of the United States. I do not care whether he is farmer, lumberman, manufacturer or merchant, a great mercantile marine is essential for every man in the United States. I do not care what plan, in the opinion of our great legislators at Washington, may be best for the operation of these ships so long as they are operated economically and so long as the expense of operation is not borne by any one or few, but by the whole people.

No American shipping can be profitable or successful or enlist private capital today, as shipping is now operated, and you, the manufacturers of the United States, must raise your voices for the successful operation of our mercantile marine. Do not let the cry that a few may profit by subsidies or otherwise deter you in the least. I do not care in what form the people pay the bill. If the government operates the ships themselves and they operate them at a loss the people pay the bill. If the ships are operated by private concerns and a loss accrues that is made up in some form of subsidy, the people themselves pay the bill. So that whatever form may be adopted we must find the means of doing it.

I do not hesitate to say, however,—not as a politician, because in that I have never had any part—I do not hesitate to say as an American business man that the real development of any great enterprise depends on the individual initiative of the American business man. I do not believe we will ever get the full economical development of any great branch

of American industry that is not developed under private enterprise and by private capital. You may guard it in any way you see fit, but provide such laws and regulations as will not hamper its operations. But, gentlemen, point me if you will to any great industry of transportation or other development that has not been the result of the initiative of a few enterprising citizens in its inception.

What part has this in this great transition? I will tell you. It is well illustrated by the steel industry. During this year the steel industry will have made approximately forty-five million tons of steel. Before the war twenty-five million to thirty million was considered a big output. This great development has been brought about by needs of the war. In my opinion, it is higher on the average than the amount which this country needs at this time. This country will rapidly develop to the full need of it, but at this moment it is more than we need for purely domestic wants. Our great outlet for all our manufactures must be foreign markets. How are we going to get into the foreign markets unless we have the ships and the mercantile marine to carry our goods to the foreign markets? Therefore, gentlemen, it is your duty, it is the duty of every society, it is the duty of every chamber of commerce, it is the duty of every single individual, to raise up their voice to be heard, to let their clamors be loud and long for the development and maintenance of this mercantile marine of ours. . . .

The Labor Problem

My friends, there is one other question of great and timely importance, to cover which no one can lay down general rules, and that is this great and important labor question. I am one of the men who believe in the fairness of American labor. I am one of the men who believe that the only foundation upon which any of these things can permanently rest is the economic use of everything, whether it is labor, material, manufacture or what not. Any foundation of organized labor or capital that is on a false basis must fail. We started in some 20 years ago on a series of exploitations that many people called trusts and there were many such concerns organized that had as their prime motive the artificial idea of either restricting production or increasing the selling price. You have seen them, one after the other, fail and fade away. That was on a wrong basis. Our Congress, our legislature in Washington, realized it, and rightly and justly took steps to correct it. What has been true of capital will be equally true of labor, and, therefore, the education of the American laboring man must be to have him realize that his permanency and success, and the success of the nation, will depend upon labor conditions and capital conditions that are founded on economic principles first of all.

I am not opposed to organized labor. I believe that labor should organize in individual plants or amongst themselves for the better negotiation of labor and the protection of their own rights; but the organization and control of labor in individual plants and manufactures, to my mind, ought to be made representative of the people in those plants who know the conditions; that they ought not to be controlled by somebody from Kamchatka who knows nothing about what their conditions are.

But, gentlemen, in the years gone by, I seriously doubt many times if labor has received its fair share of the prosperity of this great country. We, as manufacturers, have got to open our eyes to a wider vision of the present and the future with reference to our workmen. We have got to devise ways and means by which capital and labor, that have so often been termed synonymous shall share equally, not in theory, but in practice. We have got to devise ways and means of education. We must not only talk about these things, but we must do these things. We have got to realize that many unjust demands will be made by labor as they probably have been made by capitalists and employers in the past. That is one of the lessons this great war has taught us

—true democracy. The thing we have to do is to teach, not patronize, to educate and have the American laborer know and feel that he can stand with his head in the air, as you can and as I can, and say with pride, "I am an American citizen."

That is what I feel is our duty, as manufacturers now, if we want to preserve the situation in America. We have to study it with utmost care. Each manufacturer must study his own case and his own situation from his own standpoint and must know his own condition. There can be no general rule that will be applicable to all. We ought to urge a continuance of work in every direction. Matters will adjust themselves industrially in this country sooner or later by the natural course of events, but what we want to prevent is that sudden slip of the cog which will give us a social jolt that may be dangerous to our industries for years to come. We must be patient. We must go along with small or no profits if necessary. We must bend every effort to keep our employees busy, employed and satisfied. They must be made to realize the situation as we see it and be content to help us in that development. We must get closer together with our work people. We must listen with patience to their side of the story, and we must induce them to listen with patience to our side of the story. We now stand shoulder to shoulder for the protection of our mutual interests and above all for the protection and glorification of this great and glorious country of ours.

Representation in Industry

From the Address of John D. Rockefeller, Jr.

Obviously the day has passed when the conception of industry as primarily a matter of private interest can be maintained. To cling to it is only to lay up trouble for the future and to arouse antagonism. In the light of the present, every thinking man must adopt the view that the purpose of industry is to advance social well-being rather than primarily to afford a means for the accumulation of individual wealth. It must be borne in mind, however, that industry cannot be successfully carried on unless not only the community and the workers are adequately served, but those whose money is invested are enabled to realize a just return.

Who are the parties to industry? They are four in number—Capital, Management, Labor and the Community. Capital is represented by the stockholders and is usually regarded as embracing Management. Management is, however, an entirely separate and distinct party to industry—it consists of the executive officers, who are the administrators of the industry and who bring to it technical skill and managerial experience. Labor is represented by the employees, but its contribution, unlike that of capital, is not detachable from the one who makes it, for it is his physical effort, his strength, his life.

Here the list usually ends, for the fourth party, namely, the community, whose interest is vital and in the last analysis controlling, is too often ignored. The community's right to representation in the control of industry and in the shaping of industrial policies is similar to that of labor. But for the community's contribution, in the maintenance of law and order, of agencies of transportation and communication, of systems of money and credit and of other services, all involving continuous outlays, the operation of capital, management and labor would be enormously hampered, if not rendered well nigh impossible. Furthermore, the community is the consumer of the product of industry, and the money which it pays for the product provides the wages, salaries and profits that are distributed among the other parties.

Might not the four parties to industry subscribe to an industrial creed somewhat as follows:

1. I believe that Labor and Capital are partners, not enemies; that their interests are common interests, not opposed, and that neither can attain the fullest measure of pros-

perity at the expense of the other, but only in association with the other.

2. I believe that the community is an essential party to industry and that it should have adequate representation with the other parties.

3. I believe that the purpose of industry is quite as much to advance social well-being as material well-being and that in the pursuit of that purpose the interests of the community should be carefully considered, the well-being of the employees as respects living and working conditions should be fully guarded, management should be adequately recognized and capital should be justly compensated, and that failure in any of these particulars means loss to all four.

4. I believe that every man is entitled to an opportunity to earn a living, to fair wages, to reasonable hours of work and proper working conditions, to a decent home, to the opportunity to play, to learn, to worship and to love, as well as to toil, and that the responsibility rests as heavily upon industry as upon government or society, to see that these conditions and opportunities prevail.

5. I believe that industry, efficiency and initiative, wherever found, should be encouraged and adequately rewarded, and that indolence, indifference and restriction of production should be discontinued.

6. I believe that the provision of adequate means of uncovering grievances and promptly adjusting them is of fundamental importance to the successful conduct of industry.

7. I believe that the most potent measure in bringing about industrial harmony and prosperity is adequate representation of the parties in interest; that existing forms of representation should be carefully studied and availed of in so far as they may be found to have merit and are adaptable to the peculiar conditions in the various industries.

8. I believe that the most effective structure of representation is that which is built from the bottom up, which includes all employees, and, starting with the election of representatives in each industrial plant, the formation of joint works' committees, of joint district councils, and annual joint conferences of all the parties in interest in a single industrial corporation, can be extended to include all plants in the same industry, all industries in a community, in a nation, and in the various nations.

9. I believe that the application of right principles never fails to effect right relations; that the letter killeth and the spirit maketh alive; that forms are wholly secondary while attitude and spirit are all important, and that only as the parties in industry are animated by the spirit of fair play, justice to all and brotherhood, will any plans which they may mutually work out succeed.

10. I believe that that man renders the greatest social service who so co-operates in the organization of industry as to afford to the largest number of men the greatest opportunity for self-development and the enjoyment by every man of these benefits which his own work adds to the wealth of civilization.

As the leaders of industry face this period of reconstruction, what will their attitude be? Will it be that of the stand-patters, . . . who attempt stubbornly to resist the inevitable, and arming themselves to the teeth, invite open warfare with the other parties in industry, the certain outcome of which will be financial loss, inconvenience and suffering to all, the development of bitterness and hatred, and in the end the bringing about through legislation if not by the force of conditions far more drastic and radical than could now be amicably arrived at through mutual concession in friendly conferences? Or will it be an attitude, in which I myself profoundly believe, which takes cognizance of the inherent right and justice of the principles underlying the new order, which recognizes that mighty changes are inevitable, many of them desirable, which, not waiting until forced to adopt new methods, takes the lead in calling together the parties in interest for a roundtable conference to be held in a spirit of justice, fair play and brotherhood with a view to working out some plan of co-operation which will insure to all those concerned adequate representation, an opportunity to earn a fair wage under proper working and living conditions, with such restrictions as to hours as shall leave time not alone for

food and sleep, but also for recreation and the development of the higher things of life.

Never was there such an opportunity as exists today for the industrial leader with clear vision and broad sympathy permanently to bridge the chasm that is daily gaping wider between the parties in interest and to establish a solid foundation for industrial prosperity, social improvement and national solidarity. Future generations will rise up and call those men blessed who have the courage of their convictions, a proper appreciation of the value of human life as contrasted with material gain, and who, imbued with the spirit of brotherhood, will lay hold of the great opportunity for leadership which is open to them today.

Foreign Trade

From the Address of James A. Farrell

The task before us today in respect to foreign trade expansion is not so much to convince as to advise and guide. Entrance into foreign trade is no longer a matter of choice with us.

There can be no great revival of trade in the countries where we hope for it most, unless we are ready to provide capital for their development. We must enter into the industrial life of those countries, engage in enterprises with them and create out of their resources the new wealth from which will come our pay. Habits of investment are acquired by experience, and conditions in this country have favored investments in local enterprises. We have just begun to acquire experience with investments outside of the country, and the development among us of a body of cosmopolitan investors such as has long existed in England must vitally affect the future of our foreign trade. It means, however, an enormous stride in commercial and industrial capacity that we should have passed out of the ranks of the debtor nations, and become ourselves large creditors of all the Allied countries. We must look to private investors to assure the broad and deep foundation on which must be reared the American foreign commerce of the near future.

It may be hoped that the structure will be raised the more easily because of the concession tardily secured from Congress in the shape of what is known as the Webb Act.

The value of presenting a united front, industrially, commercially and financially, in foreign markets, cannot well be overestimated. The abnormal conditions, attending the period of economic reconstruction that lies immediately before us, will, of course, demand the broadest and most generous interpretation of the right of combination. As I found occasion to say at another time, it is difficult to realize the colossal scale on which Europe will have to borrow to make good the destruction of war. Billions of dollars' worth of property will have to be replaced and the demands of the work of reconstruction will be too vast to be met by private enterprise. In the presence of the gigantic needs of the war-swept territories in Europe and of their poverty-stricken population any application of the old-time methods of competition must sound trivial. Co-operation on a large and magnanimous scale and in the most sympathetic spirit must be the rule if the economic recovery is to be quick and thorough. Moreover, we shall greatly lessen the possibility of perpetuating in the domain of commerce the hatred and bitterness engendered by the war if we refuse to be drawn into any convention, agreement or understanding that would make us parties to a boycott of the commerce of any of the nations that have been arraigned against each other.

In this matter of "economic warfare after the war," there should be no ground for misunderstanding our position. An unrepentant Germany, still wedded to her idols of militarism and the relentless application of superior force, can establish no fight to demand the raising of the economic blockade which has been a most potent instrument in ending the war.

In pursuance of the policy of combining national and commercial interests the German nation thought itself entitled to plunder its neighbors for its economic or commercial needs. Thus, Germany's policy of peaceful penetration in the economic sphere was the forerunner of the war of aggression which she launched in 1914. But, when we have exposed German ambition and denounced German methods it would be a curious way of preventing their revival by committing ourselves to the acceptance of German principles. Only on the theory that the menace of Prussian militarism must survive can there be any reason found for looking to the future security of the world in the waging of a perpetual bloodless war, inspired by the same enmities, suspicions and fears that but lately divided the world today. Nor can the fact be ignored that in a trade war, as in the class of military force, the balance of slaughter must be reckoned with since the casualties cannot all be on the other side. It is certain that if Germany is to be compelled, as she ought to be, to repair the wanton destruction she has wrought in Belgium, Northern France, Poland and Serbia, she must have access to the raw materials of manufacture, in the conversion of which into finished products she may earn the money needed to pay her debts.

As a matter of fact, given the frank acceptance by Germany of the terms of peace which will be dictated by the Allies, there can be no reason for separating her economic wants from those of the rest of Europe. These will be sufficiently imperative to use up all the surplus foodstuffs and raw materials that can be spared for many months to come.

I take it that we are all desirous to see the government in our own country as well as the governments of our Allies, release the control over commerce, industry and transportation which has been justified by the necessities of war. . . .

All indications point to a reasonably quick return to the normal condition of foreign trade. The situation, therefore, increases the importance of renewing interest in the subject on the part of those whose pre-occupation in more absorbing pursuits has turned their attention away from it, and of expanding this interest among those to whom the subject is comparatively new. The fact should be steadily kept in view that no element of our national life should be more interested than labor in the development of our foreign trade. . . .

It may be hoped that when peace returns bringing with it normal conditions of commerce the necessity for contributing to the prosperity of our new merchant marine by every means in our power will be impressed on every department of American industry and on every productive interest in the country. Foreign nations have been quick to recognize the new position in which the possession of so large a proportion of the mercantile ship tonnage of the world has placed the United States. It is a position that presents great opportunities and devolves on all concerned, including the legislators of the nation, great responsibilities. It is nothing less than a new era in its commercial and industrial development that the possession of this huge merchant fleet will open to the United States. There was a period in our history, and a particularly glorious one it was, when the gaze of this nation was turned seaward, and when we took as a matter of course the job of being the ocean carriers of the world. But two generations of development mainly landward have somewhat dulled the old aptitudes and disturbed the old sense of confidence. I have not the faintest doubt that both will return as they are needed, and that nothing but the shortsightedness of self-seeking politicians and the misplaced activity of injurious friends of labor can prevent this nation becoming once more the foremost seafaring people of the world.

Readjustment Policy of Public Finance

Alba B. Johnson, president of the Baldwin Locomotive Works and also of the Railway Business Association, presented his paper first before the related group meeting on

machinery, machine tools and power equipment, where it was so well received that he was asked to present it again before the general session, following the reading of Mr. Farrell's address.

Mr. Johnson asked the delegates to conceive the national income composed of a stream of commodities and services pouring forth from the farms, factories, mines and railroads. That income, he said, measured in dollars approximately \$50,000,000. He then traced at the outset of the war what the Secretary of the Treasury did in proposing that \$4,000,000,000 worth of the goods constituting the national income be placed at the disposal of the government for war purposes. He pointed out that at the time of the signing of the armistice the war appropriations exceeded \$24,000,000,000.

Mr. Johnson inquired what shall be the essential points of a readjustment policy of public finance. The burden of taxation must be lifted from business, he said, as a sound method of financing the government. He spoke of the necessity of taxation for maintaining the American army in France. He called the attention of the business men to whom he was speaking to the necessity for the closest possible scrutiny of the \$6,000,000,000 tax measure which is now pending in Congress. He spoke of the desirability of apportioning taxation with reference to the encouragement of business activities and of limiting the amount to be raised by the proposed revenue bill for 1918 now pending in Congress to a maximum of \$4,000,000,000 or to such sum as Congress judges to be necessary. This is a proposition so manifest to business men, he said, as to require no further discussion.

Financial Reconstruction

Paul M. Warburg's paper which he read before the general session of Friday morning discussed chiefly the financing of our foreign trade, and emphasized in great measure the necessity of investment with that end in view.

In trying to survey the field or our future financing, Mr. Warburg said in part, we may take it for granted that should our government cease to make advances to our Allies, some of them are most likely to offer for sale in our market their own government bonds or notes, or their industrial properties. I feel certain that vast amounts of the obligations of our strong friends will find a cordial reception here and will be readily absorbed; but taking it all in all, it appears extremely doubtful whether our investment houses will find it possible to place foreign securities on a broad enough scale to meet the large foreign requirements for our goods. The task will be made all the more difficult, because as some of these countries have just passed through a period of unrest and great financial strain, we may expect the investor to insist on some evidence that new political conditions have come to stay and that he may rely on an undisturbed economic development before he risks his money. On the other hand, this period may offer great opportunities for the acquisition of most valuable foreign properties. Some, particularly those with strong credit, might possibly prefer sooner or later to dispose of some of their national securities or assets rather than to increase their indebtedness to us by the acceptance of further loans; other countries may have to sell in order to pay their debts because their national credit has been destroyed.

From the business point of view it would obviously be to our advantage to buy assets of this sort (or, as the case may be, to make advances secured by such assets with an option to buy them) instead of taking an unsecured long-term foreign government obligation. It is evident why, in the long run, it is more desirable for the United States to acquire the electric light and power plants, telegraph and telephone lines, railroads, mines, or other industrial plants, than to advance to others the money with which to carry these properties; for whoever owns and controls these foreign properties is most likely to secure for his nationals the orders for raw material and manufactured articles that go with the upkeep and de-

velopment of these properties. Regular orders of this nature have shown themselves to be a most valuable nucleus around which further business crystallizes.

We shall, therefore, soon be driven into a position of great importance in international finance, and this responsibility will be facing us long before we may expect to see our market for foreign securities develop far enough adequately to meet the situation. I believe that so-called "investment trusts" will ultimately play an important role in solving this problem. Companies of that character are well known in England, particularly in Scotland.

In these circumstances, it occurred to me some time ago that by converting the War Finance Corporation into a Peace Finance Corporation and authorizing it, to acquire directly, or make advances on foreign securities, we might create an instrument that would promote our foreign trade and at the same time greatly assist foreign nations in need of our support during a period of political and economic transition. . . .

Whatever form of financing, however, the reconstruction period may bring, whether issued by our own government, or by a Peace Finance Corporation, or by foreign governments or foreign corporations, it is certain that their successful absorption will depend upon the saving capacity of our people.

I believe we cannot emphasize too strongly that the time has not yet come when our people, large or small, may relax their efforts to curtail unnecessary consumption, both for the sake of releasing for export the greatest possible quantities of goods thereby stimulating our export industries, and for the purpose of accumulating funds available for investment. The slogan, "Don't stop saving food," would gain in scope and strength by abbreviating it into "Don't stop saving." Our more than 21,000,000 Liberty Bond holders must be trained to become permanent investors; thrift must become a national virtue, a priceless inheritance left to us by the war.

It is sincerely to be hoped that the people by saving and curtailment of unnecessary consumption and expenditures, and the business community by a program of wise moderation, particularly dealing with non-essentials and as long as this can be done without creating unemployment, will do their share in consolidating both our gold and investment strength, on which two factors our ability to secure our proper position in foreign lands and our power to act boldly and generously in dealing with other nations is largely predicated.

In thinking of financial reconstruction and of the financial world of the future, do not too many amongst us have this one thought uppermost in their minds: Is the United States hereafter going to be the leading financial country? In other words, are we going to take England's place as the foremost financial power? Do not these men forget that if England were to surrender her entire trade and banking to us, we should collapse, and that if we were to unload all our business on her, she would break under the burden? The whole truth of the matter is, that we have both grown to be pillars supporting the same structure and that neither can fall or become weakened without bringing danger or disaster on the other. England, herself the owner of billions of foreign obligations, will remain the banking center of Europe; a world clearing house for goods and credits. I believe that her banks and ours will be found in close co-operation sharing the burdens in bond issues and credits, and relieving each other as the tide may swing from time to time.

Personally, I think it is finer and healthier for us not to think so much of the rank as of the responsibility of our position.

The war has accentuated and vastly accelerated the growth of government responsibility and influence in business. This development is worldwide at this time; it is natural, logical and inevitable. While it will tend to elevate business, there is danger that unless carefully safeguarded in both form and scope, it may tend to corrupt and to debauch government. It is this peril that we are facing at the moment of our proudest triumph, and it must be our serious concern that a

national effort born in idealism should not bear the seeds of ultimate national decline. The reconstruction period places us face to face with this problem and it is during this period that thoughts will have to be developed leading to a solution entirely fair to the people.

In the case of the railroads, it is not solely a question between security holders and shipper; it is a question which affects on the one hand the integrity and safety of our future political life, on the other the very foundation of our economic development. The next year or two must bring forth legislation which ought to be for the railroads what the Federal Reserve Act has been for the banks. To find the proper formula will be a national contribution of the highest order. It will be a difficult task, but just for that reason one worthy of the efforts of the best minds of the country. It is not solely a question of railroad technique or finance. A larger problem is involved; one that will face us at every future step in the evolution of the relation between government and private enterprise; the problem of finding men big, trustworthy, expert and independent enough to measure up to the task, and to make the task, independent, clean, non-partisan and dignified enough to measure up to the men. Until that phase of the problem is solved, government regulation or operation in times of peace will remain imperfect and fraught with dangers threatening to outweigh its benefits. No time ever was more propitious than the present for making a determined start in this direction.

The 32 Resolutions

The opinions of the conference were expressed in the form of 32 resolutions passed practically unanimously at the Friday morning's general session. These resolutions were made by following their presentation in the sessions of the 375 war service committees and their approval and co-ordination first by the related group meetings, then by the major group meetings and finally by a clearance committee. The resolutions are all of interest to the readers of the *Railway Age*, but space does not permit of their inclusion in full in this article. The subjects covered by the resolutions were as follows, those of particular interest to *Railway Age* readers, being given in greater detail.

1. Cancellation of War Contracts. 2. Surplus Government Supplies. 3. Removal of Restrictions of Industry. 4. Pivotal Industries. 5. Industrial Co-operation. The war has demonstrated that through industrial co-operation great economies may be achieved, waste eliminated, and efficiency increased. The nation should not forget, but rather should capitalize these lessons by adapting effective war practices to peace conditions through permitting reasonable co-operation between units of industry under appropriate federal supervision. It is in the public interest that reasonable trade agreements should be entered into, but the failure of the government to either clearly define the dividing line between these agreements which are, and those which are not, in unreasonable restraint of commerce, or to provide an agency to speak for it on application of those proposing to enter into such agreement in effect restricts wholesome co-operation and deprives both industry and the general public of its benefits. The conditions incident to the period of readjustment renders it imperative that all obstacles to reasonable co-operation be immediately removed through appropriate legislation.

6. Federal Trade Commission. 7. Industrial Relations. The convention heartily approved in letter and spirit the principles of the industrial creed so clearly and forcibly stated in the paper read to it Thursday morning by John D. Rockefeller, Jr., and urged upon all units of industry, where they may not now be employed, the application of such principles.

8. Relocation of Labor. 9. Public Works. 10. Taxation. 11. Inventories.

12. Railroads. The Congress of the United States should speedily enact legislation providing for the early return under federal charters, to their owners of all railroads now being operated by this government under federal regulations permitting the elimination of wasteful competition, the pooling of equipment, combinations or consolidations through ownership or otherwise in the operation of terminals, and such other practices as will tend to economies without destroying competition in service.

13. Means of Communication. We are opposed to government ownership and operation of telegraphs, telephones, and cables.

14. Merchant Marine. We recommend that the construction of a great merchant marine be continued and amplified, and that its operation under American control be kept safe by such legislation as may be necessary to insure its stability and its lasting value to American industries.

15. Port Facilities. The recommendations of the Port and Harbor Facilities Commission of the United States Shipping Board for development of ports are supported. Vessels of foreign register needed for our commerce by sea are attracted to those ports which are best fitted to coal, to load, and to unload cargoes, and thus provide means for a quick-turn-around. After ascertaining the port facilities of European countries, and their plans for further development, the Commission has recommended that there should be a local port commission at each of the important ports upon our coasts, that upon these commissions there should be representatives of industrial, commercial, and railroad interests centering at the port, that facilities should be installed to meet the needs of the port, and that a zone system should be arranged by which exports and imports would flow through these ports which are within economic transportation distance of the points of origin and destination. There should be co-operation with the Facilities Commission in its task of expanding means which will enhance the position of the United States among maritime nations.

16. Public Utilities. 17. Water Powers. 18. International Reconstruction.

19. Favoring the European Commission. In order to contribute to the fullest toward the prompt solution of the problem presented, the Chamber of Commerce of the United States is requested to enlist the co-operation of national bodies devoted to the extension and promotion of American commerce and particularly foreign trade, in the appointment of a commission representative of American business, which shall proceed without delay to Europe and establish machinery for the following purposes:

A. To study at first hand the reconstruction needs of European countries in connection with business men of those nations in order to advise the business men of the United States as to how they may be most helpful in meeting the necessities of Europe and caring for the interests of American industry and commerce.

B. To be available to the peace delegates of the United States for any needed information which they may be asked to present or for any other aid which may be given by the business men of the United States through the medium of such a commission.

20. European Committee. 21. Markets for Foreign Trade.

22. South American Relations. 23. Property Rights in Mexico. 24. Education in Foreign Commerce. 25. Approving the Work of the Forest Products Laboratories. 26. Cost Accounting. 27, 28 and 29 relate to the work of the Chamber of Commerce, etc. 30. Acknowledging the appreciation to the speakers at the Conference. 32. Favors the organizing of the country's industries in representative trade associations.

31. Trade Press. The conference has been singularly favored by the trade press of America in having its daily proceedings published in the special editions of a paper gotten out each morning for that purpose alone. For this splendid service and the spirit which inspired it, the conference now desires to express its appreciation and to extend its thanks.



The Material Yard at Hetch Hetchy Junction.

San Francisco's Venture in Railroad Construction

The City Has Just Completed a 68-Mile Line As a Facility for the Hetch Hetchy Project

By A. J. Cleary

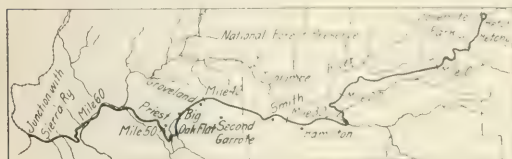
Assistant General Manager, Hetch Hetchy Railroad, San Francisco, Cal.

TO CONVEY construction material for the Hetch Hetchy water supply project, which San Francisco is developing in the Sierra Nevada mountains, that city has built a railroad 68 miles in length, extending from Hetch Hetchy Junction, a station on the Sierra Railway of California 26 miles east of Oakdale, to the Hetch Hetchy dam site, in the Yosemite National Park. This is believed to be the first steam railroad of any considerable extent to be built and also operated by a municipality.

The Hetch Hetchy project is being developed to furnish San Francisco and the neighboring communities with a domestic water supply of 400 million gallons daily. The project will cost \$45,000,000 independent of a pipe distribution

and through the Coast range by a tunnel 31 miles in length. From the westerly end of this tunnel the water will be brought to the San Francisco peninsula, through a pipe conduit 19 miles in length, while 21 miles of tunnel and two miles of pipe aqueduct must be constructed on the San Francisco peninsula. The total distance from the Hetch Hetchy valley to the city limits is 166 miles, of which 66 miles will be tunnel, 88 miles steel pipe line, and 12 miles river channel.

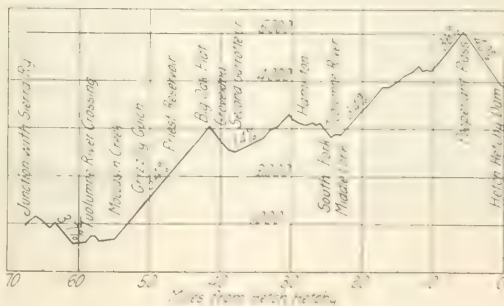
On the upper portion of the aqueduct, which traverses the Sierra Nevada mountains, there were no means of transportation when the city undertook the project, except very poorly maintained wagon roads, with grades often as high as 18 per cent. Motor truck haul over such roads could not be made for less than 50 cents per ton-mile. As 233,000 tons of construction material and equipment will be necessary for the mountain division of the work, the imperative need for a railroad in connection with the project was at once evident.



Map of the Hetch Hetchy Railway

system within the city limits, which the city will probably acquire from the existing water company.

A dam 300 ft. high and about 900 ft. in length along the crest will be constructed across a gorge at the lower end of Hetch Hetchy valley. When constructed to the full height it will contain approximately 500,000 cu. yds. of cyclopean concrete. Impounded by this structure will be a reservoir seven miles long and one mile wide, containing 112 billion gallons of water. This will be released from storage and allowed to flow 12 miles down the canyon of the Tuolumne river, where it will be diverted into a tunnel 18.3 miles in length and 10 ft. 3 in. in diameter, at the lower end of which will be a regulating reservoir, whence the water will drop 1,215 ft. into a power house. From here the water will flow through two tunnels, 5.7 and 11.3 miles in length, respectively, thence across the San Joaquin valley in a pipe line, 45 miles long



Profile of the Line

Since hauling can be made by rail at a cost of approximately 5 cents per ton-mile, and the cost of the railroad complete was approximately \$2,000,000, the amount of money saved by its construction would be \$5,000,000, if all this freight were hauled the entire length of the railroad. As some, how-

ever, will be delivered to intermediate points along the line, it is figured that the saving by building the railroad will be between \$2,000,000 and \$3,000,000.

A contract for grading nine miles of the railroad, from Hog Ranch to the Hetch Hetchy dam site, in the Yosemite National Park, was awarded to the Utah Construction Company in 1914 at a total contract price of \$180,000. This portion of the road is through the canyon of the Tuolumne river in a granite formation, over an exceedingly rough and precipitous country. The width of this portion of the roadbed was 22 ft., the intention being, after the completion of the project, to convert the upper nine miles of the railroad into a scenic automobile boulevard. The contractor completed this work in February, 1915. A contract for grading the remaining 59 miles and laying and ballasting the track over the entire 68 miles of roadbed, was awarded to F. Rolandi on December 6, 1915, for the estimated sum of \$1,543,080. Actual construction was begun in February, 1916, and completed two years later with the exception of some of the ballasting and minor details.

The Line Is in Difficult Country

The elevation of Hetch Hetchy Junction, where the city's railroad begins, is 935 ft. Thence the railroad crosses two low ridges and drops to an elevation of 625 ft. in a distance of nine miles, to cross the Tuolumne river, which is bridged about 15 ft. above extreme high water. From this crossing the road continues along the river canyon, past Jacksonville, one of the oldest mining camps in California, thence follows up the gorges of Moccasin creek and Grizzly gulch to



The Hetch Hetchy Valley—Terminus of the Hetch Hetchy Railroad

Priest, a climb of approximately 8 miles, on a continuous 4 per cent grade, compensated for curvature.

From Priest the road continues along a comparatively level plateau through Big Oak flat, Groveland and Second Garrotte, famous mining camps of the early days and vividly described by Bret Harte in his stories. Continuing past Hamilton, the road descends to the south and middle forks of the Tuolumne river, which are crossed on ballast deck trestles. There is then an ascent to Poopenaut pass, where

an elevation of 5024 ft. is attained; thence the road descends on a continuous 4 per cent grade to Hetch Hetchy dam site, at 3869 ft. elevation.

The trip from South Fork to Hetch Hetchy dam site, a distance of 24 miles, is considered by all who have been over the road as the most picturesque railroad location in the United States, if not on the American continent. Traversing, on the railroad, the summit of one of the ridges of the Sierras, the tourist sees in the foreground, 3,000 ft. almost vertically below him, the precipitous canyon of the Tuolumne, beyond which, in every direction as far as the eye can see, the granite summits of the mountain ridges reach to the horizon, their



Typical Construction Work

contour interrupted at intervals by such well known peaks as North Dome, Kolano Rock, Smith Peak, Mount Gibson and Laconte Point.

With the exception of 9 miles of railroad from Hog Ranch to the Hetch Hetchy valley, the roadbed is 16 ft. wide. It involved the excavation of over 1,000,000 cu. yd. of material. In view of the roughness of the country and the fact that the railroad is to be operated principally for freight traffic, sharp curvature has been used to avoid heavy cuts, the maximum curves being 30 deg. There are no tunnels on the Hetch Hetchy railroad, as the maximum grade of 4 per cent and curvature of 30 deg. allows sufficient flexibility, even in an exceedingly mountainous country, to minimize grading costs.

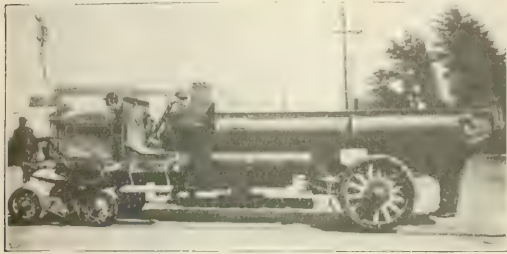
Construction

The maximum construction force was about 800 men. The excavation was done principally by stationmen, at costs varying from approximately 32 to 58 cents per yard. Scraper teams proved more economical than steam shovels on this work, due to the fact that the excavation was so light and that only one-quarter of the total yardage for the entire railroad was in rock.

The roadbed is ballasted with river gravel for a distance of 15 miles, and with decomposed granite for 15 miles. The remainder of the ballasting is being performed by the city at the present time. It is certain that decomposed granite will stand up in very good shape for a number of years. The ballast pit for this material is located on the summit of the Priest grade, where there is a downhaul of 15 miles westward

and 4 miles eastward. For the upper portion of the road, gravel will be used, as a suitable pit is contiguous to the work near Hamilton. The ballast is 6 inches deep under the ties, which are of redwood and of Oregon pine, 6 in. by 6 in. by 8 ft.

Alternate bids were invited for excavation on an unclassified basis and for a segregated basis of excavated material, classified as granite, hard rock, soft rock and earth. It was found more desirable to award the contract on the basis of unclassified material—67 cents per cubic yard being the price bid by the contractor for excavation.



The Type of Motor Truck Used for Express and Light Freight Service

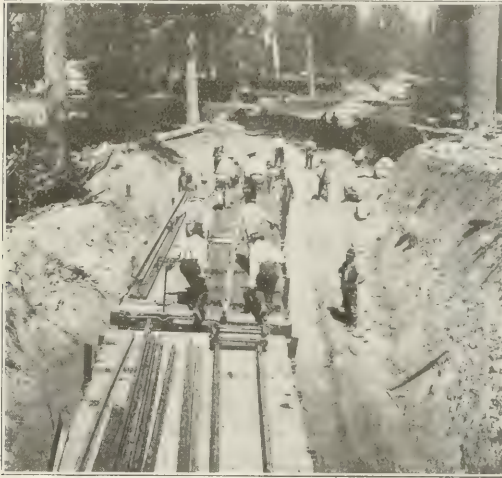
For hauling excavated material a distance in excess of 400 ft. one cent per cubic yard per 100 ft. overhaul charges were allowed.

The following table shows the quantities, unit prices and total construction costs for the road, with the exception of ballasting, which was not completed by the contractor, but taken over by the city and performed on a day labor basis.

Items	Quantity	Unit	Unit price	Total
Grading				
Excavation	1,161,997.2	cu. yd.	.67	\$778,538.12
Overhaul	476,542	sta. yd.	.01	4,765.42
Culverts				
12 in.	3,875	lin. ft.	.50	1,937.50
24 in.	11,892	lin. ft.	1.75	20,811.00
30 in.	1,306	lin. ft.	2.50	3,265.00
36 in.	2,106	lin. ft.	3.15	6,633.90
Fencing				
Common	6,391	miles	.0000	3.774.00
Hot-light	31,801	miles	.070.00	21,860.70
Ballast				
Sec. 4 gravel, 40 per cent complete	1,042	miles	50.00	52,100.00
Sec. 5 gravel	13,165	miles	1,500.00	19,747.50
Sec. 5 gravel, 40 per cent complete	1,000	cu. yd.	.80	800.00
Track construction				
Track bed	70,130	miles	8,150.00	\$5,713,550.00
Switch sets	25	sets	140.00	3,500.00
Guard rails	2,824.2	lin. ft.	.60	1,694.52
Point castings	780	lb.	.09	70.20
Rail braces	2,702	pcs.	.35	945.70
Anti-creeper	1,665	pcs.	.75	1,248.75
Derails	5	pcs.	15.00	75.00
Cattle guards	80	pcs.	15.00	1,200.00
Redwood water tanks	6	pcs.	400.00	2,400.00
Tuolumne River bridge				
Truss	487,121	lb.	.053	25,816.41
Girders		lb.	.057	27,756.09
Trestles				
Timber, erected	10,632	M ft. beam	40.00	425,280.00
Iron in trestles	4,000.92	lb.	.05	200.04
Masonry				
Concrete	1,400,542	cu. yd.	1.000	1,400,542.00
Dry rubble	148.9	cu. yd.	1.00	148.90
Telephone line				
Complete	50,393	ft.	.48	24,188.64
On poles already set	7,878	ft.	.00	2,993.64
Station instruments installed	10	sets	100.00	1,000.00
Extra work				
At Station 2924+50, draw 130 ft. tunnel, 130 ft. @ \$13 per ft.				1,690.00
Excavating part 12, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1035, 1040, 1045, 1050, 1055, 1060, 1065, 1070, 1075, 1080, 1085, 1090, 1095, 1100, 1105, 1110, 1115, 1120, 1125, 1130, 1135, 1140, 1145, 1150, 1155, 1160, 1165, 1170, 1175, 1180, 1185, 1190, 1195, 1200, 1205, 1210, 1215, 1220, 1225, 1230, 1235, 1240, 1245, 1250, 1255, 1260, 1265, 1270, 1275, 1280, 1285, 1290, 1295, 1300, 1305, 1310, 1315, 1320, 1325, 1330, 1335, 1340, 1345, 1350, 1355, 1360, 1365, 1370, 1375, 1380, 1385, 1390, 1395, 1400, 1405, 1410, 1415, 1420, 1425, 1430, 1435, 1440, 1445, 1450, 1455, 1460, 1465, 1470, 1475, 1480, 1485, 1490, 1495, 1500, 1505, 1510, 1515, 1520, 1525, 1530, 1535, 1540, 1545, 1550, 1555, 1560, 1565, 1570, 1575, 1580, 1585, 1590, 1595, 1600, 1605, 1610, 1615, 1620, 1625, 1630, 1635, 1640, 1645, 1650, 1655, 1660, 1665, 1670, 1675, 1680, 1685, 1690, 1695, 1700, 1705, 1710, 1715, 1720, 1725, 1730, 1735, 1740, 1745, 1750, 1755, 1760, 1765, 1770, 1775, 1780, 1785, 1790, 1795, 1800, 1805, 1810, 1815, 1820, 1825, 1830, 1835, 1840, 1845, 1850, 1855, 1860, 1865, 1870, 1875, 1880, 1885, 1890, 1895, 1900, 1905, 1910, 1915, 1920, 1925, 1930, 1935, 1940, 1945, 1950, 1955, 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2015, 2020, 2025, 2030, 2035, 2040, 2045, 2050, 2055, 2060, 2065, 2070, 2075, 2080, 2085, 2090, 2095, 2100, 2105, 2110, 2115, 2120, 2125, 2130, 2135, 2140, 2145, 2150, 2155, 2160, 2165, 2170, 2175, 2180, 2185, 2190, 2195, 2200, 2205, 2210, 2215, 2220, 2225, 2230, 2235, 2240, 2245, 2250, 2255, 2260, 2265, 2270, 2275, 2280, 2285, 2290, 2295, 2300, 2305, 2310, 2315, 2320, 2325, 2330, 2335, 2340, 2345, 2350, 2355, 2360, 2365, 2370, 2375, 2380, 2385, 2390, 2395, 2400, 2405, 2410, 2415, 2420, 2425, 2430, 2435, 2440, 2445, 2450, 2455, 2460, 2465, 2470, 2475, 2480, 2485, 2490, 2495, 2500, 2505, 2510, 2515, 2520, 2525, 2530, 2535, 2540, 2545, 2550, 2555, 2560, 2565, 2570, 2575, 2580, 2585, 2590, 2595, 2600, 2605, 2610, 2615, 2620, 2625, 2630, 2635, 2640, 2645, 2650, 2655, 2660, 2665, 2670, 2675, 2680, 2685, 2690, 2695, 2700, 2705, 2710, 2715, 2720, 2725, 2730, 2735, 2740, 2745, 2750, 2755, 2760, 2765, 2770, 2775, 2780, 2785, 2790, 2795, 2800, 2805, 2810, 2815, 2820, 2825, 2830, 2835, 2840, 2845, 2850, 2855, 2860, 2865, 2870, 2875, 2880, 2885, 2890, 2895, 2900, 2905, 2910, 2915, 2920, 2925, 2930, 2935, 2940, 2945, 2950, 2955, 2960, 2965, 2970, 2975, 2980, 2985, 2990, 2995, 3000, 3005, 3010, 3015, 3020, 3025, 3030, 3035, 3040, 3045, 3050, 3055, 3060, 3065, 3070, 3075, 3080, 3085, 3090, 3095, 3100, 3105, 3110, 3115, 3120, 3125, 3130, 3135, 3140, 3145, 3150, 3155, 3160, 3165, 3170, 3175, 3180, 3185, 3190, 3195, 3200, 3205, 3210, 3215, 3220, 3225, 3230, 3235, 3240, 3245, 3250, 3255, 3260, 3265, 3270, 3275, 3280, 3285, 3290, 3295, 3300, 3305, 3310, 3315, 3320, 3325, 3330, 3335, 3340, 3345, 3350, 3355, 3360, 3365, 3370, 3375, 3380, 3385, 3390, 3395, 3400, 3405, 3410, 3415, 3420, 3425, 3430, 3435, 3440, 3445, 3450, 3455, 3460, 3465, 3470, 3475, 3480, 3485, 3490, 3495, 3500, 3505, 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5170, 5175, 5180, 5185, 5190, 5195, 5200, 5205, 5210, 5215, 5220, 5225, 5230, 5235, 5240, 5245, 5250, 5255, 5260, 5265, 5270, 5275, 5280, 5285, 5290, 5295, 5300, 5305, 5310, 5315, 5320, 5325, 5330, 5335, 5340, 5345, 5350, 5355, 5360, 5365, 5370, 5375, 5380, 5385, 5390, 5395, 5400, 5405, 5410, 5415, 5420, 5425, 5430, 5435, 5440, 5445, 5450, 5455, 5460, 5465, 5470, 5475, 5480, 5485, 5490, 5495, 5500, 5505, 5510, 5515, 5520, 5525, 5530, 5535, 5540, 5545, 5550, 5555, 5560, 5565, 5570, 5575, 5580, 5585, 5590, 5595, 5600, 5605, 5610, 5615, 5620, 5625, 5630, 5635, 5640, 5645, 5650, 5655, 5660, 5665, 5670, 5675, 5680, 5685, 5690, 5695, 5700, 5705, 5710, 5715, 5720, 5725, 5730, 5735, 5740, 5745, 5750, 5755, 5760, 5765, 5770, 5775, 5780, 5785, 5790, 5795, 5800, 5805, 5810, 5815, 5820, 5825, 5830, 5835, 5840, 5845, 5850, 5855, 5860, 5865, 5870, 5875, 5880, 5885, 5890, 5895, 5900, 5905, 5910, 5915, 5920, 5925, 5930, 5935, 5940, 5945, 5950, 5955, 5960, 5965, 5970, 5975, 5980, 5985, 5990, 5995, 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6830, 6835, 6840, 6845, 6850, 6855, 6860, 6865, 6870, 6875, 6880, 6885, 6890, 6895, 6900, 6905, 6910, 6915, 6920, 6925, 6930, 6935, 6940, 6945, 6950, 6955, 6960, 6965, 6970, 6975, 6980, 6985, 6990, 6995, 7000, 7005, 7010, 7015, 7020, 7025, 7030, 7035, 7040, 7045, 7050, 7055, 7060, 7065, 7070, 7075, 7080, 7085, 7090, 7095, 7100, 7105, 7110, 7115, 7120, 7125, 7130, 7135, 7140, 7145, 7150, 7155, 7160, 7165, 7170, 7175, 7180, 7185, 7190, 7195, 7200, 7205, 7210, 7215, 7220, 7225, 7230, 7235, 7240, 7245, 7250, 7255, 7260, 7265, 7270, 7275, 7280, 7285, 7290, 7295, 7300, 7305, 7310, 7315, 7320, 7325, 7330, 7335, 7340, 7345, 7350, 7355, 7360, 7365, 7370, 7375, 7380, 7385, 7390, 7395, 7400, 7405, 7410, 7415, 7420, 7425, 7430, 7435, 7440, 7445, 7450, 7455, 7460, 7465, 7470, 7475, 7480, 7485, 7490, 7495, 7500, 7505, 7510, 7515, 7520, 7525, 7530, 7535, 7540, 7545, 7550, 7555, 7560, 7565, 7570, 7575, 7580, 7585, 7590, 7595, 7600, 7605, 7610, 7615, 7620, 7625, 7630, 7635, 7640, 7645, 7650, 7655, 7660, 7665, 7670, 7675, 7680, 7685, 7690, 7695, 7700, 7705, 7710, 7715, 7720, 7725, 7730, 7735, 7740, 7745, 7750, 7755, 7760, 7765, 7770, 7775, 7780, 7785, 7790, 7795, 7800, 7805, 7810, 7815, 7820, 7825, 7830, 7835, 7840, 7845, 7850, 7855, 7860, 7865, 7870, 7875, 7880, 7885, 7890, 7895, 7900, 7905, 7910, 7915, 7920, 7925, 7930, 7935, 7940, 7945, 7950, 7955, 7960, 7965, 7970, 7975, 7980, 7985, 7990, 7995, 8000, 8005, 8010, 8015, 8020, 8025, 8030, 8035, 8040, 8045, 8050, 8055, 8060, 8065, 8070, 8075, 8080, 8085, 8090, 8095, 8100, 8105, 8110, 8115, 8120, 8125, 8130, 8135, 8140, 8145, 8150, 8155, 8160, 8165, 8170, 8175, 8180, 8185, 8190, 8195, 8200, 8205, 8210, 8215, 8220, 8225, 8230, 8235, 8240, 8245, 8250, 8255, 8260, 8265, 8270, 8275, 8280, 8285, 8290, 8295, 8300, 8305, 8310, 8315, 8320, 8325, 8330, 8335, 8340, 8345, 8350, 8355, 8360, 8365, 8370, 8375, 8380, 8385, 8390, 8395, 8400, 8405, 8410, 8415, 8420, 8425, 8430, 8435, 8440, 8445, 8450, 8455, 8460, 8465, 8470, 8475, 8480, 8485, 8490, 8495, 8500, 8505, 8510, 8515, 8520, 8525, 8530, 8535, 8540, 8545, 8550, 8555, 8560, 8565, 8570, 8575, 8580, 8585, 8590, 8595, 8600, 8605, 8610, 8615, 8620, 8625, 8630, 8635, 8640, 8645, 8650, 8655, 8660, 8665, 8670, 8675, 8680, 8685, 8690, 8695, 8700, 8705, 8710, 8715, 8720, 8725, 8730, 8735, 8740, 8745, 8750, 8755, 8760, 8765, 8770, 8775, 8780, 8785, 8790, 8795, 8800, 8805, 8810, 8815, 8820, 8825, 8830, 8835, 8840, 8845, 8850, 8855, 8860, 8865, 8870, 8875, 8880, 8885, 8890, 8895, 8900, 8905, 8910, 8915, 8920, 8925, 8930, 8935, 8940, 8945, 8950, 8955, 8960,				

geared locomotives operate make them unsatisfactory for work of this magnitude.

For hauling express, a special type of rolling stock has been devised, which consists merely of motor trucks, provided with two flange wheels in the rear and a four-wheel pony truck in front, as shown in one of the photographs. These trucks have proved very efficient on the rails. The notable feature about them is a turntable attached to the chassis. By inserting jacks under each end of this device the truck can be lifted from the rails, swung around, and its direction reversed within about two minutes. A Cadillac automobile,



Laying Track Through the Forest

equipped in the same manner, is used for inspection trips over the line.

The construction of this railroad, as well as the entire development of the water supply project, has been under the executive direction of M. M. O'Shaughnessy, city engineer of San Francisco and general manager of the Hetch Hetchy railroad.

The Operation of the Largest Ticket Office

SOME TIME AGO a passenger purchased a ticket from Omaha, Neb., to Lamen, Iowa. The shortest route between the two points is via Osceola, Iowa, and the passenger has to change cars at that point. Acting upon the advice of the ticket salesman, who had a thorough and intimate knowledge of train schedules, the passenger bought a ticket to Chariton, a junction point 26 miles beyond Osceola, and changed cars there, thereby saving 12 hours' time. This instance is typical of the problems which daily confront a ticket clerk. As there is a limit to the detail which any man can retain in his memory it is essential that no one salesman be allotted too large a territory or be assigned to too many lines.

This principle was recognized in the organization of the consolidated ticket office at Chicago, the physical features of which were described in the *Railway Age* of July 5, page 30. In general, the pooling of ticket selling was avoided as far as practicable. In the western section of the con-

solidated office, which is the largest unified ticket office in the country, the Chicago, Burlington & Quincy, the Chicago & North Western, the Chicago, Milwaukee & St. Paul and the Atchison, Topeka & Santa Fe each have separate ticket booths while the Chicago, Rock Island & Pacific and the Chicago Great Western jointly occupy one of the remaining booths, while the Chicago, Rock Island & Pacific and the Line the other. In the section occupied by the eastern and southern lines, ticket selling is more extensively pooled. The Pennsylvania Lines and the Baltimore & Ohio jointly occupy a booth, as do the New York Central Lines and the New York, Chicago & St. Louis. The two remaining booths are occupied by five roads each, one by the Cleveland, Cincinnati, Chicago & St. Louis, the Illinois Central, the Chicago & Eastern Illinois, the Chicago, Indianapolis & Louisville and the Chesapeake & Ohio, and the other by the Michigan Central, the Wabash, the Grand Trunk, the Erie and the Pere Marquette.

While at first glance the unification of the sales of so many roads would seem to lead to serious complications, the problem of the ticket seller is simplified by the fact that most of the roads are light passenger lines; and railways serving the same territory have been grouped together. The Illinois Central and the Chicago & Eastern Illinois, for instance, are the largest passenger carriers out of Chicago and the remaining lines in the booth, the Big Four, the Monon and the C. & O. are adjacent roads. The 13 salesmen stationed in the booth were all recruited from the former individual offices of these lines and previously had a fairly thorough knowledge not only of the schedules and tariffs of their own roads, but also of competing railways. They are therefore well equipped to render satisfactory service in the booth which they occupy.

Both of the five-road sections are arranged to contain four ticket cases, each complete in itself, and two cashiers' cages, thereby eliminating unnecessary steps and the interference of one salesman with another. Telephones have been placed under the counter within easy reach of the salesmen and these are connected with a Pullman diagram desk which is located in the center of the booth. The section is in charge of an agent who has general supervision over ticket sales and accounts, and reports to the manager of the office.

Other booths in both the western and the eastern and southern lines' offices are smaller than the five-road sections, but have a similar organization and equipment. The information which the individual ticket seller is required to furnish a traveler has been minimized as far as possible by the establishment of an information bureau in the front of each office. The bureau is manned by eight people employed at the counter to answer the inquiries of prospective travelers and five people at telephones to answer calls from various parts of the city. The telephone inquiries in the office of the eastern and southern lines are averaging about 200 per hour.

The western lines' office is handling from 600 to 700 transactions per day, many of which involve more than one ticket, or about 16,000 transactions per month, representing sales totaling over \$500,000. On the opening day the section occupied by the eastern and southern lines handled 976 transactions representing sales of over \$37,000. Since that time some daily sales have totaled as much as \$50,000. The officers in charge expect the annual sales on the eastern and southern side to total \$17,000,000, or over, and on the western side about \$10,000,000.

The employees in the eastern and southern lines' section number 89 and in the western lines' section, 86. C. C. Clark is manager, and M. Wolf, is assistant manager of the former section, while L. H. McCormick is manager, and James Moriarity assistant manager of the western lines' office.

McAdoo Proposes Extension of Federal Control

Declares Present Plan Inadequate and Legislation for Further Test Only Alternative to Early Relinquishment

EXTENSION OF THE PERIOD of federal control of railroads for five years, or until January 1, 1924, in order to make possible a more complete test of government control, and as an alternative to a return of the roads to their owners under the former conditions, was recommended to Congress by Director General McAdoo in a letter addressed on Wednesday to Senator E. D. Smith, chairman of the Senate Committee on Interstate Commerce, and Representative Thetus W. Sims, chairman of the House Committee on Interstate and Foreign Commerce. Mr. McAdoo based his recommendation on the ground that it is impracticable, as well as opposed to the public interest, to attempt to operate the railroads under the provisions of the present law and that it will be impossible to secure legislation during the present session of Congress providing a permanent solution of the railroad problem. He declared that he is not interested in proving or disproving the theory of government ownership or any other kind of theory, but he hoped that Congress would make possible a test of unified railroad operation under proper provisions of law which will make the test effective and at the same time "take the railroad question out of politics" while the test is being made. Unless this is done, he said, the roads should be returned at the earliest possible moment. He added that "the President has given me permission to say that this conclusion accords with his own view of the matter."

Mr. McAdoo did not specify what he meant by "proper provisions of law" to make the test effective, and to avoid the difficulty now encountered in making improvements, nor did he discuss the possibility of another alternative—a continuation of the present system of control for a shorter period than 21 months, or until the new Congress has had a short time in which to deal with the question.

The text of the joint letter to the chairmen of the congressional committees follows:

Mr. McAdoo's Letter

The question of railroad legislation is of such vital importance to the country that I take the liberty of submitting to you my views as to the course that should now be pursued. The war is ended and we are now confronted with the necessity either of legislating intelligently about the railroad problem at this session of the Congress or of promptly returning the railroads to their owners.

Less than three months of the present session of the Congress remain. It will be impossible, I presume, to secure legislation in this short period providing a permanent solution of the railroad problem. This being true, only three courses are open: (1) Government operation of the railroads for one year and nine months following a proclamation of peace, which would mean, in my judgment, government operation for a period in no event longer than two years and three months; (2) the prompt return of the railroads to private control; or (3) extension of the period of federal control to five years.

I am convinced that it is wholly impracticable, as well as opposed to the public interest, to attempt to operate the railroads under the provisions of the present law. In the first place the time is too short, and, secondly, the present legislation is inadequate.

As to the shortness of time, it is clear to me that the railroads cannot be successfully operated under federal control during the next two years in the face of an automatic transfer

to private control at the end of that time or of an earlier relinquishment by proclamation of the president. Every month that passes will bring more clearly to the minds of the officers and employees the fundamental change in management that is impending, and the question as to what that change means to the individual. It is against human nature that there can be complete and single-minded attention to duty under such difficult circumstances. This will be especially true on account of the inevitable discussion as to what ought to be done. Already this discussion is in full swing, and its reaction on officers and employees cannot be consistent with the complete concentration upon their daily duties. State railroad commissions, railroad security holders, railroad executives, shippers' organizations and other interests are naturally and properly discussing the subject and proposing various solutions. However desirable the discussion is for the crystallization of public sentiment it cannot result otherwise than to produce a state of uncertainty and ferment among the vast army of railroad officers and employees who will inevitably feel that they face a rapidly approaching change in management.

Present Plan Inadequate

No business in the United States so imperatively requires disciplined organization and composed conditions of operation, for officials as well as for employees, as the railroad business. Not only does the safety of the lives of millions of passengers depend upon such disciplined and efficient organization, but the commerce of the country as well. To keep this vast army of officers and employees in a state of uncertainty and ferment for a period of two years would be harmful in the highest degree to the public interest. It would be impossible to prevent a serious impairment of the morale of the railroad organizations.

From the standpoint of needed improvements, the period of two years is entirely too short a time within which to plan and carry out the comprehensive improvements which ought to be made to meet the country's requirements under peace conditions. Many of the improvements could hardly be completed and put into operation inside of the two-year period, and under such circumstances and facing a change to private management at the end of two years it would be unwise in the highest degree to make the improvements and impossible to secure the hearty co-operation of the railroad corporations.

Because of the inadequacy of the present legislation the authority of the states and the federal government has been left in doubt by provisions which I opposed when the bill was under discussion. Conflict between state and federal jurisdictions will grow more acute under this law. The revolving fund appropriated by the Congress will be insufficient to carry the federal operation for a two-year period. More than that, it is of the utmost importance to the commerce, industry and life of the American people that a comprehensive programme of improvements to railroad properties shall be carried forward over a period of at least five years; such a programme will involve expenditures of at least \$500,000,000 per annum, or \$2,500,000,000 for the five-year period. The needed funds are not provided by the present law. Moreover, it is difficult under the present law, without the consent of the corporations, to carry forward a comprehensive plan of joint improvements, which, to be of value to the public, must of itself disregard the selfish and irreconcilable competitive interests of the various carriers. Many terminal improvements, to be genuinely serviceable to the public, must be made without regard to the

interest of any particular carrier. Therefore, agreements between the government and the railroads affected will in many instances, be impossible, and if the government should proceed with such improvements, using the people's money for the purpose, without securing the carriers' consent, litigation would undoubtedly arise upon the termination of federal control, with the danger that a large part of the government's investment in the properties might be lost.

Upon the efficiency of the transportation machine in America depends in great measure the future prosperity of the nation. Involved in this prosperity is the extension of our foreign trade. We produce so much more than we consume that markets must be found for that surplus. Those markets are the competitive markets of the world. We must be able to enter them upon equal terms with any other nation. Our transportation system, both on land and water, must therefore function at the highest point of efficiency and at the lowest possible cost if we are to get our reasonable and fair share of the world's trade and in turn be able to keep a prosperous, contented and happy population at home.

To attempt to continue federal control under the inadequate provisions of the present federal control act and for the very brief period it authorizes would be to multiply our difficulties and invite failure. On the other hand, I am convinced from the experience of the past year that the return of the railroads to the old competitive conditions will be hurtful alike to the public interest and to the railroad themselves. This course, however, will bring fewer evils in its train than the unsatisfactory, if not impotent, federal control provided for by the present act. The railroads were taken over as a war measure. They have been operated during the past year for the paramount purpose of winning the war. I think it will be generally admitted that the war service has been successfully rendered, and I am sure that experience of great value and benefit has been gained not only for the public, but for the railroads themselves during this brief test.

There is one, and to my mind only one, practicable and wise alternative, and that is to extend the period of federal control from the one year and nine months, provided by the present law, to five years, or until the first day of January, 1924. This extension would take the railroad question out of politics for a reasonable period. It would give composure to railroad officers and employees. It would admit of the preparation and carrying out of a comprehensive programme of improvements of the railroads and their terminal facilities which would immensely increase the efficiency of the transportation machine. It would put back of the railroads the credit of the United States during the five-year period so that the financing of these improvements could be successfully carried out. It would offer the necessary opportunity under proper conditions to test the value of unified control, and the experience thus gained would of itself indicate the permanent solution of the railroad problem.

The American people have a right to this test. They should not be denied it. It is to their interest that it should be done. In my opinion, it is the only practicable and reasonable method of determining the right solution of this grave economic problem.

Not Interested in Question of Government Ownership

I am not now and have not been for the past year interested in proving or disproving the theory of government ownership or any other kind of theory. The railroads have been operated for the past year with the purpose of serving efficiently the paramount needs of the war and at the same time furnishing the best possible service to the public, whether such operation tended to prove or to disprove any theory of railroad control, no matter what it might be. I have formed no opinion myself as to what is the best disposition of the railroad problem because the test has not been sufficient to prove conclusively the right solution of the problem. I believe that a five-year test will give the American people the right answer.

An ounce of experience is worth a ton of theory, and with the start already made under war conditions it would be a comparatively simple matter to complete the test so well begun and thereby gain the invaluable experience which will determine the solution of a problem which has vexed our state and national politics and our economic development for the past generation.

There are those who may say that an extension of five years for such a test will mean government ownership. Personally I do not believe it. But whether such a test would indicate that the ultimate solution shall be government ownership or a modified form of private ownership under effective federal regulation, should not cause us to hesitate or refuse to act. It seems to me that in a democracy like ours, where public opinion and the judgment of the majority must finally control, the plain duty is to take those steps which will fully inform public opinion, so that the judgment may be based upon knowledge rather than upon theory. Any test which will illumine the subject so completely that public opinion may operate upon it intelligently would seem to me to be desirable in any circumstances.

In this connection, may I draw your attention to the statement I made before the committee of the Senate on January 21, 1918, in reply to a Senator who asked if I believed "in the government ownership of railroads," I said:

"The actual ownership of the railroads, I believe that it will be impossible after the return of peace to restore the competitive conditions to the same extent as they existed prior to the outbreak of the war. I favor some form of governmental regulation and control of a far stronger, more intelligent and effective character than we have had heretofore, because I am satisfied that a stronger government control will be demanded and will have to be worked out, both in the interest of the public and in the interest of the security-holders of these railroads."

Those who may oppose an extension of five years should face the situation squarely and acknowledge that they prefer the immediate return of the railroads to private control under the old conditions without remedial legislation. It is idle to talk of a return to private control under legislation which will



From the Chicago Tribune

Which?

cure the defects of the existing laws. There is neither time nor opportunity for such legislation at present. It is impossible and hopeless for the government to attempt the operation of the railroads for 21 months after peace under the present law. Therefore, the country should squarely face the condition that the railroads must promptly go back into private control with all existing legal difficulties unless the only practical alternative, viz., an extension of time, is promptly granted.

I hope that the Congress in its wisdom will grant a five-year period for a test of unified railroad operation under proper provisions of law which will make that test effective and at the same time take the railroad question out of politics while the test is being made. Unless this is done, I do not hesitate to say the railroads should be returned to private ownership at the earliest possible moment. The President has given me permission to say that this conclusion accords with his own view of the matter.

Doings of the United States Railroad Administration

Equipment Orders Not Being Cancelled—Passenger Service Will Be Considerably Improved

WASHINGTON, D. C.

DIRECTOR GENERAL MCADOO is to submit to President Wilson about the first of the year a comprehensive account of his stewardship in connection with the railroads, which will be a rather complete account of the activities and possibly of the policies of the Railroad Administration during the past year. The report will cover the calendar year, which also represents the period of Mr. McAdoo's tenure of office as director general of railroads. The various departments or sections of the departmental divisions have been very busy recently compiling their parts of the record, which are to be collated or summarized by the heads of the various divisions, and Director General McAdoo will prepare a general report. C. R. Gray, director of the Division of Operation, has retired to Old Point Comfort to prepare his part of the work, after having received reports from the numerous sections in his division.

Railroad Administration Not Cancelling Orders

In reply to various inquiries that have reached Washington regarding rumors that the Railroad Administration had cancelled or was likely to cancel outstanding orders for equipment, officials of the Administration say that no cancellations have been made, except in the case of the recent orders for 600 locomotives, which were held up and then reinstated before the contracts were formally signed, and it is understood that none are proposed, although as reported last week an investigation was undertaken of the situation as to the outstanding car orders. In some cases, however, manufacturers have taken advantage of the opportunity afforded by the sudden termination of military activities to present invoices and rush deliveries on old unfilled orders placed by individual roads as long as two or three years ago, some of which would have been cancelled but for the fact that the clerical forces of the purchasing departments have been depleted and changed during the war. In order to prevent a rush of such deliveries at least one road sent a letter to supply manufacturers directing them not to make shipments after December 2 and saying that such shipments would be made at the manufacturers' risk and might be returned. The purpose of this was to allow a check of the old outstanding orders to see which should have been cancelled.

Shops on Eight-Hour Basis

Frank McManamy, assistant director of the Division of Operation, has sent to the regional directors the following interpretation of the director general's order to reduce shop hours wherever practical to eight per day, stating that the numerous inquiries received and the different ways in which this has been put in effect clearly indicates it has not been uniformly understood:

"The purpose of this order was to reduce the hours worked in locomotive shops and roundhouses and in car shops and

repair yards to a basis of eight hours per day on December 9. At roundhouses and other places where the work is continuous 24 hours a day three eight-hour shifts should be established. In shops where a single eight-hour shift will not properly maintain the equipment a second shift should be organized as soon as men can be obtained, pending which the work should be taken care of by necessary overtime in accordance with agreements with the employees.

"It is believed that under present conditions of business with increased force, which is available, that at practically all points shop work can be handled on the eight-hour basis without the necessity of requiring excessive overtime, and every effort should be made to do this."

Passenger Service to Be Improved

The war now being practically over, it will be the policy of the Railroad Administration, during the remaining period of federal control, to give to the public the best service of which the railroads are capable, says a statement "to the American people" issued by Director General McAdoo. While the necessity still remains for moving large quantities of supplies to Europe, and while a considerable proportion of the railroad passenger equipment will be needed in returning American soldiers and sailors to their homes, the problem can now be definitely appraised, he says, and there is every reason to believe that adequate service may be given in the future for the ordinary business of the nation.

"On January 6 last," Mr. McAdoo said, "important changes in passenger train service on the Eastern roads became effective, and at that time I issued a public statement saying that every patriotic citizen can directly help the government in clearing up the present unsatisfactory situation on the railroads by refraining from all unnecessary travel at this time. The policy thus outlined has of necessity been continued throughout the period of the war because the primary duty of the railroads was to contribute their maximum power to the winning of the war.

"This emergency has now passed. The war has been won. In this epochal outcome, the American railroads have played a vital part. Transportation has underlain every industrial activity during the war as it does in peace time. Without adequate transportation our troops and the supplies for our own army and for the armies of our Allies could not have been moved. To this splendid achievement those Americans who refrained from traveling unnecessarily during the war may justly feel that they contributed.

"During the war the transportation of civilian passengers and of freight not needed in the war was of secondary importance. After giving priority to the movement of war necessities it has been the policy of the Railroad Administration to supply the most adequate service possible, both passenger and freight, to non-war business.

"As rapidly as possible service will be improved, although trains which were run under private control merely for competitive reasons will not be restored. Such service was unnecessary. Plans have already been made for service to California, Florida and the Southeastern states during the coming winter. The public may be assured that the Railroad Administration will do everything possible to meet the needs of the traveling public. In line with this policy was the recent elimination, effective December 1, of the extra one-half cent a mile for traveling in Pullman cars, and of one-fourth cent a mile for traveling in tourist coaches, which was imposed as a war measure partially for the purpose of keeping passenger travel during the war at a minimum.

"There were some wasteful and extravagant practices during private control of railroads. These will not be restored during the period of federal control, but within the limits of good business practice, the public may expect every reasonable convenience and comfort on the railroads operated by the government."

Weekly Report of Traffic Conditions

Transportation conditions throughout the entire country showed a decided improvement for the week ended December 9, according to a report made public by Director General McAdoo. Passenger traffic increased both in regular and limited Pullman trains, while in some of the regions additional train service has been established. The discontinuance of the sur-charge on parlor and sleeping cars made a noticeable addition to travel, especially in the Southwestern region.

Following is a partial summary of the report:

Eastern Region—While movement of freight traffic as a total shows some decrease, it is believed that the readjustment of trade conditions will gradually remove this tendency. Cars of freight at New York terminals show an increase as a result of stopping export of a great deal of overseas freight; domestic freight on hand at terminals shows no increase. During November 9,344 cars of eastbound traffic were handled by Lake Michigan car ferries, avoiding the Chicago gateways. Increase in passenger traffic both in regular and limited Pullman trains; and heavy movement of troops to interior demobilization camps.

Allegheny Region—Regular passenger travel normal, but war workers' special train service being further withdrawn. Further progress made in the interchangeability of passenger tickets between roads in this region. Coal production is still increasing. Loading of express traffic being followed up, and resulting in some elimination of express cars by the better loading of others. Further lifting of embargo against rail shipments.

Pocahontas Region—General passenger travel very heavy, particularly due to the discharge of soldiers and sailors and laborers returning from munition plants. Additional train service on the Norfolk & Western locally to accommodate the increased traffic. Movement of freight shows material increase, particularly in coal and lumber.

Southern Region—Passenger travel generally normal, although in some spots the influenza continues to discourage travel. The winter tourist travel to Florida is gradually increasing, and the ticketing of discharged soldiers has been extremely heavy. Pullman and parlor car service established November 25 between Jacksonville and Tampa on Seaboard Air Line trains Nos. 3 and 4. Women students graduating November 16 from the schools of instruction have been placed in various offices, and reports in regard to their efficiency are very satisfactory. The work of the Southern freight service bureaus seems to be increasing, and it is believed their usefulness to the public is being enlarged. Movement of cotton is still slow, and this has its effect on the purchasing power of the communities, and therefore on the general movement of traffic.

Central Western Region—Grain loading shows small increase, and live stock a large increase, but freight movement shows very heavy decrease. Loading of L. C. L. freight at number of stations shows an average increase of 10 per cent in weight per car. California orange crop is estimated at 14,322,000 boxes, or practically twice the crop last year; while the lemon crop promises 25 per cent increase over the heavy crop of two years ago. Passenger travel is still below normal, but shows slight improvement.

Southwestern Region—Coal movement shows reduction, due to the mild weather and the large supply stored by industries. Oil from mid-continent field continues to show heavy movement. Movement of forest products continues to increase. Regular passenger travel increasing, and unusually heavy to California and Texas. Through sleeper via Missouri Pacific reinstated between St. Louis and Denver.

War Department—Some accumulations at various storage points due to heavy movement of traffic primarily intended for overseas. Newport News continues to be badly congested, but the discontinuance of this point for overseas traffic will help out the situation materially. Transportation conditions through the entire country generally satisfactory, and the work of reconsigning and diverting to interior storage of large quantities of war department property originally consigned to the ports for overseas, is reported to have been satisfactorily handled.

Food Administration—Fresh meats and packing house products—situation reported generally good. Some complaint of movement from Birmingham, Ala., to New York, which is being looked after. Live Stock—The permit system on hogs has been removed and all restrictions withdrawn for the present. Fruits and Vegetables—Movement from Florida territory becoming quite heavy, but car supply sufficient. Grain—Permit system continued on wheat alone. December program of export grain and grain products extremely large, and it is expected that the ship tonnage will be available to carry it out. This will result in further relief to interior markets.

Express Section—No congestions or unusual conditions in the express department this week. Arrangement with post office department for through storage car movements expected to relieve stations. Complaint as to delay in mails being actively investigated and correction applied.

Coastwise Steamship Lines—Number of wooden vessels released to the Shipping Control Committee, and more will be released. Of the four Lake boats taken over by the Coastwise Lines three will be released, and action on the fourth will be determined later.

Troop Section—Discharge of men has proceeded, but not very rapidly, the total of which we have record being 80,500. Number of vessels containing returning troops arrived at New York. General demobilization proceeding in an orderly manner.

Exports Control Committee—Arrangement for storage of accumulation of supplies which will not be needed overseas by United States and Allies is progressing very favorably. Plan of throwing overboard at sea high explosives accumulated at seaboard is expected soon to be carried out. Some shortage in ocean tonnage needed for the Food Administration's program.

General—Cattle receipts at Chicago show small increase, while hogs and sheep receipts show quite a heavy increase, particularly the latter. Slight increase in blast furnaces idle on account of necessary repairs. General transportation conditions reported excellent. Shortage of production in coke districts, but no lack of transportation for same.

Short Line Contract Signed

Director General McAdoo on December 5 signed one of the co-operative short line contracts with the Gulf, Texas & Western.

Budgets for 1919

The railroads are now engaged in preparing their budgets of improvements for 1919. These are to be submitted to the Division of Capital Expenditures as a preliminary estimate of the requirements for the year, but specific requests for authorization will be made separately and in view of the uncertainty as to the volume of traffic and the high prices now prevailing, the requests for authorization are not expected to amount to as much as the budget estimates. It is probable also that the Division of Capital Expenditures will not make any authorizations for next year except for such work as the corporations are willing to undertake and finance.

Improvement Work as Reported by D. of C. E.

Only 38.7 per cent of the amounts specifically authorized for capital expenditures had been expended by Class I roads from January 1 to November 1, 1918, according to a report by the Division of Capital Expenditures. Total expenditures to November 1 chargeable to capital account amounted to \$463,617,707, while the total authorizations chargeable to capital account amounted to \$1,199,426,026, while the original budgets and additions amounted to \$1,002,513,844. In addition to the usual monthly report the Railroad Administration has given out a table showing the authorizations and expenditures for individual roads.

Organization of Agricultural Section

In addition to the standing committees of the agricultural section recently appointed, sub-committees have been appointed for various districts from among the agricultural representatives of railroads operating in the territory. The chairmen will invite participation of traffic department representatives, who are charged with looking after agricultural development on lines not having agricultural departments, and also agricultural representatives (if any) of lines not under federal control. They will also invite the directors of extension of the States Relation Service of the U. S. Department of Agriculture to serve with the sub-committees in advisory capacity.

The first object of these sub-committees will be to study methods for the co-operation of the agricultural departments of the railroads with each other and with the appropriate federal and state authorities, to secure harmony and co-ordination of effort along definite lines, and to eliminate possible duplication of work. They will confer with state authorities when deemed advisable, with the agricultural colleges, and with the active civic and business organizations, which will, no doubt, be found agreeable to working in close co-operation with the agricultural section to obtain the desired results.

A. AUTHORIZATIONS AND EXPENDITURES IN CONNECTION WITH WORK COMPLETED TO NOVEMBER 1, 1918									
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Material Standards for Freight Car Repairs

Frank McManamy, assistant director of the Division of Operations, has issued Mechanical Department Circular No. 8, prescribing material standards for freight car repairs as follows:

When renewing parts or applying betterments to freight cars owned by the railroads under federal control, if suitable material, either new or second hand, that is standard to the car, is in stock it shall be used. Where such material is not in stock, material standard to United States standard cars should be used if available.

1. **Bolsters**—Body bolsters, when renewals are made, should be either cast steel or built up type.

Truck Bolsters—When renewals are made should be cast steel box girder type.

2. **Column Castings**—Truck column castings when used should be made of malleable iron or cast steel.

3. **Side Bearings**—If body or truck side bearings require changing or renewing, frictionless type should be used, interchangeable in capacity and dimensions with those used on United States standard cars.

4. **Side Truck Frames**—When necessary to renew side truck frames, cast steel U-shaped section, United States standard car type with separable journal boxes to be used.

5. **Coupler Operating Device**—Coupler operating device to be of type directly connected to coupler knuckle lock without use of clevis, link, chain or pin and to be interchange-

able with operating device on United States standard cars where possible.

6. **Draft Gears**—(a) Friction draft gears, either Cardwell, Miner, Murray, Sessions Type "K," Westinghouse or similar gears, of not less than 150,000 lb. capacity with a maximum travel of $2\frac{3}{4}$ in.

(b) Spring draft gears, if used, to be at least equal in capacity to two M. C. B. Class "G" springs, interchangeable with friction gear without change in car construction.

(c) Clearance between coupler horn and striking casting to be three inches.

(d) Coupler to be key connected to draft gear.

7. **Hand Brakes**—If renewals are required on open top cars, hand brakes should be changed to drop handle type and so located as to be below top of car where construction of car will permit and of a type interchangeable with United States standard cars.

8. **Doors**—Side doors on box or stock cars (except double-deck stock cars) will be bottom supported, the attachments uniform with those on United States standard cars.

9. **Ends**—Box cars with weak constructed ends requiring two-thirds of end to be renewed, should be reconstructed as follows:

(a) Horizontal corrugated steel ends (two or three piece) having top section $3/16$ in. thick and bottom section or sections $1/4$ in. thick and corrugations $2\frac{1}{4}$ in. deep.

(b) Vertical reinforced ends with four or five inch "Z"

CLASS I RAILROADS
CAPITAL EXPENDITURES SPECIFICALLY AUTHORIZED TO DECEMBER 1, 1918, AND THE EXPENDITURES MADE IN CONNECTION THEREWITH TO NOVEMBER 1, 1918

No. of road	Name of road	Capital expenditures specifically authorized to December 1, 1918				Expenditures to November 1, 1918			
		Additions and betterments	Equip-ment	Extensions, branches and new lines	Total	Additions and betterments	Equip-ment	Extensions, branches and new lines	Total
1	Alabama & Vicksburg Ry.	\$121,979	\$234,951		\$356,930	\$118,644	\$3,490		\$122,134
2	Alabama Great Southern Ry.	486,435	7,454		493,886	714,109	17,732		731,841
3	Ann Arbor R. R.	86,443	18,301		104,744	71,884	27,497		99,381
5	Arizona Eastern R. R.	203,853	44,382		248,235	132,308	16,133		148,441
6	Atchison, Topeka & Santa Fe Ry.	20,299,175	24,428,239	\$3,970,199	48,697,613	7,969,439	11,713,604	\$1,324,130	21,007,173
7	Atlanta & West Point R. R.	364,012	253,161		617,173	323,481	152,885		476,366
8	Atlanta, Birmingham & Atlantic Ry.	219,865	1,233,623	2,033,506	3,486,996	164,465	239,302	3,655	407,422
9	Atlantic & St. Lawrence R. R.	587,657	804,000		1,391,657	175,730			175,730
10	Atlantic City R. R.	170,658			170,658	42,386			42,386
11	Atlantic Coast Line R. R.	2,728,374	3,453,865	3,036,501	9,218,740	1,238,973	1,324,441	434,330	2,997,744
13	Baltimore & Ohio R. R. (incl. Coal & Coke)	14,488,100	45,316,123	379,422	60,183,647	6,304,864	4,159,229	637,824	11,101,917
14	Bancroft & Aronstok R. R.	205,496	1,255,569		1,461,065	111,574	222,075		333,649
15	Beaumont, Sour Lake & Western Ry.	53,433			53,433	46,003			46,003
16	Bessemer & Lake Erie R. R.	6,527,808	1,993,940	271,525	8,839,270	1,329,085	70,150	70,592	1,469,827
17	Boston & Albany R. R.	1,616,039	957,060		2,573,099	194,330	292,724		487,054
18	Boston & Maine R. R.	7,408,761	8,733,144		16,141,905	1,937,131	321,966		2,259,097
19	Buffalo & Susquehanna R. R.	29,827	2,417		32,244	7,569			8,346
20	Buffalo, Rochester & Pittsburgh Ry.	1,843,606	5,474,303		7,317,911	1,636,305	2,965,180		4,603,485
21	Carolina, Clinchfield & Ohio Ry.	271,145	4,152,531		4,423,676	165,359		3,333	168,692
22	Central of Georgia Ry.	1,226,962	1,863,453		3,090,415	793,387	727,996		1,521,383
23	Central New England Ry.	768,252	28,419		796,671	247,728	595		248,023
24	Central R. R. of New Jersey	10,081,586	7,685,099		17,766,685	2,776,865	1,252,053		4,038,917
25	Central Vermont Ry.	383,392	93,537		476,929	46,024	37,895		83,919
26	Charleston & Western Carolina Ry.	107,633			107,633	10,845			10,845
27	Chesapeake & Ohio Ry.	7,073,669	12,964,625	1,131,783	21,170,077	2,164,041	1,473,581	368,720	4,006,342
28	Chicago & Alton R. R.	18,227,233	1,751,745		3,578,978	634,101	514,763		1,148,864
29	Chicago & Eastern Illinois R. R.	1,365,126	5,295,191		6,660,317	1,041,958	960,387		2,121,985
30	Chicago & Erie R. R.	558,955	29,342		588,297	172,616			172,616
31	Chicago & North Western Ry.	8,007,469	15,531,467		23,538,936	3,358,127	4,432,967		7,791,094
32	Chicago, Burlington & Quincy R. R.	7,568,018	6,250,609		13,818,627	6,369,836	3,508,816		9,878,652
33	Chicago, Dearborn & Canada Grand Trunk Jct.	7,639			7,639	112,495			112,495
34	Chicago Great Western R. R.	795,326	1,062,235		1,857,561	371,013			432,634
35	Chicago, Indianapolis & Louisville Ry.	602,899	1,466,143		2,069,132	148,738	302,144		450,882
36	Chicago, Milwaukee & St. Paul Ry.	15,972,627	9,383,499	773,432	26,129,558	4,698,409	4,246,680	350,827	9,296,212
37	Chicago, Peoria & St. Louis R. R.	40,367	12,245		52,612	34,997	8,243		43,240
39	Chicago, Rock Island & Pacific Ry. (Including C. R. I. & G. Ry.)	7,787,087	10,577,788		18,364,875	3,060,986	2,899,327		5,960,313
40	Chicago, St. Paul, Minneapolis & Omaha Ry.	792,240	481,242		1,273,482	41,362	386,812		829,774
41	Chicago, Terre Haute & Southeastern Ry.	129,875	106,174		236,049	69,074	80,473		149,497
42	Cincinnati, Indianapolis & Western R. R.	327,808	969,289	40,165	1,337,262	202,707	75,149	9,207	287,063
43	Cincinnati, New Orleans & Texas Pacific Ry.	1,666,102	685,956		2,352,058	1,265,666	358,362		1,624,028
44	Cincinnati Northern R. R.	287,603	50,668	32,500	370,771	78,723	90,480		109,203
45	Cleveland, Cincinnati, Chic. & St. Louis Ry.	10,429,456	9,565,320		19,994,776	2,940,453	1,657,972		4,598,425
46	Colorado & Southern Ry.	317,547	729,401		1,046,948	128,186	162,553		290,739
48	Cumberland Valley R. R.	1,562,174	77,048		1,639,222	345,449	27,024		372,473
49	Delaware & Hudson R. R.	2,803,544	6,608,672		9,412,216	895,976	188,611		1,084,587
50	Delaware, Lackawanna & Western R. R.	2,532,336	6,800,014		9,332,350	1,188,588	1,365,230		2,553,818
51	Denver & Rio Grande R. R.	2,761,195	368,465	92,241	3,221,901	912,300	79,330	34,050	1,025,689
52	Denver & Salt Lake R. R.	12,195	10,073		22,268	2,540	5,014		7,554
53	Detroit & Mackinac Ry.					76	196		272
54	Detroit & Toledo Shore Line R. R.	76,331	88,500		164,831	5,859	45,408		50,767
55	Detroit, Grand Haven & Milwaukee Ry.	12,411	73		17,154	60,117			60,117
56	Detroit, Toledo & Iron Range R. R.	517,499	1,786,710		2,303,759	56,175	16,628		72,803
57	Duluth & Iron Range R. R.	366,187	714,901		1,081,088	285,101	372,123		657,224
58	Duluth, Missabe & Northern Ry.	2,021,336			2,734,294	1,145,534	39,168		1,184,702
59	Duluth, South Shore & Atlantic Ry.	44,871			635,513	2,108			35,762
60	Eaton, Joliet & Eastern Ry.	754,857	2,542,871		3,297,728	303,895	472,836		776,731
61	El Paso & Southwestern R. R.	1,407,539	2,335,009		3,742,548	820,265	1,166,338		1,986,603

Capital expenditures specifically authorized
to December 1, 1918

Expenditures to November 1, 1918

No. of road	Name of road	Additions and betterments	Equipment	Extensions, branches and new lines	Total	Additions and betterments	Equipment	Extensions, branches and new lines	Total
61	Eric R. R.	\$7,619,343	\$15,896,147		\$23,515,470	\$2,370,918	\$185,923		\$2,556,841
62	Florida East Coast Ry.	27,485	2,963,355	\$75,000	3,519,781	704,705	1,002,889		1,810,101
63	Fort Worth & Denver City Ry.	349,136	447,793		796,929	125,165	8,747		133,912
64	Fort Worth & Rio Grande Ry.	40,954			40,954	28,684			28,684
65	Galveston, Harrisburg & San Antonio Ry.	2,119,991	1,837,265	426,798	4,384,054	1,046,986	1,108,631	381,975	2,537,592
66	Georgia R. & Seaboard Ry.	111,000	1,551,382		1,662,381	35,923	80,317		116,240
67	Georgia Southern & Florida Ry.	69,419	12,396		81,815	79,208	11,946		91,154
68	Grand Rapids & Indiana Ry.	128,196	157,190		285,386	18,131	17,168		35,299
69	Grand Trunk Western Ry.	1,414,091	1,566,365		2,980,456	393,410	5,275		398,685
70	Great Northern Ry.	8,817,009	9,058,722	700,174	18,440,612	6,705,824	3,308,438	707,769	10,812,031
71	Gulf & Ship Island R.R.	36,743	112,330		481,639		38,687		38,687
72	Gulf, Colorado & Santa Fe Ry.	2,746,374	12,874		2,759,248	806,702	6,622		813,324
73	Gulf, Mobile & Northern R. R.	926,065	45,094	1,265,450	2,236,609		5,880	743,645	832,450
74	Hocking Valley Ry.	3,727,294	3,386,683		7,113,977	1,087,976	80,470		1,168,446
75	Houston & Texas Central R. R.	240,430	622,204		824,366	101,313	2,157	22,718	122,228
76	Houston, East & West Texas Ry.	44,820	1,520		46,340	20,064			20,336
77	Hudson & Manhattan R. R.	296,064	6,700		302,764				151,780
78	Illinois Central R. R.	16,867,411	1,857,600	425,591	36,130,908	8,165,012	12,426,524	291,864	20,883,400
79	International Great Northern Ry.	1,002,631	200,214		1,202,845	392,733	73,933		466,666
80	Kanawha & Michigan Ry.	557,145	640,000		1,436,899	317,897	62,600	112,294	492,791
81	Kansas City, Mexico & Orient R. R. (Including Kansas City, Mexico & Orient Ry. Co. of Texas)	8,010	8,924		16,934		740		8,496
83	Kansas City Southern Ry.	1,544,142	1,317,719		2,861,861	475,567			897,243
84	Lake Erie & Western R. R.	288,004	1,010,200		1,565,247	206,235	11,428		217,663
85	Lehigh & Hudson River Ry.	80,759	217,040		297,799	53,058	1,831		54,889
86	Lehigh & New England R. R.	1,047,872	1,234,590	42,000	2,324,462		26,535	269,567	381,874
87	Lehigh Valley R. R.	946,150	18,557,947	3,000	27,474,011	1,044			1,044
88	Long Island R. R.	1,962,146	718,497	26,427	2,707,070	886,764	150,725	32,496	1,075,990
89	Los Angeles & Salt Lake R. R.	1,434,693	841,075	626,262	2,902,032	446,227	769,554	17,999	1,233,380
90	Louisiana & Arkansas Ry.	240,294			24,478		1,191		21,411
92	Louisiana Western R. R.	5,071,728	12,641		5,084,369	23,637	6,517		30,154
93	Louisville & Nashville R. R.	73,141,248	6,883,920	1,648,133	15,573,301	6,899	2,368,667	1,011,572	6,039,618
94	Louisville, Henderson & St. Louis Ry.	173,925	1,844		175,769	18,888	1,414		19,696
95	Maum Central R. R.	3,547,000	3,547,000		4,219,532	402,794	420,285		823,079
97	Michigan Central R. R.	5,414,983	13,328,908		18,743,891	1,680,901	3,455,762		5,136,663
98	Midland Valley R. R.	194,415	80,244		274,659	117,639	43,184		160,823
99	Mineral Range R. R.	1,247	1,473		13,620	6,890	1,473		8,363
100	Minneapolis & St. Louis R. R.	365,656	165,365		531,021	155,753	36,278		192,033
101	Minneapolis & St. Paul & Sault Ste. Marie Ry.	1,150,529	174,050		1,324,579	448,813	60,068		508,881
102	Minnesota & International Ry.	31,950	291		32,241	31,233			31,233
107	Missouri & North Arkansas R. R.								
108	Missouri, Kansas & Texas Ry.	2,097,410	2,478,434		4,575,853	2,085,323	1,212,209		3,297,532
109	Missouri, Kansas & Texas Ry.	1,033,146			1,135,313	1,086			560,660
110	Missouri Pacific R. R.	3,261,582	14,630,338	14,813	17,906,733	2,110,185	227,728	16,650	2,354,563
116	Mobile & Ohio R. R.	453,467	451,068		904,535	31,861	30,177		350,038
117	Monongahela Ry.	1,731,269	378,489	392,300	2,502,058	743,480	278,633	8,006	1,030,119
118	Morgan's Louisiana & Texas Ry.	179,594			328,465		319,435		308,238
119	Nashville, Chattanooga & St. Louis Ry.	1,993,509	1,710,161	116,635	3,820,305	1,157,736	364,939	135,560	1,658,235
110	New Orleans & Northeastern R. R.	139,478	619,528		759,006	131,889	420,818		552,707
111	New Orleans Great Northern R. R.	88,147	11,099		99,246	42,491	23,229		65,720
112	New Orleans, Texas & Mexico Ry.	40,145	28,525		68,674		3,480		35,397
113	New York Central	36,350,014	36,640,485	75,000	73,071,693	11,452,085	1,918,594	41,754	20,635,433
114	New York, Chicago & St. Louis R. R.	2,791,004	4,041,488		6,832,502	584,826	1,958,098		2,542,924
115	New York, New Haven & Hartford R. R.	15,538,130	6,032,545		21,570,675	7,939,697	254,037		8,193,734
116	New York, New Haven & Hartford R. R.	128,020			302,905		0,720		184,080
117	New York, Philadelphia & Norfolk R. R.	649,086	104,364		753,450	144,198	88,164		232,362
118	New York, Susquehanna & Western R. R.	463,120	22,957		486,077	170,099	10,472		180,571
119	Norfolk & Western Ry.	11,660,460	17,955,266		29,612,726	4,140,274	7,318,399	198,591	11,657,264
120	Norfolk Southern R. R.	384,333	633,628		1,017,963				221,861
121	Norfolk Southern R. R.	6,487,973	11,377,973	377,160	18,242,906	3,296,550	6,349,755	486,061	10,132,325
122	Northwestern Pacific R. R.	262,633	344,878		607,511				166,180
123	Oregon Short Line R. R.	2,009,726	2,207,660		4,217,386	801,717	339,850	213,508	1,355,075
124	Oregon-Washington R. R. & Nav. Co.	1,376,704	487,315		3,709,799	2,234,818		133,788	991,734
125	Panhandle & Santa Fe Ry.	40,906		1,133,167	1,174,073			434,640	647,697
126	Pennsylvania Co.—Lines West	22,678,438	6,163,885		28,842,323	7,338,554	1,232,384		8,570,938
127	Pennsylvania R. R.—Lines East	63,445,962	30,596,976		65,991,710	23,899,449	13,349,017	4,320,940	41,479,210
128	Pere Marquette	2,939,188	4,633,454		7,572,642		3,525,259		4,000,644
129	Philadelphia & Reading Ry.	12,018,357	19,999,974		32,018,331	5,831,200	4,113,351		9,944,551
130	Pittsburgh & Lake Erie R. R.	5,209,473	5,058,219		10,267,692		560,734		1,571,453
131	Pittsburgh & Shawmut R. R.	57,446	4,114		57,860		24		188,264
132	Pittsburgh & West Virginia Ry.	339,437	364,357		703,794	132,247	83,385		215,632
133	Pittsburgh, Cincinnati, Chic. & St. Louis R. R.	23,471,755	1,514,680	9,637,651	31,494,086	6,007,111	1,343,375	1,577,855	8,974,497
134	Port Reading R. R.	37,104			37,104				65,485
135	Richmond, Fredericksburg & Potomac R. R.	735,765	2,432,266		3,168,031	314,630	701,560		1,016,190
136	Rutland R. R.	478,323	605,183		1,083,506	309,225	70,574		379,799
137	St. Joseph & Grand Gulf Ry.	39,849	39,746		340,341		98,653		116,116
138	St. Louis, Brownsville & Mexico Ry.	47,244	13,192		60,436				30,962
139	St. Louis-San Francisco Ry.	3,896,357	7,354,086		11,250,443	2,161,907	803,937		2,964,844
140	St. Louis, San Francisco & Texas Ry.	71,169			71,169	18,407			18,407
141	St. Louis, Southeastern & Texas Ry.	894,707	1,354,514		2,249,221	363,988	982,218		1,346,206
142	St. Louis Southwestern Ry. of Texas	783,564	1,485		785,049				78,863
143	San Antonio & Aransas Pass Ry.	91,930	16,717		108,547	18,142	13,487		31,629
144	Seaboard Air Line	834,985	153,000		8,904,764	834,985	1,338,994		2,373,979
145	Southern Pacific Co.	12,274,965	13,901,243	579,259	26,755,467	3,909,846	7,901,160	303,250	12,114,256
146	Southern Ry.	3,158,658	19,360,376		21,519,036	8,175,732	1,933,595		10,109,315
147	Southern Railway in Mississippi	16,470	1,157		17,627	9,649			41,357
148	Spokane, Portland & Seattle Ry.	615,937	1,797,670		2,413,607		14,327		42,557
149	Staten Island Rand Transit Ry.	269,852			269,852				566,745
150	Tennessee Central R. R.	154,292	6,709		161,001		286		60,769
152	Texarkana & Ft. Smith Ry. (incl. in K.C.S.)								
153	Texas & New Orleans R. R.	355,992	7,222		363,214				103,043
154	Texas & Pacific Ry.	1,422,547	4,770,066		6,192,613		1,341,140		2,015,563
155	Toledo & Ohio Ry.	1,104,357	1,177,957		2,282,314		150,901	37,326	897,436
156	Toledo, Peoria & Western Ry.	25,186	10,720		35,906				33,393
157	Toledo, St. Louis & Western R. R.	240,779	3,727,129		3,967,908	219,774	111,810		335,584
158	Ulster & Delaware R. R.	24,714	6,960		31,674	17,987	9,619		27,606
159	Union Pacific R. R.	14,345,434	15,821,944	288,308	27,455,686	3,367,418	8,746,733	166,546	12,280,697
160	Vicksburg, Shreveport & Pacific Ry.	105,135	135,812		26,157				83,507
161	Virginia Ry.	3,752,538	3,916,276		7,668,814	1,601,434	151,106	3,029,913	1,179,711
162	Wabash Ry.	1,020,319	9,109,303		10,129,622	474,771	704,940		207,202
163	Washington Southern Ry.	3,429,342	1,000,000		4,429,342	46,964	160,338		1,37,852
164	Western Maryland Ry.	896,345	4,421,739	48,065	5,077,370	60,346	851,660	20,220	1,382,226
165	Western Pacific R. R.				5,318,093				222,271
166	Western Ry. of Alabama	175,841	5,343		401,027		168,806		301,552
167	West Tennessee R. R.	1,000,000			1,000,000	456,350	345,202		61,618
168	Wheeling & Lake Erie Ry.	748,976	5,995,604		6,344,580	202,813			633,331
169	Wichita Falls & Northwestern Ry.	10,215	810		11,025	8,762			18,146
170	Wichita Valley	76,557	1,282		77,839	267			15,988,475
171	Yazoo & Mississippi Valley R. R.	3,736,473	35,833		3,772,306	1,592,901	8,774		

bars, securely fastened to place on end sills and end plates. End plates to be diagonally braced on inside of car, under roof, to side plates, or with reinforcements equivalent in strength.

(c) End lining to be $1\frac{3}{4}$ in. thick, tongued and grooved, extending from floor to end plate, with corners sealed with beveled corner strips $1\frac{1}{2} \times 1\frac{1}{2}$ in., securely nailed to place to prevent possibility of grain leaks.

10. *Metal Strap to be Applied to Side Sheathing*—Double sheathed box cars will have applied to face of sheathing of car at side sill a small angle iron, channel iron or strap securely bolted in place to insure sheathing being held tight against side sill to prevent grain leakage; bolts to have single nuts and to be riveted over. Location of bolt spacing to be the same as on United States standard cars where practicable. Channel or strap to be painted on back with freight car paint before it is applied.

11. *Grain Door Nailing Strip*—Door post should have grain door nailing strips on inside face (approximately $1\frac{1}{2}$ in. \times $3\frac{1}{2}$ in.), full height of door opening securely fastened to place with screws or heavy wire nails.

12. *Roofs*—When roofs are changed or renewed outside flexible type metal roof with mullions between roof sheets and with flexibility at eaves and ridges, made of 22 or 24 gauge galvanized iron will be applied. Roofs should be interchangeable with United States standard cars having same length and width sheets. To permit the use of standard sheets, the following changes may be made:

(a) Increase or decrease in thickness, or omitting eave moulding, fascia or both.

(b) Increase the width of roof flashing at eaves.

(c) Where cars are equipped with all-metal roofs, such construction may be continued when renewals are necessary, if considered desirable to do so.

13. *Preservation of Material*—When rebuilding or repairing, wood or steel cars—On all-wood cars, wood preservative, freight car paint or its equivalent will be applied to all mortises and tenons; ends of posts and braces; and post and brace shoes at sills. Top of all sills will be painted, including face of side end sills.

(a) On refrigerator cars, sills will be painted all over in addition to the above.

(b) When applying metal parts on outside of wood cars, both the wood and metal part shall be painted before applied, except when applying metal roofs. Before outside metal roof is applied it should be painted on underside.

(c) Steel cars, steel underframes, steel center sills or steel draft arms, when assembling should have red lead applied before one metal part is applied, lapping another.

In complying with the above instructions, it is imperative that careful consideration be given to preservation and reclamation of material. Material removed from one car, in order to standardize such car or a part thereof, fit for further use, shall be reclaimed and used in making repairs to other equipment.

New Rules for Grain Traffic

In general order No. 57 Director General McAdoo has issued the following rules governing the inspection, selection and cooperating or rejection of cars for bulk grain loading, the recording of loss of grain from car by leakage (if any) during transit, and the disposition of claims for loss and damage of grain:

Claims on grain shipped in bulk constitute a large proportion of loss and damage claims. Some of the widely varying practices of both shippers and carriers with respect thereto are of doubtful propriety, and in many cases result in undue preference and unjust discrimination.

This condition may be attributed largely to the great number of intricate factors entering into the grain business; the condition of scales and weighing practices, which, in many

instances, result in weights of doubtful accuracy. Grain in bulk is sometimes loaded at large terminal elevators where so-called official weights are obtained; in other instances, at country elevators where weights are obtained on small scales in many drafts; and in other instances where scale weights are not used but loading weights obtained on measurement basis; and at some points where no elevators are located, grain is weighed over wagon scales, loaded into cars and the sum of the wagon scale weights used to represent the amount shipped.

Destination weights are arrived at in as many different ways as the loading weights, but, as a general rule, the bulk of the grain shipped is destined to terminal markets where official weights are secured, and the differences between these loading and destination weights constitute the basis of claims, although losses resulting from the taking of samples for inspection purposes and the failure of consignee to unload all the grain and other wastage, over which the railroad has no control, are not taken into consideration or accounted for.

In view of the foregoing, there is no good reason why carriers should assume responsibility for claims, the basis of which is solely the difference between these loading and out-turn weights.

Therefore, claims for loss of bulk grain will be recognized only where there is evidence of negligence on the part of the carriers. Leaks due to improper cooping of cars or placing of grain door boards are not to be considered as evidence of negligence on the part of the carrier, and the following rules shall apply until superseded by others that may be adopted as a result of investigation and study of the subject now being carried on by carriers and shippers in connection with the Interstate Commerce Commission.

At the present time there is lack of uniformity in the disposition of grain claims. One purpose of these rules is to clear up this present situation and dispose promptly of such claims as come within these regulations.

RULE 1.—SELECTION OF CARS FOR LOADING.

Shippers will be furnished for bulk grain loading. (See Definition.)

Definition: A suitable car for bulk grain loading is one that is grain tight and fit or can be made so by the shipper at time and place of loading by ordinary and proper care in use of coopeage material and by a reasonable amount of cleaning.

RULE 2.—REJECTION BY SHIPPER.

While carriers are expected to furnish suitable equipment, it is the duty of the shipper to reject any car which is unfit for the loading intended. Shippers should not load bulk grain in a car with door post shattered or broken, or with other defects of such character as to render car obviously unfit, or with inside showing the presence of oil, creosote, fertilizer, manure, coal or other damaging substance of like or kindred character.

RULE 3.—COOPEAGE.

Grain doors, or grain door lumber of proper quality and dimensions will be furnished by the carrier and installed by the shipper to coopee side and end doors and other openings of cars used for bulk grain loading.

Note 1—Carrier's agent at loading station will ascertain the number of temporary sectional grain doors, or the number of feet (board measure) of grain door lumber used to coopee the car and the approximate weight thereof, and note same on waybill.

Note 2—Should the shipper supply of grain door material run short, local agent will promptly notify his superintendent who will immediately send the required material or authorize local agent to purchase a supply to take care of the emergency.

Note 3—Shippers or consignees must not appropriate carriers' grain doors or grain door material, neither shall they use the same without specific authority from the carrier.

Accessories such as nails, paper, cheesecloth, burlap or similar material for caulking or lining cars, required to prevent loss of grain by leakage, shall be supplied by the carrier and applied by the shipper or at his expense.

RULE 4.—CONSIGNEE, CONSIGNEE OR OWNER REQUIRED TO LOAD OR UNLOAD CARLOAD FREIGHT.

Except as otherwise provided by tariff, owners are required to load into or on cars grain carried at carload ratings, and consignee or owner is required to unload the car, which includes the removal of entire contents, including sweeping the car. Loading includes adequate securing of the load in or on car, also proper distribution of the weight in the car by trimming or leveling.

RULE 5.—SHIPPING WEIGHTS.

Where shipper weighs the grain for shipment, he shall furnish the carrier with a statement of the car initials and number, the total scale weight, the type and house number of the scale used, the number of drafts and weight of each draft weighed, the date and time of weighing, and state whether official board of trade, grain exchange, state or other properly supervised

shipping weights; also state number and approximate weight of grain doors used. This information shall be furnished as soon as practicable, forwarding of car not to be delayed for this record.

RULE 6—DESTINATION WEIGHTS.

Consignee shall furnish the carrier with a statement of the car initials and number, the total scale weight, the type and house number of the scale used, the number of drafts and weight of each draft weighed, and date and time of weighing, and state whether official board of trade, grain exchange, state or other properly supervised unloading weight.

RULE 7—LANGUAGE OF FEDERAL RECORD.

If damage to or leakage of grain is detected while in carrier's possession, the necessary repairs must be made to prevent further loss or damage and a complete record made thereof. In case of a disputed claim, the records of both carrier and claimant on said car shall be made available to both parties. If shipper, consignee, owner or his or their representative should discover leakage of grain from car, he must immediately report the facts to carrier and afford reasonable opportunity for verification. The result of hammer testing will not be accepted as proof of loss.

RULE 8—CLAIMS ON CLEAR AND DEFECTIVE RECORD CARS.

(a) Clear Record Cars. If, after loading, a defective record is discovered, no defect in equipment or seal record is discovered, such record shall be considered to show that the carrier has delivered all of the grain that was loaded into the car. If evidence is produced by the claimant indicating a defective record, such evidence shall be investigated and given due consideration.

(b) Defective Record Cars: Where investigation discloses defect in equipment, seal or seal record, or a transfer in transit by the carrier of a car of grain upon which there is a difference between the loading and unloading weights, and the shipper furnishes duly attested certificate showing correctness of weights, and the carrier can find no defect in scale or other facilities and no error at points of origin or destination, then, the resulting claims will be adjusted subject to a deduction of one-eighth of one per cent of the established loading weight as representing inevitable loss and wastage.

(c) Transfer in transit, as referred to in Section "b" of this rule, is a transfer for which the railroad is responsible, and not a transfer because of a trade rule, governmental requirement, or because of orders of consignor, consignee, owner or their representative.

(d) Leaks over or through grain doors and other leaks due to improper cooperating by shipper shall not be considered defects for which the carrier is responsible.

Rules Governing Industry Tracks

Director General McAdoo has issued Supplement No. 1 to General Order No. 15, which prescribed requirements for new industry tracks, as follows:

1. General Order No. 15 is not to be construed as requiring or authorizing a federal manager to enter into a contract on behalf of the director general to pay for that part of an industry track on the right of way from the switch point to the clearance point where, in the judgment of the federal manager, the amount of traffic to be derived by the United States Railroad Administration from the construction of the industry track is not sufficient to justify such expenditure. In cases where, in the judgment of the federal manager, the circumstances justify the construction of an industry track, but the amount of revenue to be derived therefrom by the United States Railroad Administration does not justify the payment by the director general of the cost of that part of the track on the right of way from the switch point to the clearance point, an agreement may be made, otherwise in accordance with General Order No. 15, but providing for the payment of the entire cost of the track by the shipper with a provision for refund up to, but not exceeding, the cost of the part of the track from the switch point to the clearance point, at the rate of \$2 per car of carload freight yielding road haul revenue, delivered on or shipped from the track during federal control.

2. Track material contained in that portion of an industry track on the railroad right of way which was installed and paid for by the industry during federal control, shall remain the property of the industry, except to the extent that refund of the cost thereof shall have been made by the railroad or the director general, but such ownership shall be subject to the right of the railroad to use the track when not to the detriment of the industry.

3. Upon the discontinuance of use of an industry track for the purposes of the industry, the industry shall have the right to have the track material on the right of way which was paid for by the industry during federal control, taken up and delivered to the industry except to the extent that the

cost of such track material shall have been refunded to the industry by the railroad or the director general. The work of taking up the track shall be done, if the federal manager shall so desire, by the forces of the federal manager, but in any event at the expense of the industry.

Interpretations of Wage Orders

Director General McAdoo has issued the following interpretations of wage orders:

Interpretation No. 1, to General Order No. 27.
Prior to January 1, 1918, up to 6 a. m., June 1, 1918.

Employer's claim:—That employee's tour of duty was from 6 p. m. of one day until 6 a. m., the next, and that the last "day" on which the employee worked was May 31, 1918, although his hours extended to 6 a. m., June 1, 1918; that the employee left the service voluntarily.

Decision:—Employee having been in the service on May 25, 1918, the date of the issuance of General Order No. 27, is entitled to back pay for services rendered from January 1, 1918, to the date he left the service.

INTERPRETATION NO. 5, TO GENERAL ORDER NO. 27.

Employer's claim:—On and prior to December 31, 1915, employee occupied position as agent at a certain salary. In July, 1917, his position was changed at the same salary and continued until June, 1918. Employee claims the increase afforded by General Order No. 27 upon his salary as of December 31, 1915.

Employer's claim:—The position occupied by the employee on May 25, 1918, was at a lower salary on December 31, 1915, than was paid to the position occupied by the employee on May 25, 1918; therefore, the increase awarded by General Order No. 27 should be based upon the salary of the position and not upon the salary of the man.

Decision:—General Order No. 27, Article II, Section F, paragraph 1, explicitly provides that the wage runs with the place. Therefore, the increase should be applied to the salary which the position paid on December 31, 1915.

INTERPRETATION NO. 2, TO SUPPLEMENT NO. 7, TO GENERAL ORDER NO. 27.

Article V, Supplement No. 7 to General Order No. 27, paid on a tonnage or piece work basis and earning in excess of 43 cents per hour (the maximum rate established) receive any portion of the increase provided for, if thereby such increase would establish a rate in excess of 43 cents per hour.

Decision:—Paragraph (2) Article V of Supplement No. 7 to General Order No. 27 specifically states, "Provided that the maximum shall not exceed 43 cents per hour." Employees paid on a tonnage or piece work basis whose average hourly earnings, per day period, equal 43 or more cents per hour are therefore not entitled to any portion of the increase, but are guaranteed not less than 43 cents per hour.

The provisions of paragraph (2) Article VIII, Supplement No. 7 to General Order No. 27, protects higher rates and is to be observed.

INTERPRETATION NO. 2, TO SUPPLEMENT NO. 8, TO GENERAL ORDER NO. 27.

Question:—It is intended that house and bridge carpenters in the maintenance of way service shall receive the rates of pay and be governed by the conditions specified in Art. 1, Section 6, of Supplement No. 4 to General Order No. 27, under the heading of Carriers?

Decision:—House and bridge carpenters in the maintenance of way service come under the provision of Supplement No. 8 to General Order No. 27 and their rates of pay are established as per paragraph (e) Article 1 of Supplement No. 8.

Report of Exports Control Committee

According to the report of the Exports Control Committee to Director General McAdoo for the week ended December 7 the changed conditions causing the diversion of munitions and the substitution of food and supplies has created an enlarged export program for the food administration and the Allies. The combined frozen beef and provisions program through the ports of New York, Boston, Philadelphia and Baltimore will total 113,786 tons for the month of December, divided as follows: British Ministry of Shipping, 36,786 tons; French, 30,000; Italian, 45,000.

The movement of provisions and frozen beef on a three-day schedule, Chicago to New York, has been discontinued and traffic is now running on a four-day schedule. The Food Administration's program for December for the Atlantic and Gulf ports approximates 1,500,000 tons. For the South Atlantic ports there are assigned 40,000 tons.

There are in addition to this large amount moving under war department transportation orders 8,000 tons of flour via New York, 19,000 tons via Philadelphia, 19,000 tons via Baltimore, and 27,000 tons already permitted to move to New York. There are 44,000 tons which will move via Pacific Coast ports, making the total estimates under the original figure of 120,000 tons. This flour is to be used for relief purposes.

There is now moving in solid trains from the west a total of 1,073 cars of flour destined to New York, as well as a solid train of 30 cars for Boston. In order to expedite the delivery of this large volume of flour after arrival at the seaboard, arrangements have been made for conferences between the New York Traffic Committee with representatives of the British Ministry of Shipping, Wheat Export Company, Food Administration, Grain Corporation and the Shipping Control Committee semi-weekly in New York.

At the North Atlantic ports the arrivals of carload export freight exclusive of bulk grain and coal, during the month of November totals 50,143 cars, while deliveries were 46,449 cars, or 3,694 cars arriving in excess of deliveries. There has been an increase of only 420 cars in accumulation at all South Atlantic and Gulf ports during the week. Permits were issued to cover 1,319 cars, largely grain, of export traffic for movement through the ports at Galveston, New Orleans, Mobile and Savannah.

For the week ended November 28 there were 276,808 tons of grain in elevators at the North Atlantic ports, while 220,398 had been cleared. At the Gulf ports there were 250,892 tons of grain in elevators, while 31,820 had been cleared.

Volume of Traffic at Principal Termini

The comparative statement showing the traffic handled by the railways under federal control at 25 of the more important railroad termini of the country during the week ending November 7 shows an increase of 2.62 per cent in the tonnage as against a decrease of 7.86 per cent in the number of cars used to carry the increased tonnage, as follows:

	Cars		Tons	
	1917	1918	1917	1918
Atlanta	5,315	4,128	84,767	86,132
Birmingham	4,131	4,466	176,633	230,531
Boston	8,716	7,311	128,037	137,631
Buffalo	8,153	7,114	284,337	251,773
Chicago	49,177	49,277	1,572,698	1,650,778
Charleston	1,150	2,001	20,701	42,688
Cleveland	8,276	9,508	307,088	300,759
Duluth & Superior	1,366	1,911	23,676	6,224
Galveston	13,567	14,757	437,994	603,860
Hampton Roads	11,577	11,577	173,807	91,406
Kansas City	1,413	1,535	41,980	51,600
Los Angeles	12,905	24,298	653,528	625,952
New York	27,155	4,486	116,610	134,916
New Orleans	4,387	3,604	141,102	130,973
Omaha	4,333	2,044	44,810	52,957
Portland	1,737	1,737	516,396	446,832
Philadelphia	48,969	13,749	248,366	256,543
Pittsburgh	7,298	6,674	118,176	118,081
St. Louis	11,047	1,400	67,76	83,367
Seattle	1,588	3,083	88,37	62,37
San Francisco	7,672	1,519	33,080	33,075
Savannah	1,865	1,208	14,294	38,420
Tacoma	1,231	1,208	316,200	252,822
Twin Cities	12,246	9,840	316,179	351,960
Toledo	8,760	8,760		
Total	33,104	31,773	7,391,537	7,588,764
Increase			18,339	191,37
Decrease			2,807	2,633
Average tons per car			3	3

Accounting Circulars

The Division of Public Service and Accounting has recently issued circulars in part as follows:

P. S. & A. Circular No. 51 provides that federal auditors must make no changes from the method of accounting or classifying accounts during the test period that may affect the contract settlement with the corporation or that will transfer amounts in accounts from those included during the test period within those used to compute the standard return to other income accounts without submitting the proposed changes to and obtaining permission from the undersigned to make such changes. If any such changes have been made since January 1, 1918, without approval federal auditors shall at once submit a full statement requesting permission to continue the changed methods or classifications.

P. S. & A. Circular No. 52 gives additional instructions with respect to bills for the use of joint facilities.

P. S. & A. Circular No. 53 says that the proposed contract between the director general and the railroads under federal

control provides for compensation to the company for the complete service rendered by it in connection with the movement of carload freight prior to January 1, 1918. The provisions of General Order No. 17 respecting "lap-over" revenue are not in exact accord with the terms of the proposed contract, and where the provisions of the said order on this subject are in conflict with those of the proposed contract the latter shall govern.

The intent of the provisions of the proposed contract is to credit and pay to the company all revenue on carload traffic on which the company had completed its service prior to January 1, 1918. Revenue on carload traffic, on which the company had not completed its service prior to January 1, 1918, if not included in the revenue for the month of December, 1917, or prior thereto, by estimate or otherwise, shall be considered as revenue of the director general and not as "lap-over" revenue.

Protests Against Wage Order for Telegraphers

Protests against Director General McAdoo's recent order increasing the wages of telegraph operators and employees engaged in similar work were laid before the director general on December 5 by a delegation of 17 representatives of the Order of Railroad Telegraphers, who declared that very little increase would result to the men on some roads and that in some respects the order would make the position of the employees worse instead of better because their wages would be reduced with the reduction in hours. The delegation did not include H. B. Perham, president of the Order of Railroad Telegraphers, but a group of "insurgents" who have been threatening to strike. The director general referred the matter to the Board of Wages and Working Conditions for a hearing to begin on December 9 and meanwhile any men whose pay would be reduced by the supplemental order will be paid on the basis of General Order No. 27. The Railroad Administration had estimated that the order would increase the payroll by \$300,000 a year.

Turns Back Steamer Lines

The Clyde, Mallory, Merchants and Miners, and Southern steamship companies were relinquished from federal control on December 5 by order of Director General McAdoo. Steamship companies owned by railroads will be retained under management of the Railroad Administration. The four lines turned back to private management were taken by the government April 13 under war powers of the President, and their operation consolidated with other steamship lines under the Railroad Administration. The relinquishing order became effective at midnight December 6, but for accounting purposes it is regarded as effective from December 1.

Designs for Passenger Cars

The Committee on Standards of the mechanical department of the Railroad Administration at a meeting in Washington last week agreed upon the floor plan and general designs of the proposed standard 70-ft. passenger coach and the 70-foot combination passenger, baggage, mail and express cars. The general designs and the specialties selected follow very closely those approved for the proposed standard baggage cars.

Apprentice System May Be Extended

Frank McManamy, assistant director of the division of operation of the Railroad Administration, has been designated by the administration to confer with the government Board for Vocational Education on plans for the co-operation of the Railroad Administration in the development and extension of the apprentice system for training railway employees. The board has been in existence for about a year, having been appointed for the purpose of investigating and recommending methods of vocational education. Mr. McManamy held his first conference with the board on Thursday.

Effect of Federal Control on Railway Labor*

An Outline of Efforts to Create Improved Relations Between the Employer and Employees

By W. S. Carter

Director of the Division of Labor, United States Railroad Administration

TO STATE AT THIS TIME what has been the effect upon labor of federal control of the railroads will necessitate an explanation of what has been done in so short a time. Having regard for the fact that approximately two millions of employees are affected, and much that has been done, if not experimental, has at least been in the nature of pioneering, I am convinced that a continuance of the sympathetic policy of the director general of the railroads will in the not distant future eliminate that feeling of unrest, if not desperation, so pronounced at the termination of private control.

An effect of federal control of the railroads upon labor has been the demonstration to them that there are orderly means by which all differences of opinion between employees and the railroads may be equitably adjusted. Almost immediately after the creation of the Division of Labor of the Railroad Administration this work was systematically undertaken; in fact, it may be said that the principal purpose of the creation of this division was to bring about a kindlier relation between official and employee. These relations had become strained under private control, and for this unhappy situation neither operating officials nor employees were entirely to blame. In the early days of wage bargaining the general manager of a railroad was privileged to grant increased wages and improved conditions of employment when in his own judgment they were justified. In those days it was the operating officials of a railroad that dictated its policy affecting employees. In many instances these policies were liberal, to the extent that employees accepted a denial of requests, or accepted compromises, with the belief that the reasons offered by the operating officials of a railroad why requests could not be granted were sincere.

Strained Relations in the Past

Then came the concentration of authority over expenses incidental to labor costs in boards of directors, often common in personnel to groups of railroads. Some employees went so far as to say, and believe, that a comparatively few of the great banking institutions of the country had assumed the right to prohibit operating officials granting any wage increase, even when it was known by such officials that economic conditions justified a liberal policy. An opinion prevailed toward the last that operating officials had lost practically all authority over wage matters; that they had become but the agents to enforce the will of "absent landlords."

Some employees believed that even their highest operating officials were obligated to deny any and all requests "that meant money" to the railroads, and were forbidden to adjust liberally the personal "grievances" of employees. Some of them found that where formerly operating officials had dispensed discipline alloyed with kindness, and where leniency had once successfully been pleaded, an apparent change in policy had been established. Unadjusted grievances accumulated, the feeling of oppression became more and more pronounced, and with this change of mental attitude of the employee came a decrease in efficiency of service, a lowering of morale, almost a complete absence of *esprit de corps*, on more than one railroad.

And then came an experience that led employees to think

that "Wall Street was so far away" that it never made a concession until its dividends and interest were jeopardized by a strike, or a threatened strike. Even had such a belief been based upon error, the belief was sincere, and thereby some railway employees reached the conclusion that their only hope for relief lay in a threatened strike. They were convinced that the strike alone was the only influence of employees recognized by those who dominated the railway labor situation.

The government took over the railroads with a majority of employees mentally depressed and educated by experience to believe in this theory, and it has taken time and patience to convince that under federal control justice will prevail, without strike, or threats of strikes.

As a part of the great harmonizing plan of the present director general, three Railway Boards of Adjustment have been created, to which nearly all employees working under agreements with their respective railroads may appeal with certainty that a just decision will be reached. And for all employees not working under such wage agreements the Division of Labor of the Railroad Administration is a court of resort where justice will be secured.

Railway Boards of Adjustment

For its psychological effect it was believed that for the strongly organized classes of employees, accustomed to adjusting matters in controversy in accordance with provisions of existing wage agreements, that Railway Boards of Adjustment should be composed of an equal representation selected by these organizations and the regional directors of the Railroad Administration. By this method that constant fear of "prejudiced arbitrators," so pronounced among railway employees, has been entirely removed. Each and every member of these organizations of railway employees has the knowledge that he himself has a personal representative on the Railway Boards of Adjustment, and that no so-called "neutral" holds the balance of power. Of course, employees know that in the event of a "deadlock" on these equi-partisan boards, the director general will take upon himself the duty of rendering a decision.

It was with the belief that deadlocks were inevitable that some railroad men of long experience, both officials and employees, doubted the practicability of this plan, but experience has not produced a single failure of these Railway Boards of Adjustment to reach decisions, equally balanced as they are.

Credit for this success is not alone due to those whose vision and optimism has been vindicated. It has been a determination of the members of these boards to be fair that has made "deadlocks" avoidable and decisions acceptable. But back of that, the chief executives of the employees' organizations are deserving of much of the credit for success, for they have said, in effect, to their respective representatives which they have selected, "You are no longer an advocate, you are now a judge."

All members of these Boards of Adjustment are technical experts in matters of wage bargaining and adjustments of the many other controversies that constantly arise between the railroads and their employees. They approach all matters submitted for adjustment with a thorough knowledge of de-

*Address before the Academy of Political Science thirty-eighth annual convention, Astor Hotel, New York City, December 7, 1918.

tail and past practices. None of them can be convinced by the specious arguments that have so often led astray most estimable gentlemen who have served as neutral arbitrators. It was not only a fear that a bi-partisan board would destroy its usefulness by inability to avoid partisanship, but predictions were made that employees would refuse to accept unfavorable decisions. Long years of experience in such matters demonstrate that members of the older railway employees' unions seldom violate an agreement. When the executives of one of these organizations, or other representative officer or committee, enters into an agreement to abide by a decision it is seldom or never repudiated. It was this knowledge of the loyalty to their organizations and methods of enforcing discipline by such organizations that removed fears that unfavorable decisions of Railway Boards of Adjustment would not be accepted in good faith by employees.

For that great number of employees who had never been permitted to participate in wage bargaining and grievance adjustment through the machinery of labor union committees the Division of Labor of the Railroad Administration directly acts as adjuster of controversies. An assistant director, with high reputation and years of experience in the work of mediation and labor adjustments, has been assigned the especial duty of investigating and adjusting matters of controversy not coming within the jurisdiction of Boards of Adjustment. He is assisted by men of like reputation and experience in field work, known as representatives of the division of labor.

This theory, however, if time will permit it to be carried to its logical conclusion, will place all railroad employees within the scope of work of Boards of Adjustment, upon which each class will have a representative.

Standardization

Time will develop, in all probability, that one of the most pronounced effects upon railway labor of federal control will be the standardization of wages and working conditions of railway employees. A purpose long asserted by organizations of such employees had been accomplished only to a limited extent, both as to classes and to territory, under the pre-existing conditions.

It has not been so many years ago that on some of our most important railway systems a policy prevailed that produced a different wage, if not a different condition of employment, on the several divisions of the same railroad. In some instances these differentials were established to meet the requests of the employees themselves, but in such cases a closer study will probably demonstrate that it was the inability of employees to secure a higher standard wage rate on all parts of a system that led them to press the claims of certain portions of the railroad where, because of peculiarly objectionable conditions, they had more convincing arguments to present for increased wages. Thus, by these methods of expediency, there were developed higher wage rates for the same classes of employees on the western divisions of the principal western railway systems. Thus, we find where increased wages could not be secured for an entire railroad, increases beyond a standard were secured where mountainous or desert conditions prevailed.

At one time it could be clearly shown that the cost of living was higher on western railroads than in the eastern region, and that other living conditions were not so desirable. Usually, however, it was the theory of expediency that caused railway employees to advocate these differentials.

This fact was brought out in recent years, where the so-called "district wage movements" were instituted by certain classes of employees and district standard secured. With the unification of the railroads under federal control the argument was immediately advanced by many employees, "Now that all railway employees are working for the government, all employees should be paid the same wages for the same work." But there had arisen another condition since

the beginning of the great war that led employees to contribute to the defeat of their desire for standardization. Cost of living had advanced with such gigantic strides that many employees subordinated their altruism to their individual interests. Upon each man fell the burden of this depreciation in purchasing power of his individual earnings, and because of this burden he has, for the moment, subordinated his long-expressed desire for standardization of wages for his entire class to his desire to maintain his past individual standard of living. Notwithstanding this individualistic demand the direct result of the great increased cost of living, certain classes of railway employees have remained true to their desire for standardization.

General Order No. 27, issued on May 25, 1918, was the result of the recommendations of the first wage commission created by the director general of the railroads early in the present year. Increased cost of living since December, 1915, was the basis of computation adopted by that commission. To this was applied the humanitarian theory that the increased cost of living had fallen heaviest on the low paid employee. But regardless of the amount of increase in wages produced by General Order No. 27, hundreds of thousands of employees earnestly protested against the application of the order, because it "re-established the differentials" in wages prevailing in December, 1915, many of which differentials had been eliminated by wage negotiations during the years 1916 and 1917. This protest came largely from the approximately 350,000 employees engaged in the skilled shop trades. In carrying out their fixed purpose of standardizing wages and working conditions they had during these two years secured such an agreement on the majority of the southeastern railroads and were aggressively pressing that purpose on other railroads, when the railroads passed under federal control.

Their theory had been that the highest paid men should be content with but minor benefits, when by so doing, the lower paid men were privileged to be advanced to a standard with all men in the same class of work.

The underlying theory of the wage advance of the first wage commission, while intensely humanitarian, completely undid all that had been done by shopmen, clerks, telegraphers, and others, toward standardization during the two years intervening between December, 1915, and January, 1918. Perhaps it will be of interest to know how General Order No. 27 produced this result. The first wage commission having based its recommended increases on the rates existing in December, 1915, recommended that any increases placed in effect subsequent to January 1, 1916, should be considered as a part of the wage increase granted through its recommendation. Thus, where in December, 1915, two like employees had been paid \$3.00 and \$3.50, respectively, per day, and the lower paid man had secured an increase of 50 cents per day in 1917, thus establishing a standard rate of \$3.50 per day, General Order No. 27, increased the wage of the one who had earned \$3.50 in December, 1915, to \$4.77, while the employee who had earned \$3.00 per day in December, 1915, was increased to \$4.23 per day, and of this increase of \$1.23 per day, 50 cents was deducted because of the wage increase of 50 cents per day in 1917.

To those who did not understand what had been done a somewhat humorous situation was produced in which the man who had already received his increase was more dissatisfied than the man who had waited a year for it. Those who did understand the cause of complaint knew that both of the men used in this illustration would have been more pleased had each received the same increase and thereby have preserved the standardization created in 1917.

But a peculiar situation had developed for the employees in train and engine service. Their "district standardization" had been established to a great extent before the close of 1915,

and, therefore, the wage order (No. 27) based on the first commission's report, did not re-establish the former differentials.

The sympathetic attitude of the director general for the desire of railroad employees for standardization was amply evinced in that portion of his General Order No. 27, wherein he created a second wage commission, which he has designated as the Board of Railroad Wages and Working Conditions, and to which he delegated the following duties:

This board shall at once establish a commission, to be known as the Board of Railroad Wages and Working Conditions, and shall report to the director general on or before January 1, 1919, a report on the conditions of employment of railroad employees and on the wages and working conditions of such employees.

It shall be the duty of the board to hear and investigate matters presented by railroad employees or their representatives affecting:

(1) Inequalities as to wages and working conditions whether as to individual employees or classes of employees.
(2) Conditions arising from competition with employees in other industries.

(3) Rules and working conditions for the several classes of employees, either for the country as a whole or for different parts of the country.

The board shall also hear and investigate other matters affecting wages and conditions of employment referred to it by the director general.

This board shall be solely an advisory body and shall submit its recommendations to the director general for his determination.

In his supplements to the original General Order No. 27 this great work of standardization has been rapidly accomplished. Supplement No. 4 (July 25, 1918) established a minimum standardized wage, hours of employment and rates of overtime for approximately 350,000 employees engaged in the shop trades. Supplement No. 7 (September 1, 1918) and Supplement No. 8 (September 1, 1918) accomplished a like purpose for perhaps a million employees engaged in clerical and other station work, maintenance of way, common labor, etc. Supplement No. 10 (November 16, 1918) standardized minimum wages, hours of employment and rates of overtime for nearly 62,000 telegraphers, telephone operators (except switch operators), agent telegraphers, agent telephoners, towermen, levermen, etc., and a few days later Supplement No. 11 accomplished the same purpose for all station agents not performing telegraphic service. In creating a "minimum standard," rates that were higher are preserved.

Of course, in the pioneering work apparent discriminations, if not injustice to individuals, developed, and to remedy these the director general has directed the Board of Railroad Wages and Working Conditions to make further investigations in order that all may know that they will have a "square deal."

Wages Intended to Be Permanent

The one thing that has, to some extent, defeated the purpose of such an admirable policy has been the abnormal increase in wages of temporary war industries. Just why the railroads, under federal control, should not pay 80 cents per hour when this rate is paid by other governmental agencies is difficult to explain. But when it is realized, as it will be, that the director general's plan has been to establish wage rates that will be permanent, beyond the war period, and after the cost of living has decreased, railway employees will not complain. I am sure that had the director general remained with us it would have been his purpose to have maintained the rates of wages and working conditions established by him. It has been to accomplish this that he has refused to compete in wage increases with other agencies and industries whose activities will be greatly affected by a return of peace.

And yet, it must be confessed, that many employees are distrustful of the government, as they have been taught to be distrustful of their former employers. While such a comparison is exaggerated, and all comparisons are said to be odious, a celebrated author points out that even a wild animal, in time, responds to the treatment accorded it. Jack London in his wolf, "White Fang," portrays man—with all the bad and good that is in him. An animal with but the instincts that nature gave him and his kind in common, de-

veloped into a ferocious beast under ignorant and cruel masters, and half starved, over-worked and cruelly treated, viciousness developed to an extreme degree. And yet, as if by some magic power, another master made of him a docile, faithful creature. True, White Fang viewed with suspicion well-meant advances first made by his last master. He had been taught in his past life that all masters were cruel. It required but patience, tact and kindness to regenerate a degenerate. We have but to view a certain European situation to recognize that with man as with London's creature of the wild, like causes produce like effects. Anarchy is the natural child of tyranny, although, 'tis true, that no tyrant confesses his parentage.

Happily, no railroad employee had yet become a "White Fang" or a Bolshevik, but the heaven was there; unwittingly implanted by those whose selfish interests had blinded them to the destructive agency of their own creation.

Another administrative measure, equally as important to railway employees as those mentioned in the foregoing, has been the recognition of the eight-hour day by the director general. In some instances he has not yet been able to grant higher rates of overtime after the eighth hour of work, but usually in such cases it can be shown that the other benefits of the wage order have been a great advance, and even in these cases the eight-hour day has been established with pro-rata overtime for work performed in the ninth and tenth hour, and time and one-half for any work performed after the tenth hour in any day's work. Where past practices have resulted in an eight-hour day and time and one-half for overtime for large numbers of employees in any class, this practice has been extended to all employees in that class.

As early as February 21, 1918, less than 60 days after the railroads passed under federal control, General Order No. 8 was issued, which contained the following provisions:

"No discrimination will be made on the employment, retention or conditions of employment of employees because of membership or nonmembership in labor organizations."

This privilege thus granted, the principle of wage bargaining having been recognized, and existing wage agreements confirmed by the director general, thus placed all employees on roads under federal control on an equality with employees on most of the roads where a more liberal policy has heretofore prevailed.

The fact that the Division of Labor was created with the director of that division on full equality with directors of other divisions indicates the general attitude of the director general. It may be said that for the first time "labor" is recognized on equality in solving the problems of railroad administration.

No doubt, there has been impatience among railroad employees because of delays in adjustments of matters affecting their well being, but it should be remembered that all that has been accomplished has been the result of the first 11 months of federal control. Having regard for the fact that approximately 2,000,000 employees have been involved; that varying conditions existed on many railroads, and that it must take time to solve such problems, I feel sure progress has been made with unusual rapidity in the settlement of most questions.

Under the existing Congressional act, the railroads will pass back to private control on or before 21 months after the declaration of peace. Under private control, as under federal control, the labor problems are of great importance, and should have the serious consideration of those who are to re-assume control. If Congress decides to enact additional legislation affecting the railroads, I sincerely hope that the rights and aspirations of labor in the operation of the railroads will receive due consideration. What has been done under federal control may serve as an illustration of what may be done under any form of control. But so long as the

roads are under federal control, it is evident that labor problems will be dealt with along different lines than was the practice when the roads were operated by private corporations.

An effect of federal control on railway labor has been the inspiration for better things—that life is really worth living. I have said this with full knowledge that federal control of labor produces effects in keeping with the peculiarities of temperament of those who govern. I speak of the present and not of the future. What the future has for the well being, contentment and consequent efficiency of railroad employees rests with those who are to dictate policies of the future.

Railway Activities in the War

AN OUTLINE of the activities of the railroad engineer forces in France is given in the annual report of the secretary of war as follows:

Trans-Atlantic shipping was only one link in the chain of communications that had to be established between our home shores and the fighting front. Before our armies could function in the field, vast piers, docks and warehouses had to be built at the French ports assigned to our use, and railroads with the necessary rolling stock had to be constructed or secured from the French. This tremendous task was assigned to the army engineers who had made such an enviable record for themselves in connection with the building of the Panama canal.

Under the leadership of Maj. Gen. W. M. Black, chief of engineers, a program of construction was prepared, providing for the movement and supply in France of not less than 4,000,000 men, orders were placed for the vast quantities of material required, and immediate steps were taken to commence operations in France.

These operations involved the development of some sixteen French ports, located from the English Channel to the Mediterranean, with such facilities as piers, unloading machinery, warehouses, and railroad yards; the repair, expansion and maintenance of the standard gage railroad lines assigned to our use by the French; the construction of narrow-gage lines from the main line railheads to points near the trenches, and the provision of cars and locomotives to operate over these railroads to supplement the greatly depleted supply of French rolling stock. The orders placed up to November, 1918, on account of these projects amounted to \$700,000,000, a sum five times as great as all the purchases of material, equipment and supplies made for the Panama canal.

Of this huge sum, about \$400,000,000 is for American-built rolling stock, orders for which have been placed, as shown below:

ORDERS PLACED TO NOVEMBER 10, 1918, FOR ROLLING STOCK OF THE AMERICAN ENGINEERING DEPT.

Type	Ordered	Cost	Shipped to France	Cost
Locomotives, standard gage	3,341	\$14,000,000	1,183	\$50,000,000
Cars, standard gage	91,331	30,000,000	17,308	41,000,000
Locomotives, narrow gage	1,294	11,000,000	406	3,000,000
Cars, narrow gage	8,663	7,000,000	3,691	3,000,000
Total	104,992	\$52,000,000	22,588	\$97,000,000

In addition to the foregoing, 209 locomotives had been purchased at a cost of \$11,000,000 for army use in this country.

For the construction of the railroad track that we have added to the French system to adapt it to our needs, and for the military and lumbering roads that we have constructed, the General Engineer Depot had ordered up to November 1 sufficient rail to lay 7,500 miles of track. Nearly half of this amount has already been shipped abroad and the schedule of shipment in force at the time the armistice was signed called for the monthly shipment of material for about 600 miles of new track. In addition, enough rail for about 1,000 miles of narrow-gage track has been shipped for the construction of

the 60-centimeter lines close behind the trenches, used for traffic in these sections.

The cessation of hostilities has, of course, rendered unnecessary the completion of our expeditionary project, and steps have been taken to reduce orders and cancel contracts for such items as will not be needed in France. In this connection, however, care is being taken to assure ourselves that we are not depriving France of material which she so urgently needs to replace that worn out during her terrific self-denials of the past four years. We cannot refuse to render all the assistance possible in the reconstruction of that heroic nation.

As the work on these huge projects took form, it was apparent that a separate organization must be created within the engineering department to handle the transportation problem. Accordingly, the office of director general of military railways was established and Samuel M. Felton, president of the Chicago Great Western, was appointed to the position. His intimate knowledge of railroad problems, coupled with a personal trip of inspection over all our lines of communication in France, have rendered his advice particularly valuable and have greatly facilitated the progress of the war department in these particulars. The immediate responsibility of the work in France was intrusted to Brig. Gen. W. W. Atterbury, formerly of the Pennsylvania Railroad, who was appointed director general of transportation and who, with his able staff, has succeeded in transporting our troops and their supplies over the 500 miles of railroad from seaboard to battle line with remarkable efficiency and despatch.

The director general of military railways has performed two principal functions—that of purchasing transportation equipment, such as cars, locomotives, cranes, tugs and barges, and that of securing personnel for the transportation department of our army in France. Within a month after the declaration of war, a beginning had been made of recruiting the railway regiments, which are made up almost entirely of men formerly employed by the railways of the United States. At the present time the number of these men in service in France is nearly 60,000. They are organized and trained as military units, in companies, battalions and regiments, and these units are designated by different titles, indicating the general nature of the services they are to render, such as standard-gage railway operating regiments, standard-gage railway shop regiments, light railway construction regiments, railway operating battalions, and locomotive-repair battalions.

Each of these units is made up of men skilled in many different trades or crafts, such as engineers, firemen, brakemen, machinists, boiler makers, pipe fitters, car builders, blacksmiths, oxy-acetylene welders, staybolt testers, etc. Included in the 60,000 men above mentioned are about 2,800 locomotive engineers, 2,800 firemen, 2,000 conductors, and 5,700 brakemen. About 1,800 of these troops are officers, among whom are railway superintendents, superintendents of motive power, superintendents of telephone and telegraph, assistant division superintendents, train despatchers, master mechanics, accountants, towboat captains, and towboat engineers. The removal of so large a number of skilled men from the service of the railroads of this country at a time when they were obliged to operate at an intensity never before equalled, seriously increased the difficulties under which they labored. If the war had continued, however, and our army program had been carried out, it would have been necessary to call upon the railways for still further sacrifices which, I am sure, would have been met cheerfully.

The report also shows that in the 19 months elapsing from the declaration of war to the signing of the armistice the army created an embarkation service which succeeded in shipping overseas 2,075,834 men and 5,153,000 tons of cargo. In the last 10 months the army embarked 1,880,339 men and shipped 4,660,000 tons of cargo. Included in the cargo ship-

ment were 1,145 Consolidation locomotives of the 100-ton type, of which 350 were shipped set up on their own wheels, so they could be unloaded onto the tracks in France and run off in a few hours under their own steam. It is stated that shipment of set-up locomotives of this size had never been made before. Special ships with large hatches were withdrawn from the Cuban ore trade for the purpose, and the hatches of other ships were especially lengthened so that when the armistice was signed the army was prepared to ship these set-up locomotives at the rate of 200 a month. The army also shipped 17,000 standard-gage freight cars and at the termination of hostilities was preparing to ship flat cars set up and ready to run. Rails and fittings for the reinforcing of French railways and for the construction of our own lines of communication aggregated 423,000 tons.

The report of General Pershing to the secretary of war also pays a high tribute to the work of the Engineer Corps, which includes the railway activities, saying that "the work has required large vision and high professional skill, and great credit is due the personnel for the high proficiency that they have constantly maintained." The report says that the eventual place the American army should take on the western front was to a large extent influenced by the vital questions of communication and supply. "Constantly laboring under a shortage of rolling stock," General Pershing said, "the transportation department has nevertheless been able by efficient management to meet every emergency."

The report of the chief of staff of the army says that during the fiscal year 5,377,468 officers and men were moved by railroad to and from camps in this country.

The report of the Board of Ordnance and Fortification to the secretary of war refers to the allotment of the sum of \$74,000 for the development, construction and test of a railway car propelled by 200 horsepower oil engine with electric drive, fitted with an armored cab, searchlight and conning tower and carrying a normal armament of two machine guns. The construction of the car is nearing completion and it is expected that tests will be conducted in the near future. On August 19, 1916, the board made an allotment of \$4,500 for the construction and test of a railroad flat car mounting a seven-inch howitzer, and on May 4, 1917, \$7,000 additional was made available for this purpose. The car and mount have been completed and delivered and the tests will shortly be conducted.

Railway Statistics for 1917

THE RAILWAYS of the United States were taken over by the government at the apex of their efficiency and the nadir of their credit," is the opening sentence of the annual report of the Bureau of Railway News and Statistics, Chicago, for the year 1917, just issued.

This claim is based on the statement that 394,040,446 tons of freight were carried one mile in 1917, being an increase of 8 per cent over the highest previous record, and 36.5 per cent over the year to June 30, 1914. The low level of credit is shown by the inadequate provision in facilities and equipment to cope with such increase in traffic. Between 1914 and 1917 there was no increase in the number of locomotives and only 11 per cent in tractive power. The same condition obtained in freight cars, whose capacity increased less than 4 per cent in three years and a half.

The bureau's statistics cover reports from 485 roads, operating 252,029 miles of line and 392,350 miles of all tracks. The equipment for these roads on December 31, 1917, is given as locomotives 63,828, passenger cars 54,779, freight cars 2,384,705 and company cars 125,051. The investment in equipment alone at 1909 prices is computed to be \$4,844,056,000.

The average number of railway employees in 1917 was 1,780,235, whose compensation aggregated \$1,781,027,000, or over \$1,000 per man yearly. Between 1907 and 1917 the number of employees increased 10.8 per cent and their compensation 66.1 per cent. The Adamson law and incidental changes in conditions of employment added approximately \$201,000,000 to the yearly railway pay roll. The advances under federal control will add something like \$750,000,000 to the 1917 figures. The pay roll in 1917 absorbed 43.71 per cent of the operating revenues.

The gross capitalization of these roads is computed to be \$20,072,730,672 and the net capital after deducting intercorporate investments \$16,823,695,000 or \$66,755 per mile operated, or \$69,983 per mile after deducting mileage operated under trackage contracts. The investment in these roads to December 31, 1917, less accrued depreciation, was \$18,400,886,812.

Federal valuation to December 31, 1917, had cost the United States \$8,867,073, and the railways \$20,578,415, a total of \$29,435,120, or more than three times the cost of production, new, of the only roads whose valuation has been confirmed so far.

There were 550,652 stockholders in the 485 roads reporting to the bureau in 1917, an increase of 28,551 over the preceding year. Nearly \$1,700,000,000 railway bonds are held by national and state banks, savings and trust companies, to say nothing of those owned by life and fire insurance companies. Individual ownership of railway stocks and securities is in the neighborhood of a million.

In 1917 the railways reporting to the bureau carried 1,085,879,000 passengers a total of 39,739,682,000 miles for 2.103 cents per passenger-mile, and 2,362,294,000 tons of freight a total of 394,040,446,000 miles or 7.28 mills per ton mile. The number of passengers per train was 68.1 against 56.2 in 1916, and the journey was 36.5 miles against 34.0. The average number of tons per train was 620 against 553 in 1916, and the average haul was 167 miles against 160. These great results were obtained with scarcely any increase in train mileage.

The receipts from mail decreased from \$61,944,597 in 1916 to \$59,128,692 in the face of an enormous increase in mail carried, and in contrast with an increase from \$90,928,474 to \$107,115,528 in railway receipts from express.

The percentage of low and high rate commodities remained about the same as in 1916.

The revenues from operation were \$4,074,672,000, the largest on record, and the expenses, including taxes, were \$3,101,057,880, with an operating ratio of 76.15 per cent. The charges on account of interest amounted to over \$431,000,000 and for rent of leased roads \$133,000,000. After all deductions for betterments, etc., the balance available for dividends, surplus, etc., was \$359,527,974 against \$429,238,789 for the same item in 1916.

A preliminary income statement for the year to June 30, 1918, in the introduction computes the operating revenues as \$4,360,730,544; operating expenses \$3,430,420,192; accrued taxes \$228,764,574 and net operating income \$701,445,581. The operating ratio for the year to June 30, 1918, including taxes, was 83.91 per cent.

The opening gun, in what is intended to be a "nation-wide fight for the retention of the railroads in the hands of the government," is announced to be held at Macauley's theatre, Louisville Ky., next Sunday night, December 15. This announcement, according to a Louisville paper, is put out by the "Central Body" of railroad employees' unions of Louisville. One of the chief speakers is to be M. L. Clawson, an attorney, said to have been instrumental in securing a recent increase of wages for employees of the express companies.

Standard Heavy 4-8-2 and Light 2-10-2 Locomotives

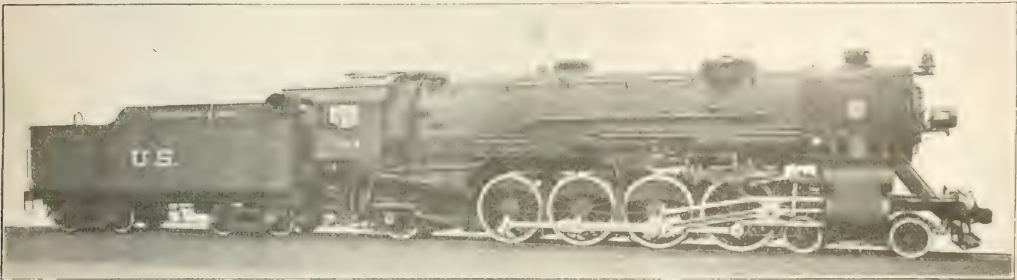
Both Boilers of Essentially the Same Dimensions with
Ample Steaming Capacity in Each Case

THE FIRST LOCOMOTIVES of the United States Railroad Administration standard heavy Mountain type and light Santa Fe type have recently been delivered by the American Locomotive Company.

The boilers used on these two types are practically identical; the size of the shell, the number and diameter of tubes and flues and the principal firebox dimensions are the same. The principal difference between the two boilers is in the slope of the mudring, the height of the center line of the boiler on the Mountain type locomotive making possible the maintenance of a deeper backhead with less inclination of the grate than

dimensions of the standard 4-8-2 type locomotive with a few of the recently built locomotives of this type. It will be found that although the total weight of this locomotive is slightly less than that of the A. T. & S. F. locomotive,* the weight on the drivers is considerably higher, as is also the tractive effort, which exceeds that of any locomotive of this type previously built. It will also be observed that the cylinder stroke is longer than has usually been adopted for locomotives of this type, which accounts for the high starting tractive effort obtainable.

A similar comparison of Santa Fe types shows less



The U. S. Standard Heavy Mountain Type Locomotive

was necessary on the 2-10-2 type. The design of both types of locomotives conforms closely in the details used to the other standard types which have already been built, and a considerable measure of interchangeability exists in the details of the various classes.

The boiler provides ample capacity in each case. Stating the relation between the boiler capacity and the cylinder demand on the basis of Cole's ratios, the Mountain type loco-

motive has practically a 100 per cent boiler, while the boiler for the Santa Fe type is equivalent to about 109 per cent. The design of the boiler itself is well balanced, both as to the ratio of tube length to diameter and the ratio of grate area to heating surface. The latter relation checks almost exactly with Cole's assumption of 120 lb. of coal per square foot of grate per hour at the maximum boiler output.

Comparison of Locomotive Data				
Road	U. S. Std.	Santa Fe	N. Y. C.	N. & W.
Builder	American	Baldwin	American	N. & W.
Year Built	1918	1918	1916	1916
Tractive effort, lb.	58,000	54,000	50,000	57,000



The Standard Light 2-10-2 Type Locomotive

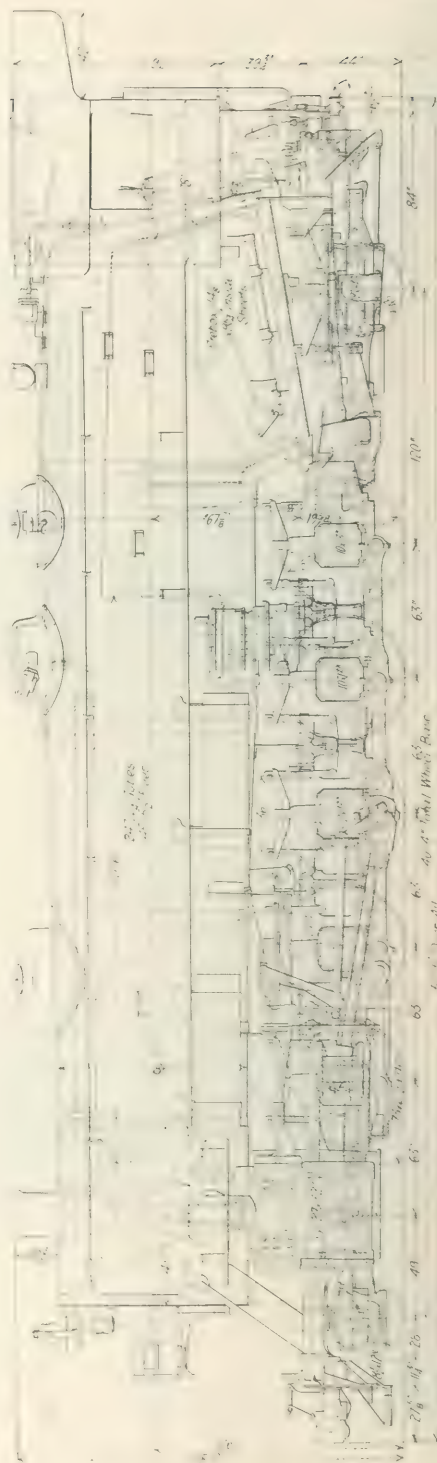
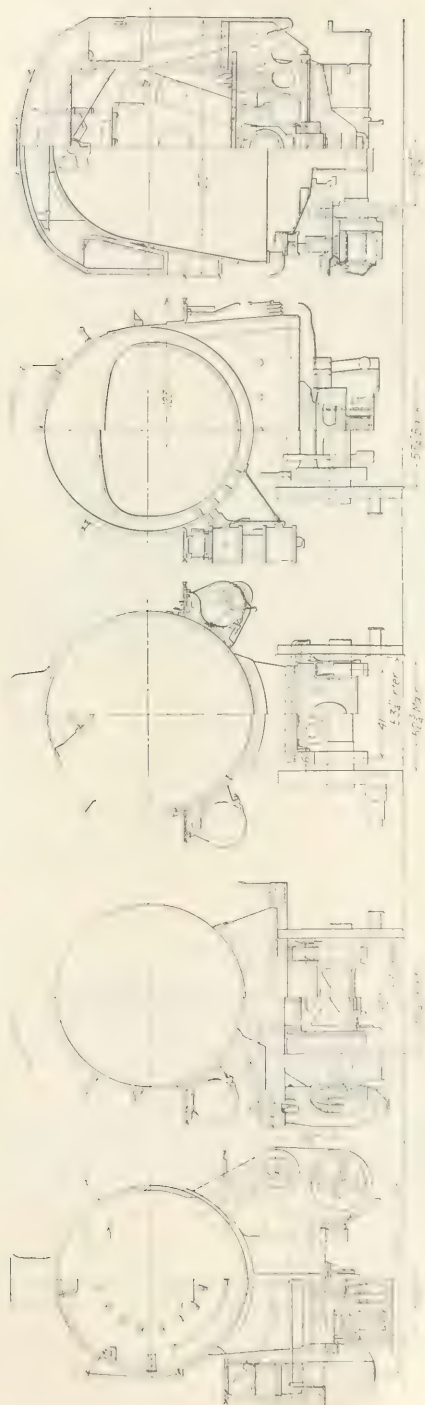
motive has practically a 100 per cent boiler, while the boiler for the Santa Fe type is equivalent to about 109 per cent. The design of the boiler itself is well balanced, both as to the ratio of tube length to diameter and the ratio of grate area to heating surface. The latter relation checks almost exactly with Cole's assumption of 120 lb. of coal per square foot of grate per hour at the maximum boiler output.

	352,000	353,900	343,000	341,000
Total weight, lb.	352,000	353,900	343,000	341,000
Weight on drivers, lb.	132,000	132,000	132,000	132,000
Cylinders	2	2	2	2
Boiler pressure, lb. per sq. in.	200	200	185	200
Diameter of drivers, in.	69	69	69	70
Evaporating heating surface, sq. ft.	4,666	4,790	4,430	3,984
Superheating surface, sq. ft.	1,085	1,086	1,212	388
Grate area, sq. ft.	76.3	71.5	66.8	80.3

The tonnage rating charts which are shown for the two

*See Railway Age, November 29, 1918, page 957

In the table is presented a comparison of the principal

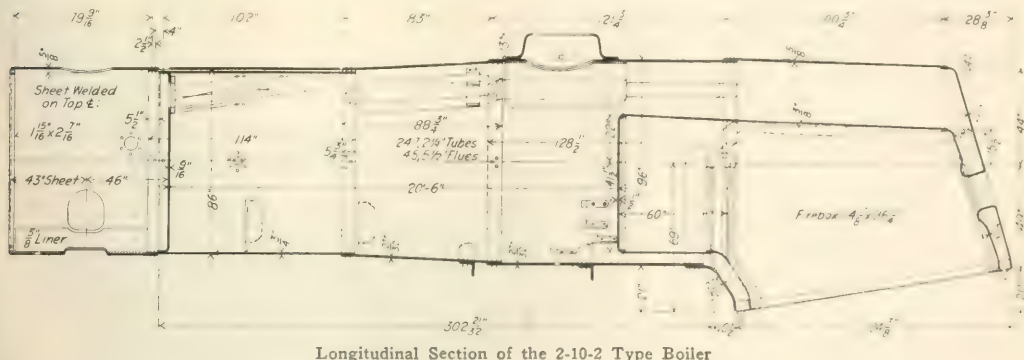


Elevation and Cross Sections of the U. S. Standard Light Santa Fe Type Locomotive

types are similar to those shown in the *Railway Age* for October 4, page 627, and October 11, page 656.[†]

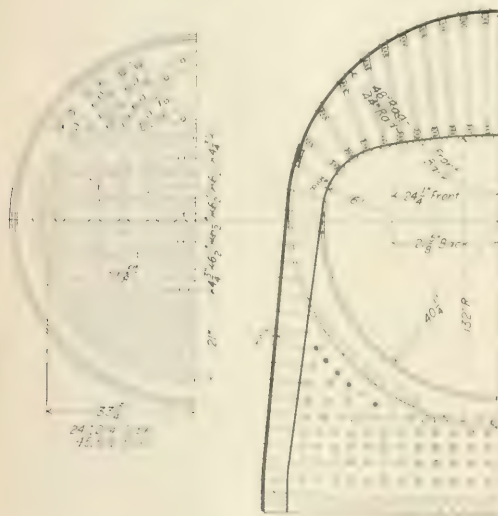
The boiler for both types is 86 in. in diameter outside of the first ring and is increased to an outside diameter of 96 in. at the firebox by a conical course just ahead of the dome.

course is placed to the right of the top center line, while the forward, straight course is closed on the top center line. The tubes and flues are 20 ft. 6 in. long, ending at the rear in a combustion chamber tube sheet which is placed five feet ahead of the firebox throat. Type A superheaters and Se-



Longitudinal Section of the 2-10-2 Type Boiler

The longitudinal seam in the dome course is placed at the left side of the top center line, the dome pad being used as an inside welt strip for the portion of the seam in front of the combustion chamber. The dome is of pressed



Firebox Section and Tube Sheet Layout

steel, standing eight inches above the top of the boiler shell on the 4-8-2 and 13 in. on the 2-10-2 type and has a clear opening of 25 in. The steam on the conical

†The curves of hauling capacity are constructed for a car resistance of 4 lb. per ton. The chart may be used for any car resistance, or for any combination of resistances by converting them into terms of grade.

1 lb. car resistance	0.8	per cent	2000 lb.
1 degree curve uncompensated	0.4	per cent	2000 lb.

For example: Find the tonnage which can be hauled in passenger service by the 4-8-2 type locomotive, on 0.5 per cent grade combined with 4 deg. uncompensated curve at 40 m.p.h.

From Table III (see the October 4 issue) the resistance of passenger coaches at 40 m.p.h. is 6.65 lb. per ton. The equivalent grade is then:

$$0.5 \div (4 \times 0.4) = (6.65 \times .05) = 0.7925 \text{ per cent}$$

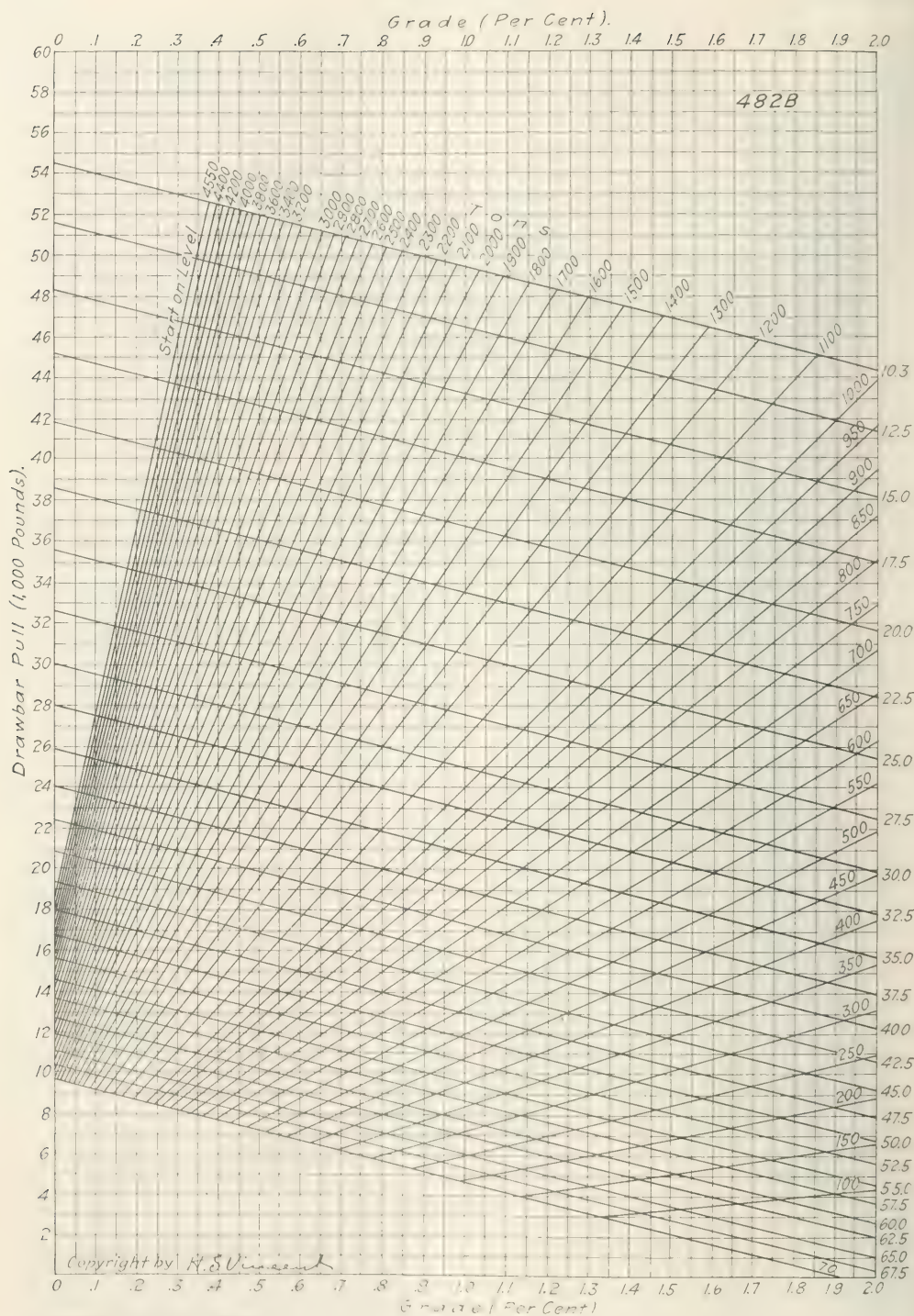
At the intersection of the ordinate for 0.7925 per cent grade with the drawbar pull curve for 40 m.p.h., we find 925 tons as the capacity of the locomotive.

curity Brick arches are used on both types of locomotives.

Both locomotives are fired with stokers, the 4-8-2 type being equipped with a Standard stoker and the 2-10-2 type with the Duplex. Both have Franklin power grate shakers and the 4-8-2 type is equipped with a Shoemaker firedoor, while the 2-10-2 type has the Franklin door. In both cases the throttle rigging is of the Chambers backhead type. On the Mountain type locomotives the boiler is fed by Hancock No. 13 non-lifting injectors, while on the 2-10-2 type the Ohio non-lifting injectors of the same number are used. The 4-8-2 type boiler is fitted with Consolidated safety valves, while the Santa Fe type has Coale valves.

The frames of both locomotives are similar in design, both having single front rails cast integral with the main frames and Commonwealth rear frame cradle castings spliced to the rear ends of the main frames. The frames of both types are six inches wide. The top rail on the Mountain type has a maximum depth over the pedestal of $7\frac{1}{2}$ in., with a minimum depth of $6\frac{1}{2}$ in. The lower frame rail is $5\frac{1}{2}$ in. in depth over the ends of the pedestal binders and $4\frac{1}{2}$ in. in depth at the minimum section. The standard pedestal taper in all cases is one in twelve. On the 2-10-2 type the top frame rail is $7\frac{1}{2}$ in. deep over the pedestal with a minimum section 6 in. deep, while the lower rail has maximum and minimum depths of $4\frac{3}{4}$ in. and $4\frac{1}{4}$ in., respectively. The frame bracing is similar in both cases. Vertical crossies are bolted to the pedestal jaws of each pair of drivers except the rear, the forward casting also being attached to the inclined lower rail immediately back of the cylinders. Horizontal crossies are attached to the top rails of the Mountain type locomotive in front of the forward drivers, this casting also supporting the guide yoke, and between the first and second, second and third, and third and fourth pairs of drivers. The bracing of the Santa Fe type is similar; starting with the guide yoke which is located between the first and second pairs of drivers, transverse castings are attached to the top rails between each succeeding pair of wheels.

The cylinders of the Santa Fe type locomotive are the same diameter and stroke as those of the heavy Mikado type and, including the cylinder and valve chamber heads, are interchangeable with those used on the latter locomotive. The Mountain type cylinders do not interchange with any other type yet built, but the valves and steam chest covers used on these locomotives are interchangeable with those used on the 2-10-2 type, both the light and heavy Mikado types and the eight-wheel switcher. The crosshead body, with the excep-



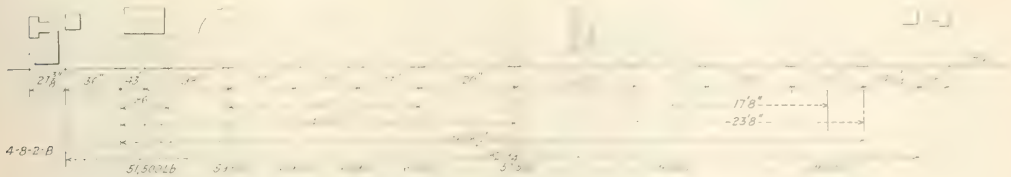
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Tonnage Rating Chart for the U. S. Standard Heavy Mountain Type Locomotive

tion of the finish for the wrist pin fits, the front end main rod clearance and the piston rod fit is identical for the heavy Mountain type locomotive, both the light and heavy Mikado type locomotives and the eight-wheel switcher. The cross-head shoes are not interchangeable. The piston and rod used on the light Santa Fe locomotive are identical with those

Cole-Scoville type, the journals in both cases being 9 in. in diameter by 14 in. in length.

The Baker valve gear is applied on the Mountain type locomotives while the Santa Fe type are fitted with the Southern valve gear. In both cases the valve motion is controlled by the Ragonnet power reverse gear.



Wheel Loading and Spacing Diagram for the U. S. Standard Heavy Mountain Type Locomotive

used on the heavy Mikado type. Paxton-Mitchell metallic packing is used for the piston and valve rods on both the Mountain and Santa Fe types.

On both the light Santa Fe and the heavy Mountain types the main driving journals are 12 in. in diameter by 13 in.

Both locomotives are served with tenders carrying the standard 10,000-gal. tank mounted on Commonwealth cast steel frames. The passenger tenders are fitted with equalized trucks having frames of the built-up type, while the trucks under the freight tender have cast steel side frames.

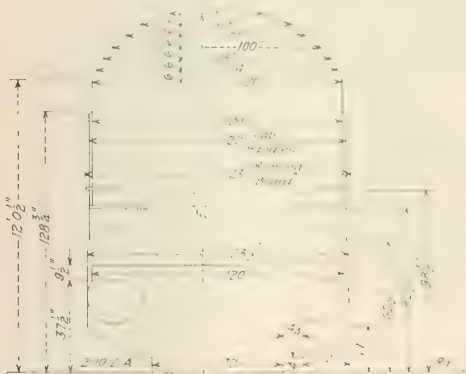


Wheel Loading and Spacing Diagram for the U. S. Standard Light Santa Fe Type Locomotive

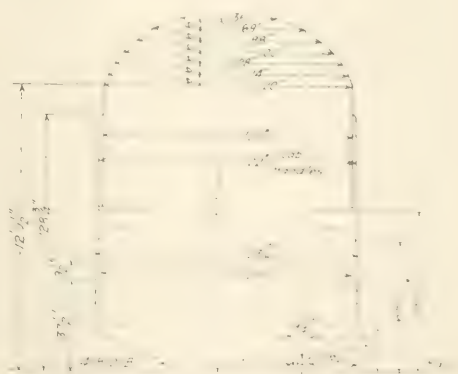
long. The other journals on the Mountain type are 11 in. in diameter by 13 in. long and the driving boxes for these axles interchange with the main driving box for the light Mikado type locomotive, with the exception of slight differences in the finish of the crown brass, which is bored out 1/32 in. oversize for the Mountain type journals and 1/100 in. over-

In both cases the trucks are fitted with Woods roller side bearings. The connection between the engine and tender includes the Unit safety drawbar and Radial buffers, while the rear ends of the tenders are fitted with Westinghouse D-3 type draft gear.

Among the specialties are Everlasting blow-off cocks on



Clearance Diagram for the Light 2-10-2 Type



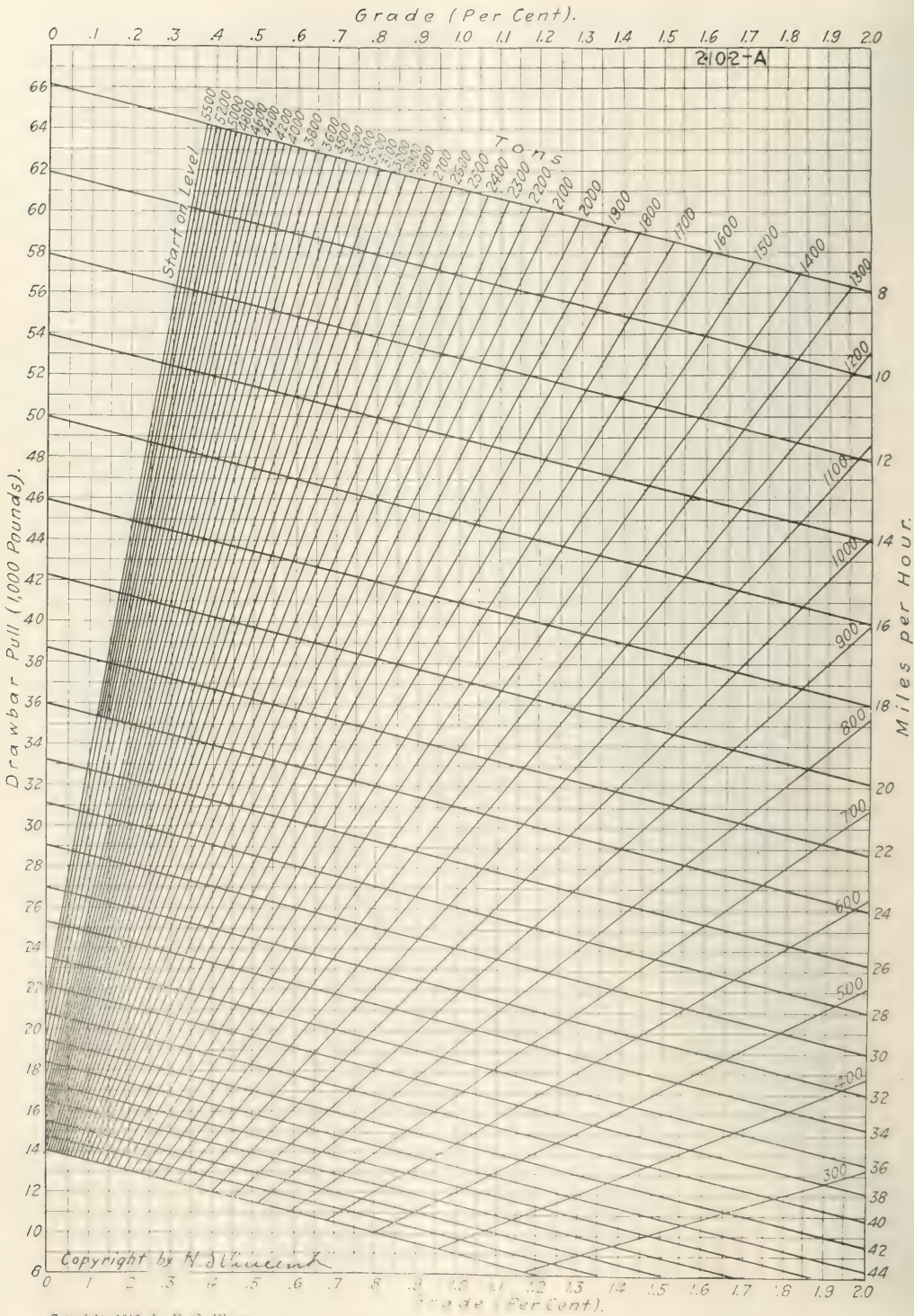
Clearance Diagram for the Heavy 4-8-2 Type

size in the case of the Mikado. The other journals on the Santa Fe type are 10 in. in diameter by 13 in. in length and the driving boxes used on these axles interchange with those of this size used on both the light and heavy Mikado type locomotives.

The leading trucks on both locomotives are of the constant resistance type, while the trailing trucks are of the

the 4-8-2 type, Murden blow-off cocks on the 2-10-2 type, Ashcroft and Ashton steam gages on the 4-8-2 and 2-10-2 types, respectively, Detroit six-feed six-pint lubricators on both types and Leslie steam heat equipment on the 4-8-2 type. Greenlaw flexible pipe couplings are used on the 4-8-2, while the 2-10-2 is fitted with Barco couplings.

The principal dimensions and data for both types are given



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Tonnage Railway Chart for the U. S. Standard Light Santa Fe Type Locomotive

in the clearance and wheel load diagrams and in the following table:

General Data			
	4-8.2	2-10.2	
Gage	4 ft. 8 1/2 in.	4 ft. 8 1/2 in.	
Service	Passenger	Freight	
Fuel	Soft coal	Soft coal	
Tractive effort	58,000 lb.	69,400 lb.	
Weight in working order	352,000 lb.	352,000 lb.	
Weight on drivers	243,000 lb.	274,000 lb.	
Weight on leading truck	51,500 lb.	23,000 lb.	
Weight on trailing truck	57,500 lb.	54,000 lb.	
Weight of engine and tender in working order	547,500 lb.	540,300 lb.	
Wheel base, driving	18 ft. 3 in.	21 ft.	
Wheel base, total	40 ft. 0 in.	40 ft. 4 in.	
Wheel base, engine and tender	75 ft. 8 1/2 in.	76 ft. 1 1/2 in.	

Ratios			
Weight on drivers ÷ tractive effort	1	3.9	
Total weight ÷ tractive effort	6.1	5.1	
Tractive effort ÷ lum. drivers equivalent heating surface*	637.0	629.6	
Equivalent heat. surface* ÷ grate area	82.4	87.4	
Firebox heating surface ÷ equivalent heating surface* per cent.	5.9	5.9	
Weight on drivers ÷ equivalent heating surface*	38.7	43.6	
Total weight ÷ equivalent heating surface*	56.0	56.0	
Volume both cylinders	21.4 cu. ft.	1.2 cu. ft.	
Equivalent heating surface* ÷ vol. cylinders	3.6	296.3	
Grate area ÷ vol. cylinders	3.6	3.6	

Clearances			
Kind	Simple	Simple	
Diameter and stroke	28 in. by 30 in.	27 in. by 32 in.	

Valves			
Kind	Piston	Piston	
Diameter	14 in.	14 in.	

Wheels			
Driving, diameter over tires	69 in.	57 in.	
Driving journals, main, diameter and length	12 in. by 13 in.	12 in. by 13 in.	
Driving journals, others, diameter and length	11 in. by 13 in.	10 in. by 13 in.	
Engine truck wheels, diameter	33 in.	33 in.	
Engine truck, journals	6 1/2 in. by 12 in.	6 1/2 in. by 12 in.	
Trailing truck wheels, diameter	43 in.	43 in.	
Trailing truck, journals	9 in. by 14 in.	9 in. by 14 in.	
Boiler			
Style	Conical	Conical	
Working pressure	200 lb. per sq. in.	200 lb. per sq. in.	
Outside diameter of first ring	86 in.	86 in.	
Firebox, length and width	114 1/2 in. by 96 1/4 in.	114 1/2 in. by 96 1/4 in.	
Firebox plates, thickness—Sides, back and crown, 3/8 in.; tube	3/8 in.	3/8 in.; 3/8 in.	
Firebox, water space—Front, 6 in.; sides and back	5 in.	6 in.; 5 in.	
Tubes, number and outside diameter	247—2 1/2 in.	247—2 1/2 in.	
Flues, number and outside diameter	45—5 1/2 in.	45—5 1/2 in.	
Tubes and flues, length	20 ft. 6 in.	20 ft. 6 in.	
Heating surface, tubes	2,970 sq. ft.	2,970 sq. ft.	
Heating surface, flues	1,323 sq. ft.	1,323 sq. ft.	
Heating surface, firebox	373 sq. ft.	373 sq. ft.	
Heating surface, total	4,666 sq. ft.	4,666 sq. ft.	
Superheater heating surface	1,085 sq. ft.	1,085 sq. ft.	
Equivalent heating surface*	6,283 sq. ft.	6,283 sq. ft.	
Grate area	76.3 sq. ft.	76.3 sq. ft.	

Tanks			
Water bottom	Water bottom	Water bottom	
Frame	Cast steel	Cast steel	
Weight	193,700 lb.	188,300 lb.	
Wheels, diameter	33 in.	33 in.	
Journals, diameter and length	6 in. by 11 in.	6 in. by 11 in.	
Water capacity	10,000 gal.	10,000 gal.	
Coal capacity	16 tons	16 tons	

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface

Service Work for Freight and Passenger Traffic

Southern Regional Director Emphasizes Necessity of More Personal Contact with Railroad Patrons

B. L. WINCHELL, regional director for the Southern region, in Circular Letter No. 414, calls attention to the need for more personal contact between the shipping and travelling public and the railroad representatives since the discontinuance of the off-line agencies and outlines methods by which it may be brought about. After referring to his letter instructing the discontinuance of the off-line traffic offices, in which he said it was not the intention that any community shall be left without proper sources of information and advice as to matters connected with the passenger or freight service, Mr. Winchell says:

Pursuant to these suggestions, it was understood that the Southern region lines would reorganize their freight and passenger traffic work and I have no doubt that the work has been gradually developed, as originally set. Nevertheless, from facts brought out from time to time, and from complaints received, etc., it is apparent that the public is not, in all cases, receiving the full amount of attention, especially in freight service work, that it has the right to expect.

Principally, the shippers feel the lack of personal contact with the railroad representatives, some of them being visited but rarely, or not at all. A comparatively minor number of shippers have in their employ men trained in railroad traffic work, and such no doubt are largely able to help themselves, but the great majority of the shippers who have in the past relied upon the freight solicitor for aid especially feel the lack of this personal contact with the carrier and his solicitude towards their affairs. As a direct result, not only do all manner of complaints reach the several directors, but shippers are making of them specific requests for information and for assistance which can be very easily taken care of by the freight service agent. It is desired that this condition of affairs be remedied as promptly as possible, and as good, or

better service, be given under federal control as was given under private management.

The discontinuance of off-line agencies necessitates the service forces looking after matters formerly handled by such agencies, and keeping in touch with the service of other lines to a greater extent than ever heretofore. The service forces should be so divided as to permit regular and frequent rounds of visits to the shippers located in the larger places at which there are resident service men, not in solicitation, of course, but purely for the purpose of keeping in close touch with the problems and requirements of the individual shippers. Similarly, there should be traveling service agents who visit regularly the local and smaller stations, where patrons should be called upon. The shipper at these local and out-of-the-way stations usually is the most neglected of all the patrons.

Invariably should shippers be impressed with the fact that the service men are to be called upon to aid them in every reasonable way, whether the problem at hand concerns the representative's railroad or that of another. The frequency of these visits, both at the cities and smaller places, should be determined by circumstances, but it is the suggestion that in any case such ought not to be further than 30 days apart. The attitude of the individual representative should at all times be one of soliciting the confidence of the public, and that of one personally interested in the commercial welfare of the shipper and the personal comfort of the passenger, and evidence of this attitude should be in a demonstration of the efficiency with which the patron's matter is handled.

Some of the railroads have undertaken to define the particular duties resting upon the representatives engaged exclusively in traffic service work. Where it has not already been done, a list of these duties as in relation to the public, should

be compiled and placed before the agents and representatives. An outline of these is, for convenience, stated below:

Duties of Service Agents

FREIGHT

1. The prompt quotation of freight rates requested by shippers and agents. This relates to the representative's own line, as well as to other sections of the country, as may be requested by shippers and consignees.
2. Informing shippers, as they may be interested, of tariff regulations of important changes in rates, classifications, and tariff rules and regulations. Also keeping shippers posted as to regulations of the various government departments as may concern the particular kinds of business of the shippers.
3. Watching, with extra solicitude, the interests of new industries, or new shippers, so as to develop their necessities with view of having such promptly supplied.
4. Handling claims for shippers within the customary regulations.
5. Examining damaged freight at request of the owners (or agents) for the purpose of determining the cause and extent of the damage, and for the prompt disposition of resultant claim.
6. Tracing delayed local freight and giving passing reports of local freight, and where avoidable causes are ascertained, making suggestions to proper officer of the carrier, and also to shippers and consignees (where proper to do so), as will tend to improve transportation conditions.
7. (Tracing delayed interline freight and furnishing of passing reports of interline shipments to be taken up at request of shippers at places where there is no administration service bureau with the administration's central bureau.)
8. Assisting in securing cars for loading.
9. Determining the shipper's prospective needs for cars and posting the transportation department accordingly.
10. Keeping informed as to probable dates of large movements of freight requiring special attention in the way of providing equipment or other facilities therefor.
11. Supplying shippers with information with respect to embargoes and aiding them in finding open routes that may be available from time to time.
12. Keeping informed of freight ready to be forwarded into embargoed sections in order that shippers may be notified as soon as an open route can be found.
13. Keeping posted as to where commodities are produced or where they can be produced and thus bringing buyer and seller together.
14. Assisting manufacturers and dealers in disposing of their goods, furnishing names of brokers, buyers, etc.
15. Furnishing information and advising shippers of terminal deliveries and routing to facilitate prompt transportation and quick delivery at destination.

And as to those traveling service agents who visit local agents, including resident agents to whom a group of local agents report:

15. Furnishing local agents with needed information with respect to through rates and the routing of traffic; instructing and educating the smaller local agents in the proper application of tariffs, use and interpretation of classifications, rules and regulations provided for their guidance, and otherwise instructing and educating them in all details of their duties coming under the jurisdiction of the freight traffic department.
16. Checking tariff cases to see that they contain all the tariffs needed or which are required by law to be posted at the station, and taking measures to fill shortages.
17. Checking records of agents covering over and short freight, and assisting them in disposing of overs and in locating shortages.
18. Checking the agents' claim records for the purpose of determining if all claims are promptly and properly handled in accordance with general instructions and authority given them for settlement.
19. Checking up freight warehouses for undelivered freight with view of assisting in disposition thereof.
20. Otherwise assisting agents wherever the latter's work seems deficient and which it seems that they do not properly understand same, keeping in mind that there is now a greater need of such assistance than at any time in the past.

In making rounds among shippers, service men can assist the operations of their road by:

21. Urging shippers to the prompt loading of cars and the securing of maximum loading.
22. Aiding the freight claim agent in securing settlement of claims.
23. Encouraging shippers to make suggestions and receiving their complaints about other than traffic matters and immediately placing the data before the proper official.
24. By proper season, urging shippers and receivers of freight at all points to lay in stocks, with view of avoiding an undue rush and congestion at other periods of the year, thus minimizing the strain on transportation facilities.
25. In their rounds, noting instances of poor service, not within the traffic department's jurisdiction and posting the proper local official in charge.
26. Watching crop conditions and other large movements with view of posting superior officers as to prospective resulting tonnage in time to make provision therefor.
27. Studying possibilities of service and where the scope of authority admits taking action; otherwise making recommendation to superior officers.

PASSENGER

1. Collection of fares requested by passengers and agents, irrespective of whether these be between points on representative's own line or elsewhere.
2. Instructing and educating agents and baggagemen as to the proper

and otherwise instructing and educating agents and baggagemen in the details of their duties coming under the jurisdiction of the traffic department.

Keeping agents and baggagemen posted as to regulations of the law to be posted.

Information may be promptly and accurately furnished.

6. Assisting in procuring special or extra cars when needed.
6. Keeping the transportation department posted about probable requirements for extra cars.
7. Keeping in close touch with military authorities and agents at military camps, and assisting them, as well as the transportation department, in the handling of military traffic.
8. Keeping close watch of special car movements from point to point, and giving prompt advice of future movements.
9. Watching carefully the loading of regular line equipment so that when necessary extra equipment may be provided for.
10. Keeping informed as to dates of probable large movements of passengers requiring extra cars.
11. Watching carefully to see that patrons are given prompt and courteous treatment by station, train and Pullman employees.
12. Investigating reports of unsatisfactory service, and initiating investigations of train and station service and facilities where such may appear inadequate, bringing such information to the attention of superior officers.
13. Inspection and reports of service given the public by employees of new companies operating restaurants in depots and supplying service on trains, and that the companies comply with the rules governing them and their obligations to the public under their contracts with the carriers.
14. Constant inspection of Pullman and other passenger equipment, with reports of deficiencies to superior officers.
15. Constant inspection of the condition of waiting rooms and toilets, both for white and colored people, and reporting deficiencies to superior officers.
16. Keeping hotels and other public places posted as to schedules, sleeping and parlor car service, arrival and departure of trains, equipment, etc.
17. Watching schedules printed in newspapers (where such are published), to see that they are accurately printed and that changes are promptly made.
18. Keeping in close touch with the daily requirements made on passenger trains with view of seeing that there is sufficient equipment provided; conferring with and actively co-operating with division superintendents and depot superintendents to the end that adequate accommodations may be supplied.
19. Assisting the transportation department in the latter's requirement that ticket and baggage offices at local stations are open a reasonable time before the departure of trains.
20. Inspection and reports on parcel check rooms and other public facilities in and about railroad stations or operated on railroad property.
21. Checking bulletin boards in waiting rooms to see that the public notices of train passings are properly posted.
22. Aiding agents and baggagemen in keeping their records, disposing of unclaimed baggage, stowage of baggage in the most economical way for handling and delivery, and testing baggage room scales with view of determining their accuracy.
23. Checking local agents' ticket stocks and assisting them in keeping the proper two on hand.
24. Studying the possibilities of the service in every phase, and making recommendations to superior officers.
25. Aiding patrons requiring authorized special service of any character, to obtain that service.

It is suggested that circulars be compiled showing the names of the service and commercial representatives of each line, defining the scope of territory in which each works, for distribution among connections, and thus aid in bringing about active co-operation between representatives of all lines.

To accomplish the best results, not only must the hearty co-operation of the transportation and other departments be enlisted, but systematic supervision must be had and periodical reports must be made so that the necessary direction may be given the activities of all engaged in the service.

While I am addressing you with special reference to freight and passenger traffic service, all branches of the service are involved in the broad duty owing to the public, and it is desirable that the importance of this fact will be fully understood and appreciated by all. The successful operation of the properties under your jurisdiction requires the undivided co-operation on the part of all branches of the service; while there is not now competition, in the sense the term was most generally employed prior to federal operation of the transportation lines, there should be no relaxation in the efforts of each line forming the national transportation system to see that the public is given that service which it does and has the right to expect, keeping the thought constantly in mind that it is necessary, as far as possible, to eliminate the causes which lead to complaints, and that thereby complaints themselves will be done away with.

Railroad Rental as Fixed by the Commission

In Arriving at Average Operating Income for Three Years,
Commission Made Only Obvious Readjustments

THE certifications thus far made to the President by the Interstate Commerce Commission of the average railway operating income of the carriers for the three years ending June 30, 1915, 1916 and 1917, the basis for their compensation by the government during federal control, are published as an appendix to the commission's annual report as follows:

Name of carrier	Average operating income	Name of carrier	annual railway operating income
Alameda & Western	8,118.43	Galveston	562,069.92
Alton & Barbours Belt	6,104.76	Galveston Wharf Co.	294,534.30
Ann Arbor	6,678.88	Georgia Coast & Piedmont	d 7,007.36
Arizona Eastern	1,464,482.22	Georgia	62,707.69
Arizona & New Mexican	60,000.11	Georgia Northern	858,632.42
Atlanta	6,145.85	Gettysburg & Harrisburg	38,935.46
Atlanta & Western	16,775.51	Gibson	233,496.47
Asheville & Craggy Mountain	d 3,017.13	Grand Canyon	23,666,681.07
Atchafalaya, Irapuato & Santa Fe	35,441.74	Great Northern	204,877.83
Atlanta, Birmingham & Atlantic	358,058.43	Green Bay & Western	2,828,217.50
Atlanta Terminal Co.	6,007.67	Greenwich & Johnsonville	558,337.86
Atlanta & West Point	222,066.04	Gulf, Colorado & Santa Fe	597,455.62
Atlantic City	10,180,915.15	Gulf, Mobile & Northern	25,754.02
Atlantic Coast	12,660.72	Gulf Ship Island	d 44,609.81
Augusta	d 286.90	Gulf Terminal Co.	d 2,563.53
Augusta & Summerville	86,647.38	Hannibal Connecting	51,645.62
Baltimore, Chesapeake & Atlantic	55,520.12	Harriman & Northeastern	4,393.75
Baltimore & Sparrows Point	1,555,725.29	Hartwell Ry.	2,631,232.28
Barnegat	d 8,867.25	Houston East & West Texas	375,565.53
Bath & Hamden	7,231.43	Houston & Shreveport	85,031.76
Bellingham & Northern	40,305.24	Houston & Texas Central	1,717,505.76
Bessemer & Lake Erie	4,674,714.44	Idalia & Vermilion	40,987.37
Big Fork & International Falls	1,234,492.96	Indianapolis Union	226,781.02
Bingham & Garfield	77,456.16	Interstate	83,786.51
Birmingham Terminal Co.	12,660.72	Iowa	1,295,141.37
Blue Ridge	42,113.26	Kanawha & Michigan	2,216,697.65
Brimstone R. R. & Canal Co.	306,359.63	Kansas City, Mexico & Orient and Kansas City, Mexico & Orient of Texas, combined	9,073.39
Brooklyn Eastern District Terminal	3,276,410.42	Kansas City, Shreveport & Gulf Terminal Co.	6,014.66
Buffalo, Rochester & Pittsburgh	251,555.44	Kansas City Southern	3,216,697.65
Canadian Pacific Lines in Maine	64,599.62	Keweenaw	95,958.60
Carolina & Northwestern	141,512.32	Keweenaw, Green Bay & Western	73,493.70
Catawba & Foggessville	1,468,123.63	Lake Charles & Northern	1
Central New England	3,450,903.32	Lake Erie & Eastern	1,548,541.69
Central of Georgia	9,352,301.13	Lake Erie & Western	1,548,541.69
Central of New Jersey	16,502.19	Lake Superior Terminal & Transfer Ry. of the State of Wisconsin	43,583.48
Central New York Southern	14,986.24	Lehigh & Hudson River	519,371.13
Charleston Terminal Co.	12,368.57	Lehigh & New England	1,135,760.91
Charleston Union Station Co.	466,921.15	Lehigh Valley	11,321,232.25
Charlotte & Western Carolina	d 344.43	Lessee Buffalo Creek	409,397.76
Charlotte, Monroe & Columbia	d 2,341.29	Lorain, Ashland & Southern	d 108,877.98
Chattahoochee Valley	43,604.48	Lorain & West Virginia	137,277.98
Chattanooga Station Co.	67,926.10	Louisiana	391,515.53
Cherry Tree & Dixonville	161,332.23	Louisiana & Arkansas	357,353.37
Chester & Delaware River	45,699.03	Louisiana Railway & Navigation Co.	25,463.28
Chesterfield & Lancaster	3,178,314.92	Louisiana Western	895,178.49
Chicago & Alton	33,360,683.11	Louisville, Henderson & St. Louis	169,701.70
Chicago Great Western	2,953,449.94	Louisville & Nashville	17,310,494.67
Chicago, Memphis & Gulf	55,699.03	Louisville & Wadley	2,547.66
Chicago, Milwaukee & St. Paul	27,154,551.02	Macon, Dublin & Savannah	2,575.92
Chicago & North Western	23,201,015.60	Maine Central	2,955,696.88
Chicago, St. Paul, Minneapolis & Omaha	4,934,789.51	Manitowish & Pikes Peak	29,932.68
Cincinnati, Lebanon & Northern	317,628.01	Manufacturers' Ry.	d 44,381.21
Cincinnati Northern	9,938,597.23	Mayfield, Delaware & Virginia	49,543.23
Cleveland, Cincinnati, Chicago & St. Louis	2,481,211.88	Memphis Union Station	121,353.84
Colorado & Southern	2,862,427.23	Michigan Central	8,052,127.48
Cooperstown & Charlotte Valley	d 15,381.59	Middletown & Hummelstown	d 4,112.91
Cumberland & Pennsylvania	235,806.60	Midland Valley	444,345.95
Cumberland	1,228,966.51	Mineral Range	147,432.29
Cumberland Valley	40,820.32	Minneapolis & Rainy River	d 9,033.98
Dallas Terminal Ry. & Union Depot Co.	135,308.08	Minneapolis, Red Lake & Manitoba	14,633.72
Danville & Western	7,409,600.12	Minneapolis & St. Louis	2,639,857.25
Delaware & Hudson	15,749,476.74	Minnesota & Western	202,455.24
Delaware & Pennsylvania	4,702.45	Minnesota & North Arkansas	13,146.42
Denison & Salt Lake	353,899.67	Monongahela	583,086.18
Denver & Mackinac	315,000.94	Morgan's Louisiana & Texas Railroad & Steamship Co.	1,188,525.58
Detroit	186,740.40	Nashville, Chattanooga & St. Louis	3,182,089.03
Detroit Terminal	2,385,341.74	Natchez, Columbus & Mobile	1,877.56
Duluth & Iron Range	5,122,051.04	Nevada Copper Belt	43,304.38
Duluth, Missabe & Northern	594,637.41	New Orleans Great Northern	575,951.79
Duluth South Shore & Atlantic	3,064,436.36	Newport & Richford	d 29,479.08
Duluth & Superior Bridge Co.	23,830.40	New River, Holston & Western	4,407.08
Duluth Terminal Ry.	32,175.84	New York, New Haven & Hartford	1,000,000.00
Duluth Union Depot & Transfer Co.	138,178.12	New York, Philadelphia & Norfolk	565,034.70
Dunleith & Dubuque Bridge Co.	184,901.38	New York, Chicago & St. Louis	2,118,856.59
Durham & Southern	6,953.60	New York, New York & New Jersey	1,000,000.00
Durham Union Station Co.	127,219.89	New York, Susquehanna & Western	1,000,000.00
East St. Louis Connecting	d 1,966.94	Norfolk & Western	20,534,163.48
Electric Short Line	2,862,427.23	North East Pennsylvania	d 23,793.83
Elgin, Joliet & Eastern	4,145,102.30	Northampton & Bath	d 2,585.22
El Paso & Southwestern	15,503,948.92	Northern Pacific	30,057,760.06
Erie	58,688.01	Northwestern Pacific	1,235,101.00
Florida & Lake Superior	1,891,386.40	Northwestern	49,826.26
Florida East Coast	d 8,980.77	Ocala Southern	d 18,819.70
Fort Worth & Denver City	1,891,386.40	Ohio River & Western	8,722.38
Galatin Valley	d 8,980.77	Oregon Trunk	0

Name of Line	Average Annual Total Operating Revenue
Panama & Santa Fe	1,066,988
Panama Pacific	1,274,196.78
Paraguay	2,565.67
Paraguay & Santa Fe	2,517.31
Philadelphia & Chesapeake Bay	8,500.00
Philadelphia & Chester Valley	5,074.21
Philadelphia, Newtown & New York	2,565.67
Pickering Valley	2,517.31
Pierre & Fort Pierre Bridge	11,341.17
Pierre, Rapid City & North Western	d 15,344.01
Pine Bluff-Arkansas River	d 12,887.78
Pittsburgh, Chartiers & Youghiogheny	180,614.38
Pittsburgh & Lake Erie	8,980,219.40
Poteau Valley	d 3,232.19
Puget Sound & Willapa Harbor	82,149.27
Railway, Omaha & Great Valley	1,274,196.78
Raleigh & Charleston	17,371.55
Raritan River	160,256.70
Reading & Columbia	18,280.27
Richmond, Fredericksburg & Potomac	1,137,373.75
Rio Grande, El Paso & Santa Fe	1,274,196.78
Roslyn Connecting	d 6,598.83
Rupert & Bloomington	1,021,883.12
Rutland	373,811.11
St. Joseph & Grand Island	412,427.56
St. Louis Merchants Bridge Terminal	99,702.27
St. Louis & O'Fallon	3,355,577.23
St. Louis Southwestern	555,514.52
St. Louis Southwestern of Texas	d 10,855.70
St. Louis Transfer	143,257.24
St. Louis, Troy & Eastern	12,887.78
San Antonio & Cross Timbers	46,666.42
Santa Fe River & Rangeland Lines	27,429.09
Savannah Union Station Co.	10,707.82
Schoharie Valley	6,497,024.85
Seaboard Air Line	78,229.99
Seneca, Port & Tidewater	81,060.81
Shreveport Bridge & Terminal Co.	17,352.93
Sioux City Bridge Co.	38,023.27
Sioux City Terminal Ry.	207,444.48
Sioux Falls & Northern	1,871,083.00
Southern Pacific Terminal Co.	1,137,373.75
Spokane, Portland & Seattle	1,137,373.75
Standard & Northern	1,137,373.75
Stony Creek	64,562.77
St. Paul Ry.	17,368.77
Sylvania Central	3,283.68
Tacoma Eastern	133,525.16
Tallulah Falls	5,357.50
Tamiami, Hazlet & Northern	4,337.50
Tampa & Gulf Coast	2,359.80
Tampa Union Station Co.	1,070.82
Tennessee, Alabama & Georgia	d 46,914.90
Tennessee Central	162,733.55
Terminal R. R. Association of St. Louis	2,574,100.88
Texasarkana & Fort Smith	318,729.68
Texas & New Orleans	715,814.84
Texas & Pacific	4,107,432.49
Texas Southeastern	23,012.96
Toledo & Ohio Central	1,086,650.87
Toledo, St. Louis & Western	994,294.38
Tonopah & Tidewater	182,874.84
Tamaqua & Brazos Valley	d 238,904.66
Trinity & Brazos Valley	19,698.73
Tug River & Kentucky River	12,009.47
Ulster & Delaware	1,888,317.67
Union R. R. of Baltimore	84,690.41
Union Ry. Co. (Memphis, Tenn.)	1,370,900.00
Union R. R. Co. (Pensacola)	73,326.05
Virginia Carolina	3,286,914.41
Virginia	d 10,855.70
Waco & Southern	468,224.81
Waco, Shields & Southern	5,027.19
Washington Southern	41,576.50
Washington & Vandemere	d 6,350.56
Waycross & Southern	12,028.15
Waynesburg & Washington	51,490.47
Weatherford, Mineral Wells & Northwestern Ry.	3,079,593.35
Western Allegheny	1,900,349.74
Western Maryland	288,237.53
Western Pacific	1,131,151.33
Western of Alabama	143,143.14
Wheeling & Maryland	15,707.41
Wheeling Terminal	1,131,151.33
White Falls & North Western	143,143.14
White Valley	15,707.41
Willcox & Santa Fe	1,131,151.33
Williamson & Pond Creek	9,304.64
Williams Valley	1,131,151.33
Winston Salem Southern	1,131,151.33
Wichita & Kansas	1,131,151.33
Wilmington & Northern	1,131,151.33
Yazoo & Mississippi Valley	3,862,317.83
Zanesville & Western	d 107,888.48

d Deficit.

The commission under date of September 3 addressed the following explanatory letter to the President regarding operating income certifications:

"The federal control act, approved March 21, 1918, provides as regards carriers taken under federal control and making operating returns to this commission that 'The average annual railway operating income shall be ascertained by the Interstate Commerce Commission and certified by it to the President.'

"The certificate which we are required to transmit to yourself for the purpose of your making an agreement with any

such carrier as to its just compensation is by the act made conclusive of the amount of its average annual railway operating income for the three-year period ended June 30, 1917.

"In transmitting to you herewith certificates numbered 1, 2, 3, 4, 5, 6, 11, 82, 116, 289, 291 and 360, inclusive, we deem it proper to explain briefly our construction of Section 1 of the federal control act, and of our action both as regards these certificates and those to follow.

"The federal control act employs certain specific terms of our accounting system, and indicates that in the certificate the terms are to be used in the same sense. Furthermore, the end of the three-year period designated in the statute does not coincide with the fiscal year currently prescribed, and we must therefore compute the average annual railway operating income attributable to the first six months of 1917 in conformity, so far as we reasonably can, with the accounting methods prescribed by us for the carriers' observance.

"The term 'railway operating income' designates a particular item in the sworn monthly and annual reports required of carriers. It is essentially the excess of railway operating revenues over the sum of concomitant railway operating expenses and railway tax accruals.

"Into the various refinements which from a technical accounting standpoint might modify this item determined as above indicated, we do not deem it appropriate here to enter. We note only in passing that the statute employs to other specific terms of our system of accounts, to wit, 'equipment rents' and 'joint facility rents,' and requires their inclusion whether debits or credits to arrive at the carrier's annual just compensation which the statute provides shall not exceed 'a sum equivalent as nearly as may be to its average annual railway operating income for the three years ended June 30th, 1917.'

"We have perforce been obliged to observe in connection with the preparation of these certificates the narrow time limits within which a procedure to be workable must be confined. It is not impossible that if these limitations had not been present, a more detailed and comprehensive scrutiny of the carriers' financial reports might have been effected and a revision thereof proffered which from a standpoint of accounting accuracy might be superior to that which for practical reasons we here offer.

"We are of opinion, moreover, that the Congress intended that our certification should proceed within practical limits and along our established accounting lines. The financial returns of the carriers under the current accounting system were before the Congress when the act was passed, and while we are not in terms bound in making the certificates to refrain from deviating from the accounting methods which have in general been mandatory since July 1, 1907, we are of opinion that no radical departure therefrom was contemplated by the Congress nor enjoined upon us by the act. We have always exercised the power to revise the carriers' returns. In our certificates we have reserved the right and power to correct the amount certified as average annual railway operating income to the extent that the commission may certify to be requisite in order to bring the accounts into conformity with the regulations in effect at the time of such accounting, and to correct computations based thereon.

"It is proper to state that all carriers do not observe the same standards of maintenance and depreciation. These depend somewhat upon varying operating and traffic conditions in different sections, and to a larger extent are affected by variations in the administrative policies of the carriers. There is, however, no fixed standard, and aside from the conjectural character of the assumption of a single standard for all carriers, such an equalizing attempt would involve a complete revision of the accounts and reports of each carrier, a task so vast that it is utterly impracticable to attempt it. To meet this difficulty in a practical way it is proposed to provide in

the contract with carriers an automatic correction in the form of a provision that during federal control the government shall expend enough on the carrier's property to insure its return at the end of federal control in substantially as good repair and complete equipment as it was on January 1, 1918, with the proviso that an average annual expenditure for such purposes equal, making due allowance for differences in wages of labor and cost of materials to that made by the carrier itself during the test period shall be deemed a satisfaction of the covenant, and with a further provision that expenditures in excess of those so made by the carrier for the test period, but required for the safe and proper operation of the property, assuming a use similar to the use during the test period, shall be made good by the carrier.

"We regard the provisions of the Adamson act as superimposed upon our accounting regulations, and are of the opinion that the wage entries since January 1, 1917, should conform to the standard established by that act. In this particular, therefore, carriers' returns have been revised by us so as to include in the computation as a part of operating expenses the wage accruals under the Adamson act for the first six months of the calendar and fiscal year 1917.

"Conformable to our accounting usage we think it appropriate to compute for the six months beginning January 1, 1917, appropriate accruals for that period of the war taxes, and deduct the same in arriving at the figure properly to be reported under the head of average annual railway operating income. In harmony with published rulings of the Treasury Department we have calculated such tax accruals for the first six months of 1917 at one-half of the total for that year."

Commissioner Anderson added the following dissenting statement:

"In the foregoing statement I am unable to concur. I cannot join in certificates made pursuant thereto.

"As originally drafted, the federal control act required of this commission merely a certificate based upon the returns made; but as finally enacted we were required to 'ascertain' and certify the average railway operating income as the basis of probable contracts between the government and the carriers, approaching \$1,000,000,000 a year.

"In my view Congress thus put upon the commission the duty of ascertaining, within practical limits, and as 'nearly as may be,' the net earnings of the carriers during the test period. I do not think the methods adopted by my colleagues meet the requirements of the act.

"I do, however, concur in the method of leaving deferred maintenance to be dealt with by an automatically correcting provision in the proposed contracts. I agree that back wages paid under the Adamson act and war taxes should be deducted as proposed. But I think other analogous readjustments, not numerous, though substantial, are required and might easily and speedily be made."

Southern Regional Orders

Shopping Locomotives.—The Southwestern regional director, in Order No. 139, directs that locomotives moved in trains, destined for the shop, must have all coal and water removed from the tenders before beginning the trip.

Right to Route Freight.—The Western Union Telegraph Company has the right, in the Southwestern Region, to route its shipments of freight. This is provided for in Order No. 137 of the regional director, and constitutes an exception to the routing provisions of the director general's Order No. 1.

Live-stock Attendants.—The Southwestern regional director orders that an additional caboose shall be provided, or, if necessary, a coach, whenever accommodations are lacking on a freight train for officers and enlisted men accompanying shipments of live stock, particularly horses for the War Department.

Orders of Regional Directors

CONSERVATION OF STEEL.—In Circular 140 the Southwestern regional director announces that the Facilities Division of the War Industries Board has cancelled restrictions on the class of material to be used in constructing tanks or other railroad projects.

Sheltering Guards Who Accompany Shipment.—In Order 131 the Southwestern regional director quotes Order 121 containing instructions regarding the sheltering of guards who accompany shipments during the winter season, and appends the following statement:

"In the absence of any other arrangement, the usual form of freight train release. This was not contemplated when the arrangements for transporting guards was made with the War Department nor is it considered that the release is of any particular value under the circumstances, especially when the guards are officers or soldiers.

The Embargo on Movement of Hogs.—The Central Western and Southwestern regional directors in a circular dated December 5, and Circular 143, respectively, announce that the embargo against the movement of hogs to various markets established by the Car Service Section has been cancelled at the request of the Food Administration. The permit system of handling traffic under the embargo outlined in Circular 209 of the Central Western regional director, and Circular 139 of the Southwestern regional director, is thereby cancelled.

Grain Embargo Primary Markets.—The Southwestern regional director announces that the Car Service Section has removed the embargo placed against the movement of grain to primary markets except on wheat. The removal of the embargo was effective December 3, and will continue until January 1.

Freight and Passenger Service Work.—The Southern regional director, in Circular No. 411, says a good deal of complaint is still coming from patrons who claim they are not securing from home offices information which formerly they got from the off-line offices and that there is no reason why a shipper should not be able to procure all the rate information he may require, and with reasonable promptness. If the agent, the freight service agent, or other freight traffic representative hasn't the information at hand, he should procure it either from the general office or from the proper official of the initial line at interest, even if it is necessary to use the railroad wires to secure it. The Director of Traffic instructs: "I shall be glad if you will impress upon the traffic officials in your region that there is no excuse for not securing such necessary information for the shippers. Won't you please see that all of your people understand this requirement?" Mr. Chambers also points out that it is very desirable that division freight and passenger agents and traveling service men shall cover their own line thoroughly and make every effort to educate the agents, a number of whom are doubtless new men, in the proper service to the public.

Salaries of Telegraphers.—The Eastern regional director, file 401-7A307, quotes from a telegram from Mr. Gray in regard to the application of Supplement 10 to General Order 27:

"On account of continuing economic conditions, the general agent the effect upon salaries of Supplement No. 10 to General Order 27, won't you please instruct them to be applied to the Eastern, Southern and Western by wire from each line statement of the aggregate amount and per cent of increase for telegraphers occasioned by same as applied both to the basis of wages before application of General Order 27 and since. Please instruct telegraphers to whom the present compensation under General Order 27 is adversely affected by this supplement or which have not been increased thereby."

The Eastern regional director later, file 401-7A308, advises that the director general has granted a rehearing to agents and telegraphers before the Board of Railroad Wages and Working Conditions which has been set for December 9.

Pending the result of this hearing, no rates under Supplements 10 and 11 to General Order 27 shall be put into effect which serve to decrease the present compensation of agents, telegraphers, and others, coming under these two supplements.

Discharge of Essential Employees from Military Service.—The Eastern regional director, file 1200-35-2A309, quotes Circular No. 77 dated November 21 1918, issued by Chief of Staff, War Department, Washington:

1. Department commanders within the United States, commanders of posts, subdivisions and companies of camps, not under the authority of department commanders or of chiefs of bureaus of the war department, are authorized to discharge enlisted men upon their own application when there is sickness or other distress in the soldier's family, or when he is needed to resume employment in an industry or occupation in which there is urgent need of his services, provided that such discharge will not disrupt or cripple an existing organization, and that the soldier's services can be spared. Consideration will be given to the fact that the machinery of camps must be utilized in the demobilization of the army and due regard must be taken that it is not retarded by the discharge of personnel connected therewith.

2. The instructions contained herein apply only to individual and exceptional cases and are not intended to release men in large groups or blocks for any general employment or occupation.

3. Application for discharge under the provisions of this circular will be made in each individual case by the soldier concerned and through his immediate commanding officer. No man who voluntarily enlisted prior to April 1, 1917, will be discharged under this authority.

4. Men discharged under these instructions will be included in such weekly reports of men discharged as are required by the war department.

5. Cases of the character indicated arising in places not covered by this authority will be forwarded to the Adjutant General of the Army for final action.

Holiday Travel.—The Eastern regional director, file 1600-80A311, quotes from a letter from C. R. Gray, director, Division of Operation, in regard to the desire of the director general that special attention be paid to movement of passenger travel during the holidays:

The director general instructs that especial attention be paid to the movement of holiday travel.

I appreciate that it is always exceedingly difficult to anticipate and provide for travel of this character, because it is not a quantity which can be measured as in the case of a specific movement to a given place.

The director general, however, feels that a very great improvement is possible in the movement:

(a) By the provision of a sufficient quantity of coaches to prevent the crowding of passengers; and

(b) A prohibition against the overloading of trains by requiring them to handle so many cars that schedule time cannot be made.

It is entirely possible that the holiday travel this year will be unusually heavy, so that more than the ordinary precautions will be necessary.

Won't you kindly instruct all of the lines in your region regarding this matter, requesting that the federal managers give it their personal attention.

Taxation.—The Eastern regional director, file 2002-3A310, quotes from a telegram received from Judge J. B. Payne, general counsel, Division of Law, under date of December 4:

Referring to circular of September 27. Please wire all roads under your jurisdiction not subject to Federal Capital Stock Tax or where doubt exists and against whom assessment has been made and payment demanded to file claim for abatement on internal revenue Form 47. Payment of tax where liability clearly exists should be made from federal funds.

The regional director enclosed with this a copy of a letter dated November 19, 1918, from the Commissioner of Internal Revenue, treasury department, on the same subject, in which Commissioner Roper agrees that roads under federal control not having any outside activities are not liable to the Capital Stock Tax.

Posting of Placards of Bureau of Public Health.—The Eastern regional director, file 1600-38A301, advises that the treasury department, bureau of public health service, is preparing placards warning against venereal diseases, which will be framed under glass in an oak frame, with holes drilled in same to facilitate posting, which it is desired to place in all men's toilets in railway stations, railway coaches and Pullman cars.

Free Transportation to Joint Train Baggage and Express Messengers.—The Eastern regional director, file 2100-11A306, states that with respect to issuance of transportation to joint train baggage and express messengers who are carried on Express Company's payroll, it has been decided that if a portion of the salary of such employees is billed against the railroad, they should be treated as railroad em-

ployees. This rule also applies to joint train baggage and express messengers carried on the railroad payrolls, and a portion of whose salary is billed against the Express Company.

Clearance Warning.—The Eastern regional director, file 1800-100A304, states that at a recent meeting of a General Safety Committee, the following suggestion was submitted and approved for adoption:

It is suggested that the following signs be placed at each end of tracks that lead to industries where there are obstructions that do not afford sufficient clearance. These signs should read substantially as follows:

CAUTION
THESE BUILDINGS WILL NOT CLEAR A MEN
ON TOP OR SIDE OF CARS.

In the construction of new sidetracks particular care should be taken to see that proper clearance standards are observed so as to avoid such conditions, as the elimination of the source of danger is, of course, more effective than the placing of cautionary signs.

Maintenance of Telegraph and Telephone Wires During Winter Season.—The Eastern regional director, file 700-A-305, quotes from a letter received from Martin H. Clapp, manager of the Telegraph Section, Division of Operation, as follows:

On account of the approach of the season of the year when storms may be expected that will seriously interfere with our telegraph and telephone wires, it is suggested that the attention of the superintendents of telegraph and those in charge of the restoration of the wire service of the different railroads be called to the following points:

1. Have definite plans and understandings relative to the use and handling of available maintenance forces during storm emergencies.

2. Have definite plans for obtaining promptly and accurately information relative to the extent and amount of storm damage and the necessary material to repair it.

3. Have definite plans for handling and moving promptly material and cable for storm repairs.

4. In case of complete prostration of telegraph lines, have definite understandings relative to the order wires are to be restored.

5. If the pole lines and railroad wires are maintained jointly with or entirely by a commercial telegraph company, have definite understandings as to the action to be taken in case of storm damage, with view of cooperating and using all the available maintenance forces of both the railroad and the commercial company to the best advantage.

Violations of Federal Laws.—The Eastern regional director, file 3000-444, refers to General Order No. 46, in regard to violations of various federal laws pertaining to safety appliances, hours of service and locomotive inspection:

In the handling of cases of violations it is observed that the federal managers in some instances upon receipt of notices of such violations have instituted investigations and made reports based upon such investigations. This action is not sufficient and it is not to be inferred in referring these cases to the officials of the railroads that they are sent to them for investigation. It is not the purpose to substitute the judgment of the officers and employees who are responsible for the defective conditions for the judgment of the courts which previously passed upon the evidence. Violations of the laws referred to, which will be from time to time submitted, will be supported by ample proof. This information is sent you in view of the erroneous impression that may exist on the subject and in order that it may be properly understood by those concerned.

As set forth in the Director General's General Order No. 8 of February 21, 1918, and No. 46 of October 5, 1918, measures should be taken to insure the enforcement of the laws enacted to promote safety of employees and travelers upon the railroads and, in cases of wilful and inexcusable violations, proper disciplinary action should be taken with the person or persons responsible therefor, such action to be determined by the facts in each case.

The Chicago Terminal Yard Masters' Association recently complained to the police that someone representing himself as an agent of the association had been soliciting advertising funds. Similar frauds have been perpetrated in other cities, the victims being in most cases proprietors of small stores.

The Railroad Question Before Congress

WASHINGTON, D. C.

ALTHOUGH IT HAD BEEN UNDERSTOOD that some of the Democratic leaders in Congress had hoped to deal with the question of the disposition of the railroads during the present short session, which expires in March, and before the new Republican majority comes into power, there had been little display of activity before Mr. McAdoo's recommendations were written. It had been understood that the Joint Committee on Interstate Commerce created at the suggestion of President Wilson in 1916, and generally known as the Newlands Committee from the name of its first chair-

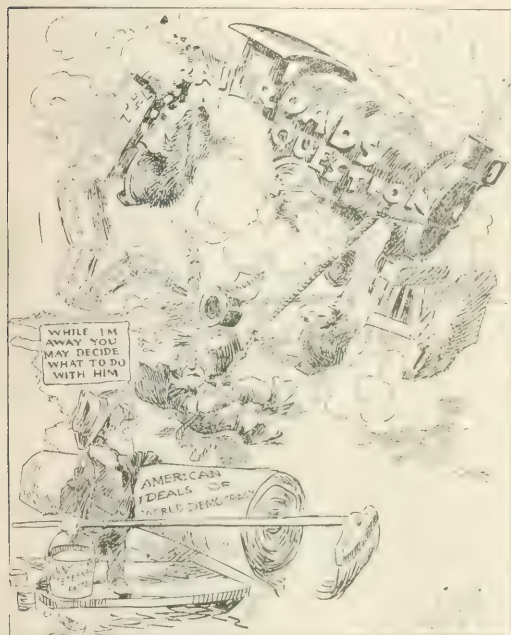
Friday but it was found impossible to obtain a quorum.

Representative Edward W. Gray of New Jersey has introduced a bill to create a national railway system under federal charter providing for a board of directors in which the government, the stockholders and bondholders, and the employees shall be represented. The surplus earnings are to be divided between the government, the employees, a fund for betterments and an emergency reserve fund. The bill makes participation in the system voluntary on the part of the railways and, to put the plan in motion, provides that the President shall appoint a committee of three to enter into negotiations for the purchase of stocks and bonds of existing companies.

Senator Hardwick of Georgia introduced a bill in the Senate on December 5 to amend section 14 of the federal control law by providing for the termination of federal control not later than six months from the adoption of the amendment.

The Republican Publicity Association, through its president, Jonathan Bourne, Jr., has issued a statement opposing government ownership of railroads, in part as follows:

"The question of government ownership is not one to be decided according to the demands of temporary emergency.



And Congress Has Been Worrying Because It Didn't Have Enough Responsibilities

man, would initiate the proposed inquiry into the railroad situation with a view to determining upon a policy to be adopted.

Chairmen Smith and Sims of the Senate and House committees on interstate commerce, and also chairman and vice-chairman, respectively, of the joint committee, have been conferring with congressional leaders and the Railroad Administration regarding the program to be followed to carry out the President's recommendations in his address of December 2 and have agreed that the present committee should take charge of the investigation. A resolution was to be introduced some day this week extending the life of the old committee, which was required to submit a report to Congress by the first Monday in December.

The committee began its hearings in November, 1916, and continued them at various times until the President took over the railroads, taking over 7,000 pages of testimony and hearing prominent railroad officers, shippers, state commissioners and others. It was to have made a report a year ago but the time was extended.

An effort was made to call the committee together last



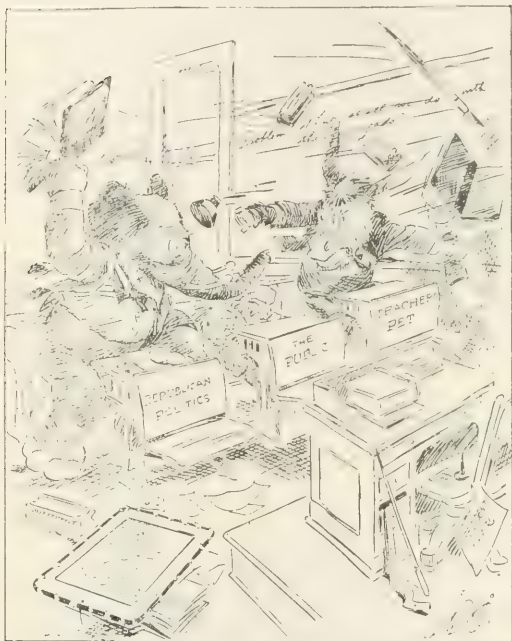
And Only an Infant at That

It is doubtful whether there was any real need for the government to take over the railroads when it did. If the railroads had been granted even a portion of the increase in rates which Mr. McAdoo established soon after he got control, the private managers could have conducted the roads with as good service as the public could expect.

"Neither was there, nor is there, any reason for government operation of the telephone, telegraph and cable lines. Experience has shown and will continue to show that government operation is more expensive and less efficient.

"But cost in money and character of service are minor considerations. The fundamental evil of government ownership lies in the effect it has upon the individual, creating

in his mind a wrong conception of his relation to the government. The gradual extension of government ownership and operation carries with it the necessary assumption that private operation is either inefficient or dishonest, and that the citizen must look to the government for service.



From the New York Tribune

As Usual When Teacher Leaves the Room

"The problem of government ownership and operation is not merely one of higher costs and poorer service, although those are material considerations. The real danger is the shackling of enterprise and the inculcation of the idea that

the people of the country must rely upon the government for everything, instead of depending upon themselves."

Government control of railroads was characterized as "wickedly wasteful and inefficient" by Representative Simeon D. Fess, chairman of the Republican Congressional committee, in an address to the National Association of Credit Men at the Washington Commercial Club on December 5. Representative Fess asserted that at no time in the history of the roads had the service been so bad as at present. He declared that there was no one on whom responsibility for proper management could be fixed. Mr. Fess said that although the roads could not be returned to their pre-war status, a satisfactory policy could be adopted under which they could be operated more efficiently and without great expense to the government.

Prevention of Fires: Maintaining the Interest of Officers and Employees*

By Robert Scott

Superintendent of Insurance and Safety, Atlantic Coast Line.

AS TO HOW INTEREST in fire prevention is to be aroused and maintained among officers, it has been found that these men, all of them being reasonable and practical, are open to conviction when confronted with cold facts proving what has already happened, and when shown by suggestion or otherwise what is likely to happen if certain well-defined precautions are not observed. It, therefore, follows that statistics in connection with fire losses, classified according to origin, are necessary and that this information should be presented in attractive form, easily taken in at a glance.

After having reached the man higher-up it is necessary to go a step farther and awaken the rank and file to the dangers of fire. Magazines published in the interest of employees are used by some roads in driving home to the men in transportation, mechanical or roadway service that by exercising simple measures of precaution many fires can be prevented and much valuable property saved. . . . Monthly or quarterly

*Abstract of paper read at the annual meeting of the Railway Fire Protection Association at Chicago December 4. A report of this meeting was given in the *Railway Age* of December 6.



His Little Job

From the Chicago News

bulletins announcing results for a given period have been found most helpful in conducting a campaign of publicity for the purpose of keeping interest at high water mark. These periodicals may be used in presenting to employees the common causes of fires, illustrating how easily they are started and the difficulties experienced in extinguishing them. A majority of fires on railroad property are due to a few common causes, nearly all of which are preventable.

In presenting this matter to employees it should be pointed out that fire prevention is a mutual proposition as between the road and the men. It is wiser to appeal to their reason rather than to the sentimental side of their nature.

On some roads committees have been formed for the study of fire problems. These committees sometimes embrace fire marshals, chiefs or captains of fire brigades, all of them being considered necessary parts of an efficient organization for the inspection of buildings and their valuable contents for fire hazards.

Among the most helpful agencies in creating interest in fire prevention, as well as maintaining it, are the traveling inspectors or supervisors. These men, experts in their line, do much real good in spreading the gospel of fire prevention by word of mouth. They are able to accomplish many things that cannot be done through the distribution of printed matter.

It might be timely to suggest the adoption of motion pictures as a factor in creating interest in fire prevention. There are some people who can best be reached in this manner.

Relinquishment of Government Control of Railroads*

By Lewis J. Spence,

Director of Traffic, Southern Pacific

NO PROBLEM OF RECONSTRUCTION is more important to the public than the future operation of our transportation systems. I do not intend to deal with this question by criticising the performance of the Railroad Administration; it isn't necessary. An experiment in railroad and steamship operation has been undertaken which must be tested by your own experiences, but it may be appropriate to remind you that you have not yet by any means experienced all of the evils of government ownership or permanent government control.

It has been nearly eleven months since possession, control and operation of the principal railroads of the country and their proprietary steamship lines were assumed by the government. The law provides that federal control shall continue for a reasonable time after the war—not to exceed one year and nine months following the proclamation of peace. It also authorizes the President to relinquish control in the meantime whenever he shall deem such action needful or desirable. The act was expressly declared to be emergency legislation, enacted to meet conditions growing out of the war. The owners and users of the transportation systems patriotically accepted that reason for assuming control of the properties, but it is not surprising that the question should now be persistently asked why governmental operation of the transportation systems of the country should be continued for 21 months after the proclamation of peace, or, indeed, for any longer period of time than may be necessary to restore them to individual management in an orderly way.

Since the cessation of hostilities an industrious publicity bureau has devoted much attention to an explanation of other benefits accruing from unified control, and has especially em-

phasized the elimination of "competitive waste." The definition of "waste" which is most appropriate to this discussion is "useless expenditure." If the expression "competitive waste" is intended to mean that every expenditure arising from competition in transportation is a useless expenditure I venture the opinion that it will not strongly appeal to you. If, on the other hand, competitive waste means only extravagant expenditures which are not necessary to afford the public adequate service and facilities, and reasonable competition, I submit that railroad officers, under private management, have a disposition to eliminate waste which has never been characteristic of governmental agencies, and that they may be depended upon to eliminate competitive waste in so far as the necessary action to accomplish this result shall not be prohibited by law, and in so far as its accomplishment will not deprive the public of adequate service and facilities, and reasonable competition. If joint ticket offices conveniently and adequately serve the public and are found to be more economical than individual ticket offices, I predict that consolidated ticket offices will be continued.

If extravagant duplication of passenger trains can be avoided by co-ordination of service without depriving the public of the comforts and conveniences which may reasonably be expected, there is every reason why railroad officers should promote such co-ordination if they are not prohibited by law from so doing.

If the shippers are willing to have cars loaded to their maximum capacity—as they should be to promote efficiency and economy—it is only necessary for them to advocate or concur in the publication of minimum carload weights which will insure such maximum loading and continue the efficiency and economy which the Railroad Administration has established by more arbitrary methods.

Competition is where two or more persons are engaged in the same business and each is seeking patronage; where competition does not act at all there is complete monopoly. Elimination of competition is the avowed policy of the director general of railroads. It is a fundamental principle of the present system of federal control, and it is inherent in government ownership or any other form of unified control and operation which has ever been proposed.

If my interpretation of public sentiment is correct, whatever benefits have been obtained during federal control are believed to have been outweighed by the disadvantages attributable to the elimination of competition, and the paramount desire of the public is that there shall be a prompt restoration of the benefits of reasonable competition in rates and service; that the shipper's right to route his freight shall be respected; that the courtesy and accommodation which are born of individual initiative and competitive endeavor shall be revived; and that there shall be an impartial consideration of rates by the Interstate Commerce Commission which shall be fair alike to shippers and carriers. These advantages are not obtainable under unified control and operation; and personally I do not believe that there is any satisfactory middle-ground between government ownership and monopoly, on the one hand, and individual ownership, with fair competition, on the other hand.

Government ownership would be accomplished by the payment of just compensation for the property acquired. There are members of Congress who favor this solution of the transportation problem, and there are quite a number of security owners who have been driven to the conclusion that government ownership would be preferable to private ownership and operation under a system of regulation which denies the carriers sufficient revenue to meet enforced increases in wages and in other uncontrollable expenses. If I believed government ownership to be the salvation of security owners, it would not become me as a director and trustee to discourage that destiny; but I have too much confidence in the good

*An address delivered at the annual meeting of the Traffic Club of New York.

sense of the American people to believe that we shall be driven to a solution which, I am sure, would be inimical to the public interest, and would be a national calamity.

If it is a correct conclusion that competition is eliminated in every substantial sense by any plan of federal control or unified operation, whether it contemplates the operation of all of the lines of the country as one system or their operation in unified groups, and if it is a correct conclusion that the public interest requires the preservation of that individual initiative, resourcefulness, efficiency and fair competition which have developed the cheapest and most efficient transportation in the world, the people should become aroused to a sense of their responsibility and forestall the drift of our transportation systems to government ownership or some other form of unified control.

The organization and the policies of the railroad administration; the propaganda in favor of continuing governmental control of the railroads after the disappearance of the avowed necessity for taking them over; and finally the seizure of the ocean cables, after the conclusion of an armistice, have too much significance to be ignored by the public. The evident desire to continue in peace the governmental administration of the great systems of transportation and communication is revealing a tendency toward state socialism which threatens to undermine our free institutions; and our most conservative statesmen, irrespective of party, are beginning to view this tendency with the greatest concern.

It must be apparent to everyone who is familiar with the subject that some comprehensive legislation will have to be enacted to correct the intolerable burdens of the past and ensure the successful development of the railroads as useful instrumentalities of commerce. For example, labor difficulties, which are always with us, have been greatly increased by the exigencies of war and the federal control of railroads. There have been wage and adjustment commissions to deal with wages, hours and working conditions, which have resulted in generous treatment of employees, and I believe it will be to the interest of the public, the employees and the railroads to have such a tribunal of adjustment under private control; but I believe quite as firmly that the findings of such a commission should be subject to the review and approval of the same governmental agency which is charged with the regulation of rates, and that such governmental agency should also be charged with the duty of readjusting rates contemporaneously with any readjustment in wages which it may approve and authorize; but, the longer the railroad and steamship lines are continued under unified control and operation, the more completely their individualities will be obliterated, their organizations disrupted, and their individual credit impaired. If unified control is not to be prolonged for exploitation by the advocates of government ownership or the apostles of paternalism, the situation, in my judgment, requires prompt, concerted and vigorous action by the public.

The short cut would be for the President to exercise the authority conferred upon him by the federal control act to relinquish control of the properties; but if this course is taken his notice of intention to relinquish the properties on a specified date should be accompanied by a recommendation to Congress to enact the necessary legislation to provide a tribunal for the consideration of wages and the contemporaneous adjustment of rates.

Why should not a public petition be made to the President to so deal with the question? If he submits it to Congress in this way, it will, of course, be important that the people should not fail to exert their influence upon the members of Congress to ensure the enactment of the legislation immediately required to become effective with the return of the properties.

Will the people rise to their responsibility?

Standard Ticket Forms Approved

AS BRIEFLY NOTED in last week's issue, Director General McAdoo has approved a report completed by the Railroad Administration's standard ticket committee recommending standard forms for tickets and baggage checks of all kinds which are to be used in printing new forms of local and interline tickets, conductor's cash fare receipts, stop-over certificates, baggage checks and other forms, and also in replenishing stock as the supply now on hand becomes exhausted.

The various forms are prescribed in complete detail in a circular issued by the Division of Traffic, representing the work of the committee which was organized by the passenger department early in the year, consisting of O. P. McCarty, formerly passenger traffic manager of the Baltimore & Ohio, chairman; W. J. Cannon, assistant general passenger agent, Chicago, Milwaukee & St. Paul; J. V. Lanigan, assistant general passenger agent, Illinois Central; F. E. Batturs, general passenger agent, Southern Pacific, and A. B. Smith, general passenger agent, New York, New Haven & Hartford. The work of the committee was based to a considerable extent on that which had been carried on for several years by a committee of the Association of Passenger Traffic Officers.

The new forms, which will go into effect gradually as the present supply becomes exhausted, represent a material decrease in numbers as compared with the various forms now in effect. A considerable saving in space has been effected by eliminating various more or less complicated contract provisions which are replaced by the simple statement that the ticket is sold subject to tariff regulations. They are also expected to simplify greatly the work of the conductors by reducing the number of forms which they will be required to familiarize themselves with or to examine, and they will also represent a simplification in the interest of the passenger. The forms as worked out by the committee were also gone over with committees of conductors, appointed by the president of the Order of Railway Conductors and of ticket agents appointed by the president of the International Association of Ticket Agents, and several changes were made at their suggestions.

The text, the style of type and the arrangement of matter for the various forms, as well as the size of the tickets, coupons, etc., are prescribed in detail in the circular. In case local conditions on any lines seem to necessitate a revision of any of the forms the matter must be submitted in advance to the Division of Traffic and authority for the proposed changes secured. The quality of stock specified must be used when practicable, but if the exact quality cannot be secured, stock nearest the specification may be used. The circular contains reproductions and other detailed specifications of the following forms: Local card, one way; local card, round trip; local, blank destination, one way, round trip; local, blank destination, half, clergy, party; conductor's cash fare receipts; conductor's stopover certificate, conductor's scrip book exchange check; child's age certificate; commutation card, monthly, 60-ride and 54-ride; commutation card, 46-ride monthly and 26-ride family; commutation book, monthly, 60-ride; round-trip pastor contract; interline, one-way, single combination; interline, multi-road; interline, multi-route; steamship one-way, local and interline; steamship round trip, local and interline; scrip book, \$30 and \$15; scrip book, \$90; instructions for detaching coupons from scrip books; furlough fare certificate; prepaid order; order for tickets at reduced fare; clergy fare certificate; sleeping car tickets; parlor car tickets; sleeping and parlor car, conductor's cash fare check; baggage check, local and interline; baggage check, prepaid local and interline; baggage check, C. O. D.; baggage check, delivery to hotel or residence; parcel check; station claim check; storage tag.

General News Department

Apalachicola, Fla., will be in the eastern time zone instead of in the central, according to an amendment to the recent order of the Interstate Commerce Commission fixing zone boundaries, which has just been announced.

The University of Illinois announces a registration this year of 5,216 students, not including the medical students and others who study in Chicago, and of the 5,216, the number registered in the college of engineering is 1,584.

The American Society for Testing Materials is to found a scholarship in the department of civil engineering at the University of Pennsylvania, as a memorial to Edgar Marburg, one of the organizers of this society and for 16 years its secretary until his death on June 27, 1918. The executive committee asks members to contribute \$2.50 each towards this fund, the purpose being to raise the sum of \$5,000 to maintain this scholarship.

Mounted railway artillery could be profitably used as a supplement to existing coast defenses in some situations, and the idea is suggested in the annual report of General Coe, chief of coast artillery. "Where headlands connected with the mainland are suitable for emplacing this class of armament," he said, "the use of railway mounts may be justified. This might enable such guns to be withdrawn for service with the mobile forces or to reinforce points under actual attack."

The Metropolis bridge over the Ohio river at Metropolis, Ill., was the subject of a paper presented by Ralph Modjeski before the Western Society of Engineers on December 9, to a large attendance. The paper treated of the design and construction of this bridge from the standpoint of the designing engineers, who were C. H. Cartledge, late bridge engineer of the Chicago, Burlington & Quincy, and Mr. Modjeski. Several articles describing the progress of this work appeared in the *Railway Age* during the period of construction.

Collisions in France

A press despatch of Thursday, December 5, reports a rear collision on the evening of that day at Meung-sur-Loire, 11 miles southwest of Orleans, France, in which 12 or more persons were killed and 25 injured. An express train appears to have run into the rear of a freight.

On Saturday, the 7th, a collision was reported near Chateauroux, in which the number of persons killed and injured was given as 80 or more; 30 killed and 50 or more injured. Chateauroux appears to be 88 miles south by west of Orleans.

Anticipates Great Demand for Lumber by Roads

In an address before a meeting of the National Lumber Manufacturers' Association at Chicago on November 22, Hon. Edwin B. Parker, priorities commissioner of the War Industries Board, asserted that in normal times the railways use approximately 1,250 million feet of lumber yearly for car construction alone. During the war their consumption of lumber has been sub-normal; in fact, the railroads are approximately four years behind in their ordinary peace-time improvements, additions and extensions. This work must now be done; much of it cannot be longer deferred. Although the Railroad Administration authorized expenditures of \$1,002,500,000 for additions and betterments on railroads during the year 1918, only a little over 34 per cent of the amount authorized has been spent. As these improvements are urgently needed, it is believed that now that materials and labor are available, they will be made promptly. There are also important railroad terminal projects that

have been deferred on account of the war, among them those at Chicago, Los Angeles, St. Paul, Cincinnati, Baltimore and New York.

Test Suit on Handling Claims

Two cases which are being prosecuted against the Chicago, St. Paul, Minneapolis & Omaha in the Ramsey County (Minn.) District Court will test the validity of Director General McAdoo's order making himself the defendant in damage suits and prohibiting action against the individual railroad corporations. The attorneys for the plaintiffs attack the director general's order on the grounds that the federal control act expressly provides that all legal action is to be taken as previously, but that no property of a defendant railroad shall be attached during the control period. One of the cases is a suit for \$20,000 damages for the death of Andrew Mertz, a switchman, fatally injured in the performance of his duties, and the other a suit for \$25,000 for personal injuries sustained by Albert Lavalle, a fireman.

A decision was rendered on this point in the district court of Ramsey county, Minn., on December 10, by Judge J. C. Michael. This was in the cases of Kadlac vs. Minnesota Transfer, and Keefe vs. the Chicago, St. Paul, Minneapolis & Omaha. It was held that in all cases where the cause of action arose before October 28, 1918, which was the date of the director general's order No. 50, directing that damage suits be brought against him, the action would lie against the railroad and not against the director general, as neither the President of the United States nor the director general might rightfully issue a retroactive order. The director general intended his order to cover all cases back to the time when he took charge of the railroads, that is to say, January 1, 1918. In both of these two cases, an employee was killed while on duty.

"Agent for the Prosecution"

Among the many suggestions presented by the Interstate Commerce Commission in its annual report for the future control of the railroads some may be better than others, but none of them will gain much in the importance to be attached to them because of the particular source from which they emanate. After a long and patient trial of the administrative methods of the Interstate Commerce Commission it has been generally voted a failure. Its membership changes from time to time, but after all these years its character and its theory of operations remain the same. It has made of itself a reactionary body; it has proved a means of obstruction in practice and a dead weight in the development of the railroads of the country.

What ails the Interstate Commerce Commission is not lack of powers or lack of laws, but lack of an understanding of business conditions. So far as it was designed for certain definite purposes of regulation, it has neither met expectations by maintaining an attitude of judicial impartiality nor has it succeeded in suppressing the inclination to assume the rôle of agent for the prosecution. What is needed first of all is a radical change in the commission itself.—*New York World*.

Association of Railway Telegraph Superintendents

The thirty-sixth annual meeting of the Association of Railway Telegraph Superintendents, held at Chicago last week, was reported in the *Railway Age*, page 1024. The last day's session was devoted to the presentation of a paper on the "Buzzer as a Telegraph Receiver"; a discussion on the remarks of President Clapp, who as manager of the telegraph section of the Railroad Administration discussed Circular 61 with reference to re-

lieving the railroad telegraph and telephone facilities from unnecessary business and censoring, the adoption of standards and the election of officers.

One of the most important matters acted upon by the association was in the adoption of rules for specifications for the construction of railroad pole lines to meet the load, wind and ice conditions existing in the territory where the line is to be constructed. A factor of safety of two was decided on except where the poles are located within striking distance of the main track when a factor of safety of three is used. The proposed specifications will apply recognized engineering principles to pole-line construction.

The officers elected for the ensuing year were:

President, M. H. Clapp (N. P.); first vice-president, J. F. Caskey (L. V.); second vice-president, F. T. Wilbur (I. C.); secretary and treasurer, W. L. Connelly (N. Y. C.); eastern division chairman, W. P. Cline (A. C. L.); western division chairman, W. H. Hall (M. K. & T.).

Postmaster General's Annual Report

The annual report of the postmaster general, A. S. Burleson, gives the surplus of receipts over expenses for the year ending June 30, last, as \$19,979,798, a sum far larger than any similar previous surplus. The gross revenues of the department from all sources during the year are given as \$388,975,962, or about 59 millions greater than in the preceding fiscal year.

The postmaster general renews his recommendation that all telegraph and telephone lines should be owned and operated by the government. He declares that experimental control during the war has demonstrated the correctness of his opinion in this matter.

A large part of the report is devoted to the use of airplanes for transmission of mail, and he presents plans for a large extension of this facility. The airplane service between New York and Washington (about 224 miles by railroad) has been regularly maintained since May 5, last. The average north-bound trip takes two hours thirty minutes, and the south-bound, two hours fifty minutes, the prevailing winds being from the west. An average of 7¼ tons of letter mail is being carried each month. The report describes as follows the aerial lines which it is proposed to establish:

"1. New York to San Francisco, with feeders from (a) Chicago to St. Louis and Kansas City, (b) Chicago to St. Paul and Minneapolis, (c) Cleveland to Pittsburgh.

"2. Boston to Key West, with feeders from (a) Philadelphia to Pittsburgh, (b) Washington to Cincinnati, (c) Atlanta to New Orleans.

"3. Key West, via Havana to Panama.

"4. Key West, via the West Indies, to South America."

Negotiations have been begun with Central and South American countries looking to the use of airplanes in carrying mail overseas.

The construction of an underground railroad from the Grand Central Terminal, New York city, to the Pennsylvania Station, something over one mile, is recommended, and an argument for it is set forth at considerable length. The estimated cost is \$1,500,000. The proposed railroad would be double track, and the tunnel 7 ft. high, and 11 ft. wide. It is estimated that 650 tons of mail pass daily between these two stations. It is calculated that, compared with the use of motor trucks on the surface of the streets, which now make 77 trips daily, the annual saving in operating expenses would be \$200,000.

Government and Railroads; Varied Views

Frank W. Noxon, secretary of the Railway Business Association, has compiled a pamphlet giving the views of congressmen, bankers, railroad men, economists and others on the railroad problem. The material is grouped by topics, the main divisions of the subject being: "Modified Private Control or Government Ownership," "For a New Policy of Encouragement," "Plans for Regional Monopoly," "Wider Scope for Federal Regulation," and "To Do Away With Wasteful Competition." The grouping together in this manner of expressions of opinion gives an extraordinarily com-

prehensive view of the various sides of this complicated question. Copies of the pamphlet may be obtained from the secretary of the Railway Business Association, 30 Church street, New York.

The Illinois Manufacturers' Association, at its 25th annual meeting at Chicago on December 10, adopted resolutions expressing the unalterable opposition of that body to government ownership of railroads. Charles H. Sabin, president of the Guaranty Trust Company, of New York, delivered the principal address at the annual banquet of the association. He declared government ownership unjustified by the experience of this or any other country. He favored the early repeal of the Sherman law and the substitution of a statute based upon the elimination of economic waste. The Interstate Commerce Commission, both through inadequate legislation on the part of Congress and an inadequate grasp of its own responsibilities, has failed to meet the needs of the public in its control of railroad affairs. Anti-trust laws are anachronisms in their regulation of transportation. The public should be alive to the political dangers of government ownership of the railroads and other public utilities. The banker or investor who says that he would be willing to have the uncertainty ended by government purchase of his railroad securities would only temporarily serve his selfish interests. Government ownership of railroads would be followed by public ownership of all public utilities and then of natural resources, and the end of such a program could be only economic chaos, financial disaster and political corruption.

The Railroad Securities Committee of the Investment Bankers' Association, of which John E. Oldham, of Merrill, Oldham & Company, Boston, is chairman, presented a report at the annual convention of the association held this week, at Atlantic City, expressing the opinion that railroad regulation as practiced prior to the war was a demonstrated failure, and suggested that the Sherman Anti-Trust Law and the various state anti-trust laws applying to transportation should be repealed.

The Illinois State Federation of Labor in its annual convention at Bloomington, on December 7, adopted a resolution favoring the retention by the government of the railroads of the country.

Air Brake Association

At a meeting of the executive committee of the Air Brake Association, held on December 5 in Pittsburgh, Pa., it was arranged to hold the twenty-sixth annual convention in Chicago on May 6, 7 and 8, 1919. The subjects adopted by the committee for discussion are as follows:

Air requirements for pneumatically operated devices for locomotives, C. H. Weaver, chairman.

Cleaning, repairing, lubricating and testing freight car brake cylinders, by Mark Purcell.

Reclamation and conservation of air brake material, T. L. Burton, chairman.

Twenty per cent overload allowed on heavy grade braking, by C. H. Rawlings.

Holding standing trains and cars on grades, by R. J. Watters.

Recommended practice report, H. A. Clark, chairman.

M. C. B. air brake defect card.

How can engineers and trainmen assist in air brake maintenance, by H. A. Glick.

It was decided to invite car and locomotive builders each to send a representative to the convention for their information as to the best methods of installing air brake equipment.

Western Railway Club Meeting

The regular December meeting of the Western Railway Club will be held in the Hotel Sherman, Chicago, at 8 p. m. on December 16. R. H. Aishton, director of the Northwestern region, will speak informally, and Dr. Hermann von Schrenk, consulting timber engineer, will give an address on "The Selection and Proper Utilization of Lumber in Car Construction."

Traffic News

Fuel Administrator H. A. Garfield on December 1 vacated the order issued on May 7, last, placing an embargo on the shipment of coke through the New England gateways, a step rendered necessary at that time because of traffic congestion.

The United States Shipping Board has ordered the resumption of direct passenger service between New York and Valparaiso, the first move in the re-establishment of improved transportation between the United States and the countries of Latin America.

The restoration of club cars, observation cars and other forms of special passenger service and a limited amount of passenger advertising were discussed at a conference of the regional passenger committees of the Railroad Administration in Washington, Wednesday and Thursday, with Gerrit Fort, passenger assistant in the division of traffic.

The lake season closed officially on November 30 and, according to a report by A. H. Smith, director of the Eastern Region, a total of 28,200,000 tons of cargo coal were loaded during the season, fully meeting the schedule of the Fuel Administration. Approximately 100,000,000 tons of ore, bituminous coal, anthracite coal and grain were moved through the lake ports in practically a seven months' period, in a satisfactory manner.

A total of 229,131 cars of coal of all kinds were loaded by the railroads during the week ended November 23, as compared with 243,548 during the week of 1917. The total increase in 1918, up to and including the week ending November 30, over the same period in 1917 is estimated at 608,053 cars. The percentage of full time output of coal lost on account of car shortage during the week ending November 23 is reported by the Geological Survey as 2 per cent.

Eleven hundred cars of shipbuilding steel has recently been shipped in train lots, across the continent to the Pacific coast; this in consequence of the cessation of hostilities in Europe, giving the United States government an opportunity to repay Japan a large amount of shipbuilding steel which it had commandeered during the war for the use of the Emergency Fleet Corporation. A large percentage of this steel was destined to Japan, while the remainder was consigned to Pacific coast shipbuilders.

Director General McAduo has ordered the filing of tariffs providing joint rail and water rates from the Northern part of the Mississippi valley to New Orleans (by boat from St. Louis). The effect is to make the rates from Minnesota, Wisconsin, Illinois, Iowa and that part of Missouri north of the Missouri river to New Orleans 22 cents per 100 lb. less than the all-rail rates on first class and 5 cents less on the lowest class. The river portion of these rates is 80 per cent of the all-rail rates for parallel distances.

The Traffic Committee of the National Lumber Manufacturers' Association, at a meeting in Chicago on November 25, adopted unanimously resolutions favoring the passage of Senator Cummins' bill giving the Interstate Commerce Commission authority over freight and passenger rates established by the Railroad Administration. The committee requests the support of the entire lumber industry to insure the passage of the bill, and calls on the general counsel of the association to take necessary steps to this end.

Loading in Central Western Region

A comparative statement prepared by the office of the Central Western regional director for the month of November indicates a decrease of 13.3 per cent under November, 1917, in the number of cars loaded by the roads of the region. The loading of coal and coke was 17.9 per cent below that of last year, while lumber and forest products showed a decrease of 14.2 per cent. The loading of grain and grain products and ore was only slightly below that of November,

1917, the decrease in the case of ore being 1.7 per cent, and in the case of grain 1 per cent. The only commodity which showed a heavy increase was live stock. In November, 1918, 70,080 cars were loaded on Central Western lines, as compared with 61,437 cars in the same month a year ago. The increase was, therefore, 8,643 cars, or 14.1 per cent. There was a large decrease in the loading of miscellaneous commodities, the reduction in cars being 60,175 and the reduction in percentage, 18.8.

Southwestern Industrial Traffic League

The Southwestern Industrial Traffic League, at a recent meeting, expressed its opposition to the cancellation of exceptions to the Western Classification. In the discussion of the proposed southwestern mileage scale the sense of the meeting was that the principle of the scale was satisfactory, but not sufficient time had been allowed to consider its details. It was decided also to request the Railroad Administration and the Interstate Commerce Commission to consider the proposition of having representatives of the commission sit with the Consolidated Classification Committee in future sessions to represent the shippers, having equal authority with the Railroad Administration representatives.

The league went on record as opposing increases in lumber rates in the Southwest and the proposal to discontinue furnishing grain doors except for grain and flaxseed. Because of the prospect of a large increase in traffic through the Gulf ports, a marine committee was created to assist the U. S. Shipping Board in developing this business in the Southwest. The league indorsed the sailing day plan.

In a joint meeting with the Texas Industrial Traffic League, the present railroad situation and the action which ought to be taken in disposing of the transportation problem were discussed. The presidents of the two associations were instructed to appoint committees to work on the subject and to report subsequently to their respective organizations.

Inland Traffic Service of the War Department

The annual report of Gen. Peyton C. March, chief of staff of the U. S. Army, speaking of the work of the inland traffic service, says:

"The inland traffic service was established on January 10, 1918, in order to work in harmony with the Railroad Administration. H. M. Adams was appointed chief of the section. At the time the section was formed, 15,000 carloads of War Department property held in cars were congesting various Atlantic ports. This condition was relieved, and the value of the inland traffic service was soon demonstrated. The chief of the inland traffic service exercises direct control of the transportation of troops, of the supplies of and for the various bureaus of the War Department, and for the contractors working for the several bureaus. This control extends over the entire country through the medium of representatives stationed at various traffic centers.

"Working in conjunction with the Railroad Administration has resulted in minimizing the burdens of the carriers. The work has been performed most efficiently. More than 5,000,000 troops have been moved from their homes, from one camp to another, and from camps to the points of embarkation within the period covered by this report.

"Arrangements have been made by which this branch will take charge of all express movements for the War Department, as well as the tracing of the movements of all War Department property, including the contractors and others for the various bureaus."

EXPORTS OF MERCHANDISE from the port of New York during the month of October, 1918, totaled \$178,231,835. This amount included steam locomotives valued at \$561,791, railway cars at \$607,050, and steel rails at \$986,600.—*Bulletin of the National Commerce Conference*.

GERMAN GIRLS AS FREIGHT HANDLERS.—Press despatches state that 10,000 girl servants at Stuttgart, the capital of Württemberg, were mobilized recently to help unload railroad freight cars. Each has to give one day or two half days a week to this work. They are paid men's wages.

Commission and Court News

Interstate Commerce Commission

The American Railway Express Company has filed a fifteenth section application to increase the rates applying to or from all offices of that company and offices of the Canadian Express, Canadian Northern Express and the Western Express in the United States; also from offices of the Canadian Express, Canadian Northern Express and the Western Express in the United States to points in Canada and Newfoundland, in order to align these rates with the general increase authorized for the American Railway Express Company in General Order 56 of the director general.

E. Morris and E. B. Boyd, agents, have filed a fifteenth section application for a proposed revision of class freight rates from Central territory, Mississippi river points (west bank), Madison and Beloit, Wis., and points taking same rates to Eastern Trunk Line and New England territories, Virginia cities, points east of the Western termini of Eastern trunk lines taking arbitraries in excess thereof and points in Canada subject to Boston, Mass., Stanstead, Que., or Rockland, Me., rates to restore the rate relationships and differentials in class rates which existed prior to June 25, 1918. The proposed rates will include both reductions and increases, the increases ranging from one-half to one cent per 100 lb.

Court News

The supreme court of Colorado, reversing the decision of the district court, at Colorado Springs, Colo., refuses the petition of A. E. Carlton, receiver of the Colorado Midland, for permission to discontinue the operation of the road and to dismantle it. The Public Utilities Commission of Colorado resisted the action of the district court, contending that application had not been made to the commission for the discontinuation of service.

The Kansas City Southern has filed in the Supreme Court of the District of Columbia a petition in mandamus to compel the Interstate Commerce Commission to investigate and receive testimony and to report the valuation and cost of acquisition of certain lands of the company. The court issued a ruling requiring the commission to show cause on December 10 why the writ of mandamus should not be issued. The company claims that the commission by declining to receive the testimony proffered by the company regarding the cost of acquisition of certain lands will greatly undervalue the property of the carrier in making its report. The expense to the company in preparing the testimony was said to be \$250,000.

United States Supreme Court

The Supreme Court of the United States has issued an order permitting the Delaware, Lackawanna & Western to take to the Court of Claims the question as to whether the post office department can reduce the compensation of a railroad for carrying the mails when the railroad has a contract to carry them at a stipulated rate.

The United States Supreme Court, in a decision by Justice Holmes, holds that a fee of \$10,000, assessed by the Public Service Commission of Missouri for the issuance of a certificate authorizing an issue of bonds of the Union Pacific, secured by mortgage on the whole line of the road, was an unlawful interference with interstate commerce. The fee was fixed by a percentage on the total bond issue, which was to reimburse the company for expenditures, of which less than \$125,000 had been made in Missouri. The court pointed out that only 3,168 feet of the road lay within the Missouri jurisdiction and that the business done by the railroad in Missouri is wholly interstate.

Equipment and Supplies

THE AMERICAN LOCOMOTIVE COMPANY has begun deliveries of the light Santa Fe type and heavy Mountain type locomotives ordered by the Railroad Administration and deliveries of some of the light Mountain types are expected this month. Deliveries of the heavy Santa Fe and Pacific types are expected to begin in January.

Locomotive Deliveries

A total of 57 locomotives were delivered to railroads under federal control during the week ending November 30, including 49 of the U. S. R. A. standard types, as follows:

Works		
N. Y. C.	1	USRA 8-W. Switch
Penn. L. W.	1	USRA Santa Fe
Southern	2	USRA Santa Fe
Total	43	
Lima	6	USRA Mikado
Baldwin	4	USRA Mikado
	3	USRA Mikado
	1	USRA Mikado
Grand total	57	

* Four USRA Mikados constructed for the New York Central were sent to Albany, N. Y., and one USRA Mikado constructed for the El Paso & Southern Railway was sent to Cleveland, Ohio, to be stored in the shops.

Orders for \$53,000,000 of Iron and Steel and

Railway Materials Cancelled by War Department

The Secretary of War, in announcing the amount of some of the larger contracts cancelled by the War Department, mentioned an item of \$53,000,000 for iron and steel products and railway materials.

Regulation of Steel Prices to Be Discontinued

Government regulation of steel prices will be discontinued December 31, it was announced, following a meeting of the committee of the American Iron and Steel Institute with the War Industries Board in Washington, Wednesday. The steel producers have proposed a voluntary reduction in steel prices. There has been no fixing of the price of rails except for a few contracts, principally for the army and navy, on which the contracts left the price question open.

Locomotives

THE SHANTUNG RAILWAY of China has ordered five locomotives from the American Locomotive Company.

Freight Cars

THE EGYPTIAN STATE RAILWAYS are in the market for 50 tank cars.

THE AMERICAN STEEL FOUNDRIES are inquiring for one 50-ton steel flat car for the Granite City, Ill., plant.

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for 10 second hand 60,000-lb. capacity log cars with solid steel trucks.

A. G. DE SHERBININ & Co., importers and exporters, 60 Broadway, New York, are asking prices on trucks for 50 10-ton 30-in. gage gondola cars, for 2 15-ton 30-in. gage locomotives and for 12 miles of 30-lb. rail for export.

Supply Trade News

Joseph T. Ryerson & Son, Chicago, announce the opening of an office in Philadelphia, located in the Widener building.

Nelson T. Burns, formerly with the New York Central, has joined the sales department of the Vapor Car Heating Company, with office in Chicago.

W. F. Keckeisen, advertising manager of the International Filter Company, formerly associated with the Federal Sign Company, has joined the staff of **Russell T. Gray**, advertising engineer, Chicago.

L. F. Body has been appointed manager of railway, street railway and marine sales of the Glidden Co., Cleveland, effective December 1. Mr. Body has been identified with

paint and varnish interests for many years. He began his career with the Sherwin-Williams Company in 1902, where, after many promotions, he rose to the management of railway and marine sales in 1912. In 1915 he severed his connection with Sherwin-Williams to become sales manager of the Master Builders' Company, Cleveland.

John C. Kuhns has left the service of the Oxweld Railroad Service Company to become identified with the Burden Iron Company, of Troy, N. Y., as manager of railroad sales. His

headquarters will be at the Railway Exchange building, Chicago. Mr. Kuhns was formerly purchasing agent of the Illinois Central.

Roswell P. Cooley, of the Vapor Car Heating Company, in charge of sales in the southwestern region, with office at Chicago, has been appointed Eastern sales manager, with office at New York City, succeeding **George T. Cooke**, resigned.

The Independent Pneumatic Tool Company announces the opening of a branch office and service station in Cleveland, Ohio, on December 15. A complete line of Thor pneumatic and electric tools and repair parts will be carried in stock at 1103 Citizens building, under the management of **Hayden F. White**, who has represented the company in Detroit, Chicago and Milwaukee districts for some years past.

J. H. Libberton, formerly division engineer, promotion bureau, Universal Portland Cement Company, Chicago, has been appointed inspecting engineer and engineer, promotion bureau, succeeding **William M. Kinney**. Mr. Libberton has been with the Universal Portland Cement Company since August, 1918. Since February, 1917, he has also been secretary-treasurer of the American Concrete Pipe Association.

William I. Thomson, electrical superintendent of the Safety Car Heating & Lighting Company, died at his home in Newark, N. J., December 10 of pneumonia. Mr. Thomson was prominent in the field of railway car lighting engineering for many years, and to his efforts are due many important developments in car lighting electrical apparatus. He was born in Newark, N. J., June 26, 1876, graduated from Stevens Institute in class of 1897 and served as chief machinist on U. S. S. "Badger" during the Spanish-American war. He was instructor in Applied Electricity at Stevens Institute from 1897 to 1900, and after working in the electrical construction department of the Manhattan Railway Company, New York,

for two years, he went to the Safety Car Heating & Lighting Company in 1902.

George Simons has been appointed district sales manager of the Detroit district of the Edison Storage Battery Company, Orange, N. J. Mr. Simons succeeds **Bertram Smith**, who was recently called to the main office at Orange, N. J., in the capacity of assistant general sales manager. Mr. Simons has been associated with the Edison Storage Battery Company for the past three years. He has had valuable experience in storage battery practice, and was for nine years associated with the National Battery Company, Buffalo, N. Y., and with the United States Light & Heat Corporation.

The War Industries Board, which is to be discontinued on January 1 has announced the discontinuance before that time of several of its sections, including the special committee on plants and munitions of which **S. M. Vaulchain**, vice-president of the Baldwin Locomotive Works, was chairman. The section on railway materials, of which **Lieut. Col. J. Rogers Flannery**, of the Flannery Bolt Company, was chairman, expected to complete its work this week. **J. Leonard Reppogle**, director of steel supply, is expected to hand in his resignation within a few days, effective January 1, and to return to his former duties as president of the American Vanadium Company.

William M. Kinney, inspecting engineer of the Universal Portland Cement Company, Chicago, has been appointed general manager of the Portland Cement Association, succeeding **H. E. Hiltz**, resigned.

Mr. Kinney has been engaged in cement and concrete promotion work for over 11 years, having occupied for the past four years the positions of engineer, promotion bureau and inspecting engineer of the Universal Portland Cement Company. He was born in 1885, and is a graduate of the Lewis Institute, Chicago. In 1906 he entered the service of the Willamette Iron & Steel Works, Portland, Ore., as a draftsman, and was later employed by the Universal Portland Cement Company.

From 1908 to 1914 he was assistant inspecting engineer for the company at Pittsburgh. Afterward he became inspecting engineer and engineer of the information bureau of the company. He is vice-chairman of the committee on cement of the American Society for Testing Materials and is secretary of the committee on concrete roads and pavements of the American Concrete Institute. Mr. Kinney was also largely instrumental in establishing the Structural Materials Research Laboratory at Lewis Institute, Chicago, under the direction of Professor D. A. Abrams, and has been since its inception a member of the advisory committee.

Electro-Dynamic Company

Takes Over Consolidated Co.

The Electro-Dynamic Company, of Bayonne, N. J., which formerly manufactured the electric car lighting equipment for the Consolidated Railway Electric Lighting & Equipment Company, New York, has bought the entire stock in trade, assets, good-will, etc., of the latter company, and will continue to manufacture and sell the "Axle Light" equipment formerly sold by the Consolidated, together with all repair parts for the Consolidated Equipment now in service on the railroads.

The Electro-Dynamic Company is controlled by the Submarine Boat Corporation and is known in the railway field



L. F. Body



W. M. Kinney

as the manufacturer of the Edco Inter-pole motors for railway shop use, machine tools and submarines.

A separate department of the Electro-Dynamic Company has been created, known as the axle light department, to handle this work. There will be no interruption of the former Consolidated business.

Reception in Honor of Captain Hunt

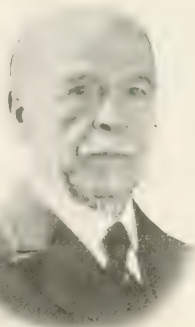
Captain Robert Woolston Hunt, for many years a well known figure in the steel industry and president of Robert W. Hunt & Co., a bureau of inspection, tests and consultation, was tendered a reception in honor of his eightieth birthday, on Monday, December 9, at Mid-Day Club, Chicago. Fully 500 friends, associates, and business acquaintances attended. On Monday evening members of his staff and intimate associates, joined Captain Hunt in a dinner at the Blackstone Hotel. This was the occasion for the presentation of a memorial by the Board of Directors of the American Institute of Mining Engineers, congratulating him "upon his notable achievement as a pioneer in the manufacture of iron and steel and his long and admirable service both as a practical director and as a wise critic and counselor in that art." This was done in illuminated lettering on parchment and bound in heavy morocco. The Western Society of Engineers in its meeting held the same evening, also passed resolutions of congratulations.

Capt. Hunt was born December 9, 1838, in Fallsington, Buck county, Pa. He spent several years learning the practical side of iron making in the rolling mills of John Burnish & Co., Pottsville, Pa., and later took a course in analytical chemistry in the laboratory of Booth, Garrett & Blair, upon the completion of which he entered the employ of the Cambria Iron Company, Johnstown, Pa., where on August 1, 1860, he established the first laboratory in America as a direct part of an iron or steel organization.

In the fall of 1861 he entered the U. S. military service, in command of Camp Curtin, Harrisburg, Pa., where he served as mustering officer for the state of Pennsylvania, with the rank of captain, and in 1864 was mustered into the United States service as a sergeant. Upon being mustered out of service he was employed in the experimental Bessemer works of the Cambria Iron Company, at Wyandotte, Mich., being placed in charge of those works in July, 1865, and so continued until May, 1866, when the Cambria Iron Company called him back to Johnstown to take charge of their steel business. While there engaged he had charge of the rolling of first steel rails made in America on a commercial order.

Later he assisted George Fritz, Cambria's chief engineer, in designing and building its Bessemer works, and assumed charge of it on its completion July 10, 1871. On September 1, 1873, he became superintendent of the Bessemer works of John A. Griswold & Co., Troy, N. Y., and in March, 1875, general superintendent of the Albany & Rensselaer Iron & Steel Company. Mr. Hunt has taken out several letters patent on steel and iron metallurgical processes and machinery, both individually and in conjunction with others. He put in the first automatic rail mill tables. In April, 1888, he established the bureau of inspection, tests and consultation of Robert W. Hunt & Co., in Chicago.

Mr. Hunt was president of the American Institute of Mining Engineers in 1883, and again in 1906, president of the American Society of Mechanical Engineers in 1890, of the Western Society of Engineers in 1893, and of the American Society for Testing Materials in 1912. He was awarded the John Fritz medal in 1912 "for his contributions to the early development of the Bessemer process."



R. W. Hunt

Railway Financial News

BOSTON & MAINE.—The first board of directors of the reorganized Boston & Maine to hold office until the first annual meeting will consist of H. Leroy Austin, Norman L. Bassett, Charles W. Bosworth, Frank P. Carpenter, Samuel Carr, Charles Sumner Cook, Henry B. Day, James L. Doherty, Frederic C. Dumaine, Charles P. Hall, Woodward Hudson, James M. Prendergast, John G. Sargent, Leslie P. Snow, James Duncan Upham, George H. Warren.

President Hudson has issued a circular calling the stockholders of the Boston & Maine and of the principal leased lines to meet to vote on the new consolidation plan, which has been unanimously recommended by the directors.

The \$38,817,900 of first preferred stock to be exchanged for leased line stocks will be known as Class A, B, C, D and E stock, as follows:

Class of stock	Rate of div. to January 1, '24	Rate of div. after January 1, '24
A	4%	5%
B	6.4	8
C	5.6	7
D	8	10
E	3.6	4.5

The first dividend will be paid July 1, 1919, for the preceding six months. If the \$12,000,000 par of first preferred stock is issued to retire bonds it will be known as Class F first preferred.

CHICAGO & NORTH WESTERN.—Kuhn, Loeb & Co. on Wednesday offered an issue of \$10,500,000 general mortgage 5 per cent gold bonds, due November 1, 1987, and it was heavily oversubscribed. The issue was sold at par under the general mortgage executed in 1897, authorizing from time to time the issuance of bonds not to exceed \$165,000,000 face value.

NATIONAL RAILWAYS OF MEXICO.—The following members have been elected to the board of directors in Mexico: Frederick Adams, Carlos Basave y del Castille N., Victor L. Blanco, Jose V. Burgos, Luis Cabrera, Fernando Gonzalez Rec, Elias S. A. de Lima, Mario Mendez, Rafael Nieto, Francisco Puga, Julian Ramirez Martinez and Ignacio Rodriguez. The following were elected to the New York local board: Henry Bruere, Alfredo Caturegi, Ramon P. Denegri, J. J. Hanauer, J. Hirschman, Jesus Martinez, Juan B. Rojo, W. T. Rosen and H. H. Wehrlane.

NORFOLK & WESTERN.—This company is offering holders of its preferred and common stock the privilege of subscribing at par to ten-year 6 per cent convertible gold bonds to the extent of 12½ per cent of their respective holdings as of December 18. If all of the stockholders exercise their rights to subscribe, the total of the new issue of convertibles will approximate \$18,000,000. The bonds will be dated September 1, 1919, and will mature September 1, 1929, and will be convertible into common stock at par during their life. The subscription prices will be payable according to the announcement, 40 per cent on or before January 25, 1919, 30 per cent between May 1 and May 7 and 30 per cent between September 1 and September 6, 1919.

PENNSYLVANIA.—The stockholders have ratified the federal compensation contract, covering the Pennsylvania Railroad and the lines operated by it east of Pittsburgh. The compensation named in the contract is \$53,603,427.58 per year. President Rea announced that it is sufficient to pay all fixed charges and continue the 6 per cent dividend. Separate contracts are being negotiated for the lines west and for those eastern subsidiaries which are owned only in part by the Pennsylvania Railroad.

SALINA NORTHERN.—This road, operating 81 miles of line between Salina, Kansas, and Osborne, was taken over by the Union Pacific on November 27. The Salina Northern has been in the hands of receivers since July 27, 1917.

UNION PACIFIC.—See Salina Northern.

Railway Officers

Railroad Administration

Central

G. W. Kirtley has resigned as assistant in the traffic department of the Railroad Administration to become connected with the U. S. Department of Agriculture.

Theodore H. Price has resigned as actuary of the Railroad Administration and as chairman of the advisory committee of the Fire Loss and Protection Section, effective on January 1.

Regional

E. A. Clifford, assistant general purchasing agent of the Atchison, Topeka & Santa Fe, has been appointed assistant to the Regional Purchasing committee for the Central Western region, with headquarters at Chicago.

Federal and General Managers

E. H. Coapman, federal manager of the Southern Railroad and associated lines, with headquarters at Washington, D. C., has been appointed federal manager also of the Georgia Southern & Florida, the Hawkinsville & Florida Southern, and the St. Johns River Terminal.

Operating

R. B. Freeman, car foreman of the Seaboard Air Line, with office at Monroe, N. C., has been appointed general car foreman, with office at Hamlet, N. C.

E. C. Tomlinson, car accountant on the Southern and associated lines, has had his authority extended over the Georgia, Southern & Florida; the Hawkinsville & Florida Southern, and the St. Johns River Terminal, with headquarters at Washington, D. C.

A. E. McVicker, trainmaster of the Baltimore & Ohio, Eastern Lines, has been appointed assistant superintendent of the Connellsville division, with headquarters at Connellsville, Pa., vice **C. M. Stone**, assigned to other duties, and **T. J. Ward** has been appointed trainmaster of the Connellsville division, with headquarters at Connellsville, vice Mr. McVicker.

The jurisdiction of **F. E. Bentley**, superintendent of telegraph of the Terminal Railroad Association of St. Louis, has been extended over the following lines: The Alton & Southern; the Litchfield & Madison; the East St. Louis National Stock Yards; the St. Louis National Stock Yards, and the St. Louis, Troy & Eastern, with headquarters at St. Louis, Mo.

The jurisdiction of **E. A. Chenery**, superintendent of telegraph on the Missouri Pacific, with headquarters at St. Louis, Mo., has been extended over the St. Louis Southwestern; the Louisiana & Arkansas; the Memphis, Dallas & Gulf; the Arkansas Central; the Natchez & Southern; the Natchez & Louisiana Railroad Transfer; the Coal Belt Electric, and the Southern Illinois & Missouri Bridge.

Financial, Legal and Accounting

F. M. Hickman, acting federal treasurer of the Missouri Pacific, has been appointed federal treasurer, with office at St. Louis.

C. L. Mayne has been appointed acting federal treasurer of the Arkansas Central, with office at Ft. Smith, Ark., effective December 1.

The authority of the following officers of the Southern Railroad and associated lines has been extended over the Georgia, Southern & Florida, the Hawkinsville & Florida

Southern, and the St. Johns River Terminal: **G. R. Loyall**, assistant federal manager; **A. H. Plant**, federal auditor; **E. F. Parham**, federal treasurer; **S. R. Prince**, general solicitor; **G. W. Taylor**, staff officer, transportation; **J. Hainen**, staff officer, mechanical; **F. W. Brown**, staff officer, headquarters; **H. H. Laughton**, staff officer, materials and supplies; **W. H. Gatchell**, staff officer, loss and damage prevention; **E. H. Shaw**, traffic manager; **W. H. Wells**, consulting engineer construction; **E. M. Durham, Jr.**, chief engineer construction; **R. B. Pegram**, general purchasing agent; **Alex. Grant**, mail traffic manager; **W. M. Netherland**, manager, dining cars; all with headquarters at Washington, D. C., and **Horace Baker**, general manager, lines west, with headquarters at Cincinnati, Ohio.

Traffic

A. C. Irons, assistant general passenger agent of the Chicago Great Western, has been promoted to general passenger agent, with headquarters at Chicago, succeeding **A. L. Craig**, resigned.

Hugh I. Scofield, general agent of the Denver & Rio Grande and the Western Pacific at Detroit, Mich., until last April, has been appointed general agent of the Chicago, North Shore & Milwaukee, with headquarters at Chicago, effective December 5.

A. L. Craig, general passenger agent of the Chicago Great Western, with office at Chicago, has been appointed general passenger agent of the Union Pacific, with office at Omaha, in place of **W. S. Basinger**, who was appointed assistant to director of traffic, Railroad Administration, at Washington, D. C.

R. L. Russell, assistant freight traffic manager of the Central of New Jersey, and the Philadelphia & Reading, with office at Philadelphia, Pa., has been appointed freight traffic manager of the Philadelphia & Reading; the Central Railroad of New Jersey; the New York & Long Branch; the Atlantic City Railroad; the Port Reading Railroad; the Baltimore & Ohio Railroad New York Terminals; the Baltimore & New York; the Staten Island Rapid Transit, and the Staten Island Railroad, vice **J. F. Auch**, resigned.

Engineering and Rolling Stock

Erik W. Lostrom has been appointed road foreman of engines of the Northern Pacific, with office at Duluth, Minn., vice **Charles Emerson**, promoted.

C. N. Bainbridge, assistant engineer on the Chicago, Milwaukee & St. Paul, has been appointed engineer of design, with headquarters at Chicago, to succeed **H. C. Lothholz**, resigned.

Walt Dennis, formerly principal assistant engineer of the Wabash, has been appointed division engineer of the western division, with office at Moberly, Mo., vice **W. W. Greenland**, who has been appointed superintendent at Moberly.

R. D. Quickel, having been released from military service, has been re-appointed fuel agent of the Southern Railroad lines and associated railroads, lines west, with headquarters at Cincinnati, Ohio, vice **N. C. Kieffer**, assigned to other duties.

G. W. Seidel, superintendent of motive power and rolling stock of the Minneapolis & St. Louis, has been appointed superintendent of motive power of the Chicago & Alton and the Chicago, Peoria & St. Louis, with office at Bloomington, Ill., succeeding **J. E. Ohearne**, resigned.

Purchasing

J. M. Hannaford, federal manager, announces that the purchasing and stores department of the Northern Pacific, the Minnesota & International, the Big Fork & International Falls and the Camas Prairie will be in charge of **F. G. Prest**, purchasing agent, with headquarters at St. Paul, Minn., who will appoint a general storekeeper and other necessary assistants reporting to him direct.

Corporate

Executive, Financial, Legal and Accounting

George B. Elliott, general counsel of the Atlantic Coast Line, has been appointed also vice-president, with office at Wilmington, N. C., and **Homer G. Day** has been appointed assistant to chairman, with office at New York.

J. Welch, Federal auditor of the Chicago, Milwaukee & St. Paul, has been appointed controller of the corporation, with headquarters at Chicago, succeeding **L. J. Tracy**, resigned to go with the United States Railroad Administration at Washington.

Carlos A. Hayes, who has been appointed vice-president in charge of traffic with jurisdiction over all lines of the Canadian Northern Railway System, and the Canadian Government Railways, with headquarters at Toronto, Ont., as has already been announced in these columns, was born on March 10, 1865, at West Springfield, Mass. He began railway work in April, 1882, and held various positions in clerical capacity in the accounting and general freight departments of the Boston & Maine, at Springfield and at Boston, Mass., until November, 1890. He was then to June, 1892, general freight and passenger agent of the Central New England & Western, at Poughkeepsie, and from June to October, 1892, served as division freight agent of the Philadelphia & Reading, at Hartford, Conn. In October, 1892, he entered the service of the Grand Trunk as New England agent, at Boston, of its National Despatch Fast Freight Line, in 1896, becoming manager of the same line, with office at Boston, which was later removed to Buffalo. On May 1, 1903, he was appointed assistant general freight agent of the Grand Trunk, at Chicago. In May, 1908, he was promoted to general freight agent at Montreal, and in September, 1911, was appointed freight traffic manager. In July, 1913, he was appointed general traffic manager of the Canadian Government Railways, at Moncton, N. B., and in June, 1917, became general manager of the Canadian Government Railways, Eastern lines, at Moncton, N. B., which position he held until his appointment on November 21, 1918, as vice-president in charge of traffic of the Canadian Northern Railway System and the Canadian Government Railways, as above noted.

Operating

L. B. H. Clarke has been appointed assistant superintendent of the Canadian Pacific, with headquarters at McAdam, N. B.

W. A. Kingsland, general superintendent of the Quebec Lines of the Canadian Northern, has been appointed assistant general manager of the Canadian Northern, lines east of Port Arthur, and the Canadian Government Railways east of O'Brien, with office at Montreal, Que.

Obituary

M. A. Ramsey, superintendent of the Macon and Chattanooga division of the Central of Georgia, with headquarters at Macon, Ga., died on December 1, at his home in Macon, at the age of 43.

Edwin M. Marquis, assistant traffic manager of the Carnegie Steel Company, died at his home at Haysville, Pa., on December 9. Mr. Marquis was a native of Beaver County, Pa., and began his career as telegraph operator on the Pennsylvania Lines West. He subsequently served in the division freight office of the Pittsburgh, Cincinnati, Chicago & St. Louis, at Pittsburgh, and then as assistant general freight agent of the Ohio River Railroad at Parkersburg, W. Va., until October, 1901, when he entered the service of the Carnegie Steel Company, in the traffic department.

William W. Fagan, formerly, from April, 1887, to July, 1895, general superintendent of the Kansas City, Ft. Scott & Memphis and the Kansas City, Clinton & Springfield, died on November 28, at Olathe, Kan., aged 78 years. At the time of Mr. Fagan's retirement from active railway work in 1895 he had been in continuous service for 40 years, and from November, 1869, to April, 1887, was successively assistant

superintendent in charge of maintenance of way and construction on the Atchison, Topeka & Santa Fe; general superintendent of the Kansas Midland, and division superintendent of the Hannibal & St. Joseph, the Union Pacific and the Missouri Pacific.

J. Paul Stevens, general manager of the Chesapeake & Ohio, with headquarters at Richmond, Va., died of pneumonia on December 9, in his home at Fort Mitchell, near Covington, Ky. Mr. Stevens was born on December 28, 1885, at Peru, Ind., and was educated in the common schools. He began railway work in March, 1900, and served consecutively as chief dispatcher's clerk, copy operator and dispatcher on the Chesapeake & Ohio, at Hinton, W. Va. In January, 1904, he was appointed chief dispatcher on the Cincinnati division at Covington, Ky., and from February, 1907, to the following January, was assistant superintendent of the same division. In May, 1910, he was appointed general

superintendent of the Kentucky general division, with headquarters at Covington. He subsequently served also as general superintendent of the Chesapeake & Ohio Railway of Indiana, and at the time of his death was general manager of the Chesapeake & Ohio as above noted.

Thomas J. Foley, general manager of the Illinois Central, died at the Illinois Central Hospital in Chicago on December 9, aged 52 years. He was born at Convoy, Ohio, on August 26, 1866, and began railway work on December 20, 1878, as a telegraph operator on the Pennsylvania Lines West of Pittsburgh. He was afterwards consecutively agent, train dispatcher at Ft. Wayne, Ind., chief dispatcher, assistant trainmaster and transportation inspector of the Pennsylvania Lines. On June 1, 1901, he became assistant general manager of the Baltimore & Ohio, at Baltimore, Md.; he was made superintendent of the Chicago division in 1903, and the following year was promoted to general

superintendent of the Wheeling system. In 1906, he went to the Union Pacific as special inspector in the transportation department, and subsequently was successively yardmaster and chief train dispatcher at Cheyenne, Wyo., superintendent of terminals at Omaha, Neb., and assistant superintendent of the Nebraska division. Mr. Foley resigned the latter position to become assistant to the vice-president of the Illinois Central, and two months later he was made assistant general manager of that road, the Yazoo & Mississippi Valley and the Indianapolis Southern, being promoted to general manager in November, 1912. On August 1, 1917, he was elected vice-president, in charge of operation, of the Illinois Central, which position he held until August last, when he was appointed general manager.



J. P. Stevens



T. J. Foley

*“Peace, peace to him that
is far off, and to him
that is near”*



Street Scene in Bethlehem, in Front of the Church of the Nativity.



ONE year ago we said, on this same page, “To America has fallen the lot of striking the final blow which shall crush that Awful Thing with its venomous sack and thirst for blood and rape. May God grant to us that certainty of aim and strength of arm so that on the next anniversary of the birth of our Saviour we may shout with a full heart, ‘Peace, peace to him that is far off, and to him that is near.’”

The anniversary has arrived. The Thing *has* been crushed. And with full heart do we shout, “Peace, peace to him that is far off, and to him that is near!”

“Only take heed to thyself, and keep thy soul diligently, lest thou forget the things which thine eyes have seen and lest they depart from thy heart all the days of thy life: but teach them thy sons and thy sons’ sons.”

EDITORIAL

Railway Age

EDITORIAL

Important for Subscribers

In the interest of the conservation of paper, the Railway Age will print at the end of the present volume only a sufficient number of indexes to meet direct requests from its subscribers. Those desiring indexes should, therefore, immediately advise the New York office, 2201 Woolworth Building, New York.

There is no more interesting or spectacular play in football than a successful forward pass. The conditions are such,

McAdoo in Terms of Football

however, that it is exceedingly difficult to carry off a play of this kind successfully; often the ball is blocked and sometimes the opposing side is able to catch it fairly and make big gains. Ordinarily, therefore, a forward pass is attempted only occasionally in the early part of the game and when conditions are regarded as specially favorable. On the other hand, if one side is beaten, it will often take long chances near the end of the last quarter and will repeatedly try to use the forward pass as a forlorn and desperate hope. Was not Mr. McAdoo, in suggesting that government control be continued for five years from the first of next January, making one last desperate effort to try to put something over? Fortunately, Congress, with the hearty backing of public opinion, promises to block this little play.

Now that the days of federal control of the railroads are numbered, the question is being asked on many sides as to what will become of the standard locomotives. These locomotives are not meeting with favor on a number of the roads, where they promise to become a burden because of not being specially

What of the Standard Locomotives?

suited for the conditions under which it is necessary to operate them. It has been suggested that possibly the larger proportion of them will find their way into the hands of the second-hand dealers in the near future, which will in turn sell them to the smaller roads that need only a very few locomotives and which ordinarily operate their power well within its capacity, or which are not specially concerned with their operating efficiency because of the limited amount of traffic handled. On the other hand, possibly some few of the roads which find that some of the types of the standard locomotives are specially adapted to their peculiar conditions will take them off the hands of other roads that cannot use them to such good advantage. It has been suggested that some roads can even afford to pay a bonus in order to get rid of the standard locomotives and secure types better suited to their special conditions. One party facetiously suggests that it might be a splendid idea to melt the whole mess of standard locomotives into a big casting and erect it as a monument in some central location in Washington, suitably ascribed to the handful of men who, in spite of the warnings they received, went ahead and attempted to foist their hobby upon the American railroads. Such a warning might come in useful for future generations.

It is fortunate indeed that the United States Department of Agriculture has made such thorough studies of the transportation of perishables in refrigerator

Safe Transportation of Perishables

cars and that its data has been available in designing the standard refrigerator cars and in planning for the rebuilding of many of the refrigerator cars now in service. The address by M. E. Pennington of the food research laboratory of the Department of Agriculture, before the American Society of Mechanical Engineers, which is printed elsewhere in this issue, is of more than ordinary interest because of the light that it throws upon the development of satisfactory designs for refrigerator cars. Equally important, however, is the necessity of taking radical steps to prevent perishables from freezing in winter. Great quantities of fruit and vegetables are lost in this way each year, and determined steps should be taken looking toward the application of a suitable type of heater apparatus to the box cars in which such perishables are transported. It is hardly sufficient to say that shipments of this kind must not be made when a cold wave threatens or when the weather is unsatisfactory. The rapidity with which the cold waves come on in different parts of the country, the inaccuracy of weather predictions, and the fact that it is impossible to state definitely just how long it will require to move a car between two points, make it necessary to adopt much more effective measures and precautions.

The way of the inland waterway advocates in recent years has been hard. Nevertheless they have never given up hope.

You Scratch My
Back and
I'll Scratch Yours

They have conducted an extensive propaganda. They have sent delegation after delegation to Congress. They have secured appropriations aggregating millions of dollars to deepen and maintain channels for traffic which does not exist. In spite of these efforts the streams are still practically devoid of business. The assumption of railway management by the government gave these enthusiasts a new hope. They at once concentrated their energies on the Railroad Administration in an endeavor to secure its assistance in placing waterway transportation on its feet, since it had shown its inability to compete successfully with the railways in the past. They secured the creation of the Division of Inland and Coastwise Waterways and the authorization of considerable expenditures for barges and other floating equipment. Now that the end of Federal control appears to be in sight, there is evident consternation in the camps of the Railroad Administration and the waterway advocates alike. The St. Louis Chamber of Commerce, the St. Louis Merchants' Exchange, Governor Lowden of Illinois, and others have appealed to the director general for assurances that the waterway plans will not be abandoned. In reply the director general has stated that these projects will not be dropped and he in return asks that support be given his proposal for the five-year extension of government control. In his letter to Governor Lowden he said that, "It is proper that I should call your attention to the fact, however, that unless Congress should extend the period of federal control so that a reasonable opportunity may be afforded for a fair test of the value of unified railroad

operation along with co-ordinated inland waterways operation, the experiment on the Mississippi river may not hold out promise. I doubt if the Mississippi river operation can produce satisfactory results if the railroads should be turned back soon to private control. The old methods of competition will be revived and it is probable that the waterways experiment may not be able to survive."

The decreasing activity in construction work common to this season of the year together with the industrial disturbance naturally following the signing of the armistice has produced a marked decrease in the demand for men, in some cases actually producing a noticeable surplus as, for instance,

Opportunity for Reorganization

among engineers on construction work. The change will be a welcome one to the engineering executives who have had to struggle with more or less incompetent assistants in the subordinate positions. As long as a year ago, one chief engineer stated that he did not have a single man below the grade of division engineer who was qualified for promotion. Recently an instrumentman with several months' experience on grading work was asked if the contractor had a "standard-gage outfit" and from the blank stare which he returned it was clear that the term was entirely new to him. He also was unable to answer any questions not of direct application to the setting of center or grade stakes. While the attitude of railway managements toward engineers in the past may be the underlying cause of this condition, the situation has been influenced more recently by the inability of the railroads to compete with outside industries in the rates of pay for these men, notwithstanding the fact that the Railroad Administration has given material advances to all classes of employees. This situation has now been temporarily relieved and there will be an opportunity for the railroads to improve the personnel of their engineering staffs. With the opening of work in the spring, and promise of extensive highway construction as well as building work, there will be a return, at least in part, of the severe competition for men of technical training experienced during the past two years.

Present conditions, therefore, offer a splendid opportunity to strengthen and improve the organizations.

Blocking Foreign Trade

CONSIDERABLY more than a year ago the *Railway Age* looked forward to the time when peace would finally be declared and the American business men would be able to take advantage of the opportunity to develop export trade. Ever since that time we have searched for all the information that we could find that would be helpful to the railway supply interests in developing foreign markets, and have published a large number of articles, many of which were specially written for us by experts with the needs of the railway supply industry in mind. We felt that the nation had learned a lesson in preparedness, and we joined with other business papers in trying to awaken a widespread interest in the export business which would insure future prosperity to the country. In spite of the fact that our allies have had to exhaust their resources and have had to bear the brunt of the conflict they have realized the necessity for preparedness in this direction and have planned thoroughly and comprehensively for the development of their export business at the close of the war. This country was in a most fortunate position to make similar investigations and plans, but what has been done?

The Bureau of Foreign and Domestic Commerce has been doing some good work in the way of investigating the possibilities of foreign trade and has paid particular attention to railway supplies. Through Frank Rhea's report on Aus-

tralia, which was reviewed in the *Railway Age* some months ago, and through another report of his, which is now in the government printing office, on the market for railway supplies and materials in China and Japan, there is shown the big opportunities that lie before American railway supply companies in Australia and the Far East. Only this last week the Bureau published a very detailed report on investments in Latin America, in which it emphasized the necessity for American investments in South American railroads and other industries, because of the fact that it thereby assured a market to America for its products in these industries. It is also about to send to South America an investigator to look into the market for machine tools. Readers of the *Railway Age* are already familiar with the reports on the railways of Mexico and Brazil which have recently been issued by the Latin American division of the Bureau.

It is unfortunate that the Department of Commerce has at its head a man like Secretary Redfield, who seems to be trying to undo all of its good work by decrying that this is no time for America to exploit its foreign markets while England and France have yet to be put on their feet. England and France are good friends of ours, but we doubt if even their most reasonable business men want us to hand them the foreign markets of the entire world without any competition whatsoever.

Unity

NOW IS THE TIME for railroad executives to take stock; it is a time for searching of hearts. Congress looks to the railroad men for constructive suggestions as to the working out of a plan for remedial railroad legislation. In the formation of a plan each man should clearly differentiate to himself between those factors which are the products of his duty to his security holders, his preconceived personal predilections, and the financial condition of his own road; and those factors in the plan which from years of study of, and experience with, railroad problems he knows to be essential to any sound plan or reorganization. On the first set of factors, unity of opinion is not necessary nor even necessarily desirable; on the second set of factors, unity of opinion and action are absolutely essential.

During five days of last week the Standing Committee of the Railway Executives (this is the new name of the Railway Executives' Advisory Committee, which is composed of 25 members) discussed every phase of the present railroad problem, and tentative plans and suggestions were drawn up. Another meeting of this committee is to be held on Friday of this week in New York. The standing committee will report at a meeting of the railway executives to be held in January in Chicago.

If the railroad executives were to agree upon a comprehensive and detailed plan to present to Congress which would include all or a large part of the individual axes that each company has to grind, it would in all likelihood meet with insurmountable opposition on the part of Congress and would also arouse only suspicion and distrust on the part of the general public.

The public, both as shippers and travelers and as taxpayers, has a paramount interest in the railroad problem. Labor has its own axe to grind, as have also the holders of railroad securities. A detailed inflexible, theoretical plan worked out by a group of any of the various interests involved and presented for acceptance or rejection would be an unwarranted assumption of authority.

Take the most important of the interests involved—the public. It is the duty of Congress to interpret the desires of their constituents. While there may be a comparatively few men in Congress who are familiar enough with railroad management and railroad finance to work out any detailed plan of reconstruction for the railroads, nevertheless Con-

gress should, by right, be a party to the formation of any plan. It would be entirely wrong to present to Congress a cut-and-dried plan for "rejection or approval only." Therein lies the insult which William G. McAdoo, director-general of railroads, laid upon Congress in his ultimatum, issued in connection with his request to have the roads retained under government operation for five years more.

As regards labor, one of the lessons that the war has taught England, and, to a lesser extent, the United States, is that a state of continuous strife between labor and capital is a ruinously wasteful economic condition for which there is no real necessity. Co-operation between labor and capital, if it is to be co-operation, and not a mere jockeying for position, must be based on mutual consultation and agreement, based upon reason and not upon superior force. This involves labor's participation in the discussion and working out of a plan of reorganization of the railroads and precludes the adoption of a detailed plan by railroad executives.

Security owners and officers of savings banks and insurance companies have their own organization which has discussed at length the railroad problem. Simple justice, as well as expediency, would suggest that this organization have a voice in the formation of a reconstruction plan for the railroads.

Mr. McAdoo holds over the head of Congress directly and over the head of labor, the security holders and the railroad executives indirectly the threat of immediately returning the roads to their owners. This may be a bluff pure and simple, which if it does not prove successful in frightening Congress into giving the roads up to government operation for five years would never be carried out. On the other hand, it may be a forlorn hope indicative of the state of mind of the advocates of government ownership—despite Mr. McAdoo's evasion of the direct espousal of the government ownership cause, because no one, unless it be Mr. McAdoo himself, can be deceived as to what the adoption now of his five-year proposal would mean in the long run. Mr. McAdoo may quite possibly stand ready to carry out his threat if it is not successful in frightening Congress.

Does this necessarily mean that some one of the various interests vitally affected must as a matter of public safety work out a self-contained automatic and inflexibly complete scheme for the railroads' reorganization at once? If it did, the burden would lie on the railroad executives. Unquestionably the financial difficulties involved in an immediate return of the railroads to their owners would be great; but, in our opinion, they would not be great enough to constitute a crisis wherein action on the part of the executives would be immediately imperative. The bankers would have to step into the breach. Some roads could take care of their own immediate financial situation; others, and possibly the majority could not; they would need the temporary extension of bankers' credit. It is the bounden duty of bankers to extend this necessary credit. It is all well enough for some complacent gentlemen to sit back and criticise the government for having taken the roads in the first place, and argue that the responsibility was lifted from their shoulders by the President's proclamation, and that the government and the Administration, by taking the roads, assumed a responsibility which they cannot now fairly relinquish. Fairly or unfairly, if the roads are immediately dropped by the government a responsibility falls on the shoulders of the bankers who in the past have profited through the sale of railroad securities. If they lay down under this responsibility or use the occasion to drive a hard bargain with the railroads, it will be to their lasting discredit; but it seems safe to assume that the bankers will fully live up to their responsibilities, and, if they do, the McAdoo threat has all the edge and point taken off of it.

If the railroad executives are a unity in drawing up certain general suggestions for discussion by Congress, labor and representatives of the security owners, and if in this dis-

cussion unity of purpose can be maintained, a sudden relinquishment of the roads by Mr. McAdoo would not be a disaster, however unfair a political trick it might be.

The Next Step

SO EMPHATICALLY has the public expressed itself in relation to Director General McAdoo's proposal to extend the period of federal control over the railways for five years that there is very little likelihood that Congress will give it serious consideration. This means one of two things; either that the railroads will be turned back to their owners in the immediate future or that the President and Director General McAdoo will be placed in the unfortunate position of having to admit that they were taking a long chance in trying to force the hand of Congress, and indirectly commit it to the government ownership of the railroads—for the five-year proposal would mean nothing less than this.

If the President and the director general were in earnest, then it becomes necessary for Congress and the railway executives to prepare for the immediate return of the roads. No one questions the fact that it will not be practicable for the railroads to continue to operate for any length of time under the conditions that existed prior to their being taken over by the government. Neither will it be possible for the present Congress to provide the legislation that will be needed for the final and complete solution of the railroad problem. It would seem, therefore, that the logical course to pursue would be to relieve the roads as quickly as possible, when they are turned back to their owners, of some of the most serious restrictions to which they were subjected before they were taken over by the government. Matters of less pressing nature could then be followed up at a later period and the problem would be solved and the conditions corrected by stages, which after all might not be a bad course to follow.

Under these circumstances, what changes will it be most necessary to make in order to give the railroads a fair deal? Is there any better course to follow than to examine into the measures which were taken to relieve the railroads of their various handicaps when they passed from private ownership into government control?

The financial condition of many of the properties was most serious during the latter months of private operation; the government by assuming responsibility for the operation of the roads and lending financial support to the corporations was able to relieve this situation. Director General McAdoo promptly raised the rates, but wage increases and other increased costs of operation have offset this and some of the railroads have had to draw pretty heavily upon the revolving fund of \$500,000,000. It will, therefore, be necessary for Congress to see, for the time being at least, that the present rates are maintained or that the government in some way guarantees the net returns. It will be necessary also to allow the roads easy terms on which to repay their indebtedness to the government. If a broad-minded policy is adopted, the confidence of the investors will be restored and the bankers, whose support is so necessary, will be more apt to extend the assistance mentioned in the editorial on "Unity" in this issue.

Director General McAdoo admits that it is necessary to relieve the railroads of the hampering and conflicting restrictions placed upon them by combined state and federal regulation. Congress should, therefore, relieve this situation by providing for federal incorporation of the railroads, thus making them responsible to one central federal body and at the same time insuring that the issuance of new securities will be carefully scrutinized, thus furnishing a certain amount of protection to the investors.

One of the most difficult problems with which the railroad managements have had to contend has been that relating to

labor. For the present, might it not be well to consider that the present working conditions and wages are satisfactory, and should be maintained except for certain minor differences that are now in the course of investigation by the boards of adjustment? The one class of men who as a group have not been adequately compensated and who should receive immediate consideration are the minor supervising officials. They are not organized, and the railroads should see that these men who are vital to their interests should be encouraged to put forth renewed efforts. It would seem that without any special attention on the part of Congress, the railroad executives and the labor leaders could come to an agreement concerning the continuance of the present conditions which would be satisfactory to both sides. Manifestly it is going to be impossible to serve the public acceptably if these two interests do not get together on a sound basis and show a disposition to give each other a square deal.

If the railroad executives do as they ought to do and as there are indications that they will do, and extend the hand of comradeship to labor, American labor will have an opportunity for constructive work which has never been offered labor men before in peace times in any country. If, in accepting an offer of consultation and co-operation in working out this railroad problem, labor leaders were to show the broad statesmanlike qualities that Samuel Gompers has shown in his co-operation with the Administration in war work, the benefits both to labor and to the public will be incalculably great. It is the opportunity of a lifetime for some labor man.

There are other advance steps that must be taken, but which might well be postponed (so far as action by Congress is concerned) to give the railroad managers an opportunity of trying to work them out on a practical basis before passing such legislation as may be necessary to insure these methods being continued and more generally applied. While it is true that many of these things are prevented by the application of the Sherman law, it would seem that this act could be set aside in so far as it applies to the railroads, in those respects which prevent the joint use of terminals, the pooling of freight car equipment, and other features of unified operation, which are desirable and will not stand in the way of such competition as may be desirable in the interests of giving the best possible service to the shippers.

Finally, there is a class of legislation that has been proposed, the practicable results of which are questionable in the minds of many people and which it might be well to postpone for some considerable time, with the idea of making extended studies and experiments. This might include features of which, although they may be deemed necessary and advisable from certain standpoints, are more or less theoretical or idealistic, and will require such radical changes that it will be wise to defer them until some of the factors above-mentioned may be worked out to a satisfactory conclusion.

The newspapers generally are lamenting the fact that the railroad problem is in the hands of politicians and that it will be solved on the basis of political expediency. While to a certain extent this may be true, in a larger way it must be recognized that a new era has dawned and that the business men throughout the land have indicated in no uncertain way that they propose to have this question settled on good sound business principles. This is shown by the resolutions that have been passed by various commercial organizations and particularly by the action that was taken at the Reconstruction Conference at Atlantic City two weeks ago, which was held under the auspices of the Chamber of Commerce of the United States. The railroad committee of the Chamber of Commerce of the United States is making a very thorough investigation of the transportation problem and proposes to bring the facts which are developed by this investigation before its entire constituency, which includes business men throughout the land.

It must not be forgotten also that the business papers which have done remarkable work in helping the government and the industries during the war and which have taken a larger place in American industry and business than they ever before thought of occupying, will doubtless see that this question and other questions affecting business are considered from the standpoint of economics rather than politics. It was the business papers that were largely responsible for the final passing of the Webb bill and it is a significant fact that the editors of these papers are watching the developments in the transportation situation very closely. The newspapers of the country are also following developments critically. All these factors combined should insure the most careful and unselfish attention on the part of Congress.

Why Not Order New Equipment?

(Q. QUESTION.) Do the railroads need new locomotives? (ANSWER.) Yes, surely. The statement has been made in some quarters that the present power has handled the heaviest traffic that the railroads of this country have ever had to carry and that now that war traffic has fallen off, there is a surplus of power. Also that many locomotives are in good repair and white-leaded ready for any emergency. It must be remembered, however, that a very large proportion of these locomotives are old and cannot be operated economically. Moreover, if we were to have another hard winter they would quickly be put out of business or could not be operated to advantage because they are outgrown and have not sufficient reserve capacity. If machinery of this kind were owned by an industrial concern, it would be scrapped and replaced by up-to-date tools, with the result that the operating charges would be so greatly reduced per unit of work performed that the new investment would be fully justified.

(Q.) Should the Railroad Administration order new locomotives at this time?

(A.) Yes. For two reasons. First, they will be badly needed next year. Second, it will promote the general prosperity of the country. At this time, other departments of the government are allowing work to be continued on material that was ordered for war purposes and will never be used; they are doing this solely in order to make it possible to bridge over the period from war to peace conditions, so as not to too greatly disturb industry. The locomotives that will be ordered will serve a useful purpose and will be a big factor in solving the industrial problem. If the railway supply industry, which has surely done its part in helping to make war supplies, should be forced greatly to reduce its output at this time or stop work altogether, a large number of men will be thrown out of work and places cannot be made for the boys who are coming back from the other side. It must not be forgotten that the railway supply industries employ about as many men as we now have in service on the other side. Moreover, the number of the railway supply industry employees who have families depending upon them is, of course, far greater because a large proportion of the men in service do not have dependents.

(Q.) What excuse has the Railroad Administration for not ordering locomotives and cars at this time?

(A.) Because it says the railway corporations will not pay for them.

(Q.) Why will the railroad corporations not pay for this equipment?

(A.) Because it is only a question of time when the railroads will be returned to private management and the corporations do not care to be saddled with a lot of so-called standard equipment that will be a burden to them in the future because it is not suited to their peculiar conditions and cannot be operated efficiently and economically.

(Q.) How about the prices for this equipment?

(A.) Neither the government nor the railroads wish to pay war prices for it. On the other hand, the Administration and business men generally insist that the present wage scales be continued. There is little possibility of any great decreases in prices for a long time to come. Inasmuch as good wages and plenty of business are necessary for the public welfare, it would seem that some arrangement could be made whereby the government would bear a fair proportion of the increased prices in order to promote business prosperity. If all sorts of public buildings and public improvements are to be authorized under the present scale of high prices in order to provide work for everybody, why is it not just as fair to promote the building of railroad equipment, which is not only necessary, but is vital to the continued prosperity and development of the nation?

(Q.) Is there a solution to this deadlock?

(A.) Yes. If the railroad corporations can be granted some financial assistance and if they are allowed to order the equipment that conforms to their own individual standards, they will undoubtedly be willing to do so, particularly if they are impressed with the necessity of helping to bridge over the present industrial crisis. They have responded loyally and patriotically in the past; undoubtedly they will be glad to do so again.

(Q.) Is there any precedent for granting the railroads permission to order other than standard equipment?

(A.) Yes. The Virginian, Baltimore & Ohio, Philadelphia & Reading and Boston & Maine have been granted such permission.

(Q.) Is Congress interested in the prosperity of this country? (A.) Yes.

(Q.) Has it any influence with the Railroad Administration? (A.) Yes. Particularly now that the war is closed and autocratic methods which were necessary under war conditions are being discarded.

(Q.) How can Congress be made to help in this matter?

(A.) If the railroad men and railway supply men will explain the situation clearly to the congressmen from their particular districts, someone will surely see the light.

New Books

Investments in Latin America and the British West Indies. Special Agents' Series No. 156 of the Bureau of Foreign and Domestic Commerce. Bound in paper, 544 pages. To be obtained through the Superintendent of Documents, Government Printing Office, Washington, or the district and co-operative officers of the Bureau of Foreign and Domestic Commerce. Price, 50 cents.

The Department of Commerce in this report calls attention to the great opportunities that exist for investment in Latin-America in the further development of railroads and public utilities, in agriculture, etc. Investment of surplus capital is urged as a means of assuring American manufacturers and exporters a suitable share of South American trade. It has been apparent in the past, the report emphasizes, in South America and elsewhere that the nations that supply the capital to develop the resources of a region also supply the equipment needed for such development.

The author of the report, Frederic N. Halsey, of New York, a trade commissioner for the Bureau of Foreign and Domestic Commerce, describes in detail the various fields that are open to investors, and also outlines the extent to which European capital is already invested. Among other things he goes into great detail concerning the development and present status of the railroads of each of the countries in question and shows how each railroad company has been constructed and financed and where its stocks and bonds stand as investments. A map of the South American railroads is appended.

Letters to the Editor

What Are His Motives?

ROCHESTER, N. Y.

TO THE EDITOR:

After reading the reasons, as set forth by President Wilson, for the relinquishment of the railroads from government control and the problems that arise for adjustment and future supervision, the proposal made by Mr. McAdoo that the government be given five more years to control the destinies of transportation companies gives cause for serious reflection.

Thoughtful persons cannot help but admire the attitude these transportation companies have assumed under government control. They have been our second line of defense. They have contributed in no small measure to the numbers "over there," to the detriment of themselves. Officials have labored early and late, wrestling with their own problems, and these problems have been numerous. They have co-operated in every way possible, and they, the carriers themselves, and the men in their employ have certainly helped to win this victory.

The shipper and the traveler have been seriously inconvenienced, but I think they, too, have realized the situation and have made the best of it. The question is, how long will they stand the existing situation? Mr. McAdoo in his suggestion for assuming control of the railroads for five more years hold forth no improvement over existing conditions to help solve this puzzle.

We admit that in the past the railroads adopted certain measures which were not just or fair, rebates and discriminations, though at the time they were followed they were not unlawful. We have witnessed an era of regulation which almost stifled the growth of these important arteries of commerce.

In view of all this, is it not now the time to wipe off the slate and start clean? The railroads have learned a lot, and so has the public. They have witnessed the government put into effect and carry out just what so many of our managers wished in years gone by, and have seen the benefit gained therefrom. The railroads have made this country, and the success of both is dependent on the other.

To my mind, there is only one way to settle this matter—to return the carriers to their rightful owners and to allow them the same privileges as "Uncle Sam," for if it is all right for "Uncle Sam" to do it, why not for the carriers themselves. Strengthen our Interstate Commerce Commission in numbers and require that at least 50 per cent of them be practical railroad men, and do away with our state commissions so far as they affect the steam railroads or those who do intra-state business only; but have it understood that if the railroads cannot and will not play fair, then "Uncle Sam" not only can, but will, step in and assume the control.

In this hour of victory, let us assume the attitude of President Lincoln—"With malice toward none, with charity for all." Let Washington set the example for the rest of us to follow and give those railroads who have earned it a fair chance and a square deal.

And, finally, is it not strange that the man to suggest this plan of five-year control, should be the one who has so recently resigned his office? Casting no reflections on Mr. McAdoo, what are his motives, and why should he suggest this plan?

The reason has not yet become apparent.

CHARLES E. FISHER.

Railroad Policy Discussed by Walker D. Hines

Assistant to McAdoo Explains Reasons for Desiring Five-Year Extension of Federal Control

DIRECTOR GENERAL MCADOO'S REASONS for proposing an extension of government control of the railroads for five years were explained by Walker D. Hines, assistant director general of railroads, on December 12, at Washington, at the transportation conference called by the railroad committee of the Chamber of Commerce of the United States. Mr. Hines spoke for Mr. McAdoo, who was unable to be present, as follows:

I am here simply to be of any assistance that I can in placing the situation before you and not for the purpose of presenting an argument or an appeal for one course rather than for another. I think you gentlemen, as fully as any set of gentlemen in the country, are in a position to make up your own minds what your policy ought to be and that it is not helpful or desirable for me to argue for one rather than another, but there are certain facts relating to this situation with which the director general is necessarily closely in contact and which he sees very clearly, and being associated with him as I am I have the advantage also of seeing these facts plainly, and I want to present these facts to you so that you may take advantage of them in reaching your conclusions.

Is Remedial Legislation Possible?

I think it is fair to say that a great deal of the business thought of the country is turning towards the idea that the railroads ought to be turned back promptly to private management by the railroad companies with remedial legislation to remove the difficulties under which the business world appreciates the railroads labored under the private control that existed up to December 28, 1917. This plan of a prompt turning back with remedial legislation has been suggested by the railroad executives and, I believe, in a resolution adopted by a meeting of the United States Chamber of Commerce at Atlantic City, and has been suggested in various other quarters representing the sound business thought of the country. It is a most natural suggestion, and it is the remedy to which the business people of the country would be inclined to turn. But what I want to present to you in the first place, is the plain, practical question: Is it possible at this time to get remedial legislation? I think that must underlie a consideration of that proposition because there is no advantage in talking about turning back the railroads with remedial legislation if the conditions are such as to make the remedial legislation impossible.

In facing that question I think we will all concede that there is no crystallization of the thought of the country as to what is the proper remedial legislation. I have given a great deal of thought to the subject and have tried to formulate in my own mind the remedies that ought to be adopted to provide adequate protection for all the elements that are involved in the railroad business—the public which is to be served, the labor which is to be adequately compensated and properly considered in its relations to the operations, and the investors who furnish the capital—and what has impressed me in my thought on this matter is that every point that comes up bristles with doubts and differences of opinion. Everything is debatable.

Take some of the leading points that must be considered in a scheme of remedial legislation. Take the question as to the extent to which there shall be state control or whether there shall be any state control in respect of railroad rates or railroad improvements or railroad service, and we find there are the most pronounced differences of opinion on that sub-

ject. The National Association of Railroad Commissioners, at its recent meeting in Washington, made it very clear that it was opposed to the elimination of state control. A great many other interests affected are strongly in favor of eliminating that control. So on that fundamental point there is a clear-cut issue in respect of which I do not understand the public sentiment has crystallized and concerning which there would be a prolonged debate. Indeed the point is so important and so far-reaching that it would need a prolonged and thorough discussion before a decision would be reached which could be satisfactory to the country.

Take the other question of over-capitalization. A great many people who have given prolonged attention to this subject believe that one of the insurmountable obstacles to satisfactory regulation in the past has been the settled suspicion on the part of a large part of the shipping public and on the part of labor that railroads were heavily over-capitalized, and that all the showings made by the railroad companies as to need for additional revenue were based on false premises because they were based on over-capitalization.

There has been no crystallization of sentiment on the subject, though there have been a great many charges and counter charges in regard to it. I do not believe there can be any effective remedial legislation which does not deal with and dispose of that subject that will confront the Congress on the threshold, in my opinion, of any consideration of a plan for permanent solution of the railroad problem. If it is decided that the question must be dealt with, the question as to how it is to be dealt with remains for solution, and closely connected with that is the question of valuation of the railroads.

A valuation has already been provided for, and is well under way, but has not yet been completed, and there is nothing indicating how the valuation, when completed, shall be applied in dealing with this problem of over-capitalization, although evidently it will have an important relation to that subject.

Take the question of federal incorporation of the railroads. There are a great many people who have studied this subject carefully who are firmly convinced that there can be no adequate solution of private operation without federal incorporation as a substitute for state incorporation. There again we have a question, fundamental in character, which must be met and disposed of and which cannot be disposed of without prolonged consideration.

There is the further question whether it is expedient to continue to have in this country say 100 different railroad companies conducting the public service. At present there are about 180 railroads which are known as Class 1 railroads, that is, which have operating revenues of \$1,000,000 or more per year. Perhaps 100 of them are of definite importance. Perhaps 50 of them would be regarded as railroads of such importance that they could not be eliminated in any plan which contemplated the preservation of the principal railroad organizations in the country. It has been suggested in many quarters that that system of numerous railroads whose lines interlace as the existing railroad lines do should be replaced by a system of a few regional railroad companies upon which there would be representation perhaps of the public as well as of the owners, the idea being that each of those regional railroad companies would own and operate all the railroads in a given region of the country. But the questions relating to that subject are so numerous and per-

plexing that it is confusing to try even to list them. The question of how to bring about the transition of the present ownership by many corporations with a remarkable variety of different capital structures, to new organizations with a new scheme of capitalization, and how to effect the exchange of the securities of the new company for the securities of the old, and as to the basis of the capitalization and as to the basis of the representation upon the board of directors, are questions of the very greatest importance which cannot be decided without the most thorough consideration.

Then that involves the question of the application of the anti-trust laws. Shall the anti-trust laws continue to apply to the railroads as they have in the past? In dealing with that question the attitude of the public must be considered. The public has appeared to have very definite views in the past and yet the question arises whether those views ought to continue to be applied to railroad operation if private operation is to be resumed. But you can readily see that it is a question which cannot be disposed of in a short time.

These are some of the leading problems which will be involved in any proposal for remedial legislation to admit of satisfactory operation under private auspices. I want to leave with you gentlemen the question whether it is possible for this Congress at this time to begin to conduct and complete the necessary investigation on those problems and report bills in the two houses dealing with those problems and have those bills adopted and passed and the differences of the two houses composed, and have a bill emerge which will represent the remedial legislation which is practicable and desirable in order to deal with railroad operation under private management. I don't believe this is going to be practicable in this Congress, which has a little over two working months left, when you take into consideration the necessary interruption of business on account of the Christmas holidays. If it is possible, then, of course, it remains open to endeavor to formulate a plan and get it adopted, but if the director general is right, and undoubtedly he is right, in his conviction that it is not possible, then the question is what are the other courses that are possible, or even theoretically possible?

Should the Roads Be Retained for 21 Months?

The next course that might be said to be possible would be for the President to keep the railroads under federal control up to the maximum limit authorized by the federal control act, which is 21 months after the declaration of peace. That is a subject upon which I think the director general is peculiarly qualified to speak and carry conviction in what he says, because in the last year he has been immediately in touch with the problem of government control, he knows the conditions of the railroad organizations, and he knows what is necessary in order to conduct the government operations of the railroads. I don't think I can do better in discussing that point than to read a brief extract from the letter which the director general sent yesterday to the chairmen of the Senate and House committees on interstate commerce:

As to shortness of time, it is clear to me that the railroads cannot be successfully operated under federal control during the next two years, in the face of an automatic transfer to private control at the end of that time or of an earlier relinquishment by proclamation of the President. Every month that passes will bring more clearly to the minds of the officers and employees the fundamental change in management that is impending, and the question as to what that change means to the individual. It is against human nature that there can be complete and single-minded attention to duty under such difficult circumstances. This will be especially true on account of the inevitable dissension and discontent now shown. Already this discussion is in full swing and its reaction on officers and employees cannot be consistent with the complete concentration upon their daily duties. State railroad commissions, railroad security holders, railroad executives, shippers' organizations and other interests are naturally and properly discussing the subject and proposing various solutions. However desirable the discussion is for the crystallization of public sentiment, it cannot result otherwise than to produce a state of uncertainty and ferment among the vast army of railroad officers and employees who will inevitably feel that they have a right to know the truth.

No business in the United States so imperatively requires disciplined organization and composed conditions of operation, for officials as well as for employees, as the railroad business. Not only does the safety of the lives of millions of passengers depend upon such disciplined and efficient organization, but the commerce of the country as well. To keep this vast army of officers and employees in a state of uncertainties and ferment for

a period of two years would be harmful in the highest degree to the public interest. It would be impossible to prevent a serious impairment of the morale of the railroad organizations.

I don't think that condition can be too strongly brought before thoughtful men who are trying to find a solution to this problem. It is a condition which will be cumulative in its manifestation. If the President should enter upon the policy of holding the railroads for the 21 months' period these difficulties and doubts would pile up on each other as every month went by. That would be true under any circumstances, even if there were the state of the greatest possible composure in the country, because no man can help thinking about what his personal status is and about what it is going to be, and when a stop-watch is in that way held on government control and the definite date at which the railroads are to be turned back to private control is coming along so rapidly, every man is going to wonder about what is going to happen to him when that time comes. He is going to wonder whether his career will be with the old railroad corporation or whether it is going to be with the new corporation or whether it is going to be with the government. It is no reflection on a man, because it would be against human nature if it were not true.

But we are not going to have a period of that absolute political composure. The period to a large extent will be coincident with a presidential campaign. There will be the conditions of political agitation in which the railroad question will be in issue and the conduct of these operations will be in issue. Under these circumstances, and from my contact with these men who are running the railroads, it seems to me perfectly clear that this question of morale is going to be put in the most serious jeopardy if the President should enter upon the policy of keeping the railroads for the 21 months' period without any assurance that there will be any solution either during that time or immediately at the end of that time, so that we would have the situation of a definite conviction that there will be a change of management at the end of the 21 months' period, and then in all probability that another change of management will take place at such indefinite period thereafter as remedial legislation is secured. Under these circumstances it is evident from the President's message to Congress that he has reached the conclusion, and from the director general's letter, that he has reached the conclusion that it is far better for the morale of the railroads to turn them back immediately to private control than to hold them in that condition of suspense and uncertainty for 21 months after the war.

The Problem of Capital Expenditures

But there is another phase of the very greatest importance. Everyone who has studied this subject realizes that the railroads of this country are not complete and never can be completed. The railroads must continue to grow to meet the demands of traffic and increasing demands of the public for adequate service. Therefore the question of capital expenditures is one of paramount importance.

Generally speaking, all the railroads in this country ought to have the most thoughtful continuous study and planning in order to bring them up so they will be abreast of the demands of the public and in order to keep them abreast of the demands of the public. How are we situated in that matter with a date fixed 21 months after peace for the railroads to go back to private control? In the first place, we have the consideration that no improvement of very great importance can be planned and brought to completion within much less than two years, and perhaps would require longer. It is evident, therefore, that the continuance of that sort of control, subject to that sort of termination, means practical paralysis of the development of additional railroad facilities. The railroad administration cannot satisfactorily plan to carry out improvements to meet peace conditions when, by the

time those improvements are completed, the railroads presumably will go back into other hands, and perhaps under other conditions. The railroad corporations in the nature of things cannot be expected to give their hearty co-operation in working out a scheme of improvements which will not be completed in time for the railroad administration, which plans them, to use them, and which will be completed at the time there may be a change back to private management when the improvements will seem to be less appropriate than under a unified form of control. To my mind that embarrassment of carrying out any comprehensive program of capital expenditures is of itself a sufficient reason for reaching the conclusion that as between the two courses of holding the railroads for 21 months and of letting them go promptly, the latter is the course to adopt, so that the railroad companies can take hold of this matter of carrying out improvements and use their own judgment as to what shall be done rather than have a situation where nobody is free to use judgment on the subject except the negative judgment of doing nothing.

But when we come to the matter of necessary and urgent capital expenditures, things that must be done and obviously ought to be done, the question is how they can be done satisfactorily by the railroad administration, with this limit staring it in the face, and also the question as to where the money is to come from to do them. It will require an additional appropriation from Congress if federal control is continued for any considerable part of the 21 months. Conditions are not favorable for getting a satisfactory appropriation, it seems to me, either in this Congress or the next. We don't know exactly what we can do, so it is hard to outline what is needed; it is hard to fix the amount of the appropriation—if you fix it large enough to meet all needs it may be so large as to make Congress unwilling to lend it—if you fix it so small as to satisfy Congress, it may be so small as to hamper you throughout the period. This question as to capital expenditures, it seems to me, is of itself a sufficient reason for refraining from holding on to the railroads for 21 months, and for adopting instead the plan of a very early return. That is the plan that is emphasized in the director general's letter as the thing that must be done, and also is what the President indicated in his message.

The director general emphasized in his letters that that must be done unless, and here is the only alternative the director general is able to see and the one he presents for consideration, that federal control be extended for five years with an adequate provision for making these capital expenditures, thereby continuing railroad operation under conditions which will not affect the morale unfavorably, which will restore a satisfactory degree of confidence in a reasonable permanency of management, and which will enable important improvements to go forward without interruption until such time as the country will have had an opportunity to crystallize its thoughts as to what ought to be done with this railroad problem as a permanent solution.

The thing above all that I want to emphasize to you gentlemen is that the real choice is between those two propositions. Undoubtedly a great many people whose judgment is sound on this subject would far prefer to turn the railroads back with adequate remedial legislation. But that is not a practicable thing. The 21 months' solution is not a practicable thing, and will simply pile up conditions which are unsatisfactory now and which would grow increasingly unsatisfactory in the 21 months, so that the practical choice is this: Is it better for the railroads to go back to private control promptly under the old conditions or is it better to have a five-year extension of the present control with provision for the continuing improvement of the properties, and with conditions which will make for a satisfactory morale in the railroad organization. The director general, in his letter to

the chairmen of the committees, summarized that issue in this way. He said:

Those who may oppose an extension of five years should face the situation squarely and acknowledge that they prefer the immediate return of the railroads to private control under the old conditions without remedial legislation. It is idle to talk of a return to private control under legislation which will cure the defects of the existing laws. There is neither time nor opportunity for such legislation at present. It is impossible and hopeless for the government to attempt the operation of the railroads for twenty-one months after peace under the present law. Therefore, the country should squarely face the condition that the railroads must promptly go back into private control with all existing legal difficulties unless the only practical alternative, viz., an extension of time, is promptly granted.

As I view this situation, we are inevitably forced to a choice between those two alternatives because no others are available as a practical matter. Now, as between those two alternatives, I do not wish to argue for one rather than the other, but, as I said, I feel when the conditions as we see them are presented to you by us we have done all we can helpfully do, and I don't want to argue for or against either of those methods.

Advantages of Federal Control

However, I do want to make two or three other suggestions which helped to make the matter clear in my mind, and I have thought they might be helpful to you gentlemen also, and that is, when considering the subject of a period of federal control under peace conditions it is important not to attribute to federal control under those conditions the burdensome requirements which were incidental to war conditions. Every country at war in Europe was subjected to vastly greater disturbance in transportation conditions during the war than we were. In fact, our inconveniences in transportation were luxuries beyond imagination as compared with the transportation inconveniences which the war brought on Europe, and yet the inconveniences which existed here were largely inconveniences incident to war rather than those incident to federal control, and but for federal control those inconveniences would have been worse than they were, in my opinion. I think the very natural restiveness the country has shown as to the inconveniences of the last 12 months has operated in an unconscious sort of way to constitute in the minds of many of the public the picture of federal control, whereas it ought to constitute the picture of war conditions and war necessities. So that what the choice, as I look at it as now presented, is not between the sort of burdensome requirements that existed the last year on the one hand and on the other the return to private control, but it is a form of federal control adapted to peace conditions of which there has been so far no test on the one hand, and return to private control on the other hand.

Looking at the private control, I think it is important for us to try to remember what has happened in the past, and not look at private control as something in the abstract. Take for example the fall of 1916. I made a trip out through the West. Through the eastern half of Kansas, the side tracks were filled with loaded freight cars destined to the Atlantic seaboard that could not move beyond that point because of the congestion of freight at all points, Chicago and east. There was almost a paralysis of transportation. There was the greatest waste of the available car supply, the greatest impediment to the movement of traffic, and as you came east and passed the great railroad terminals, you saw a perfect sea of freight cars that could not be gotten rid of. It was hard to handle them because of the great quantity, it was hard to get trains in and out of the yards. Those conditions were due to a lack of unified control of railroad operation. It may be they can be avoided under private management, but we then had the condition of private management, and every inducement on the part of the railroads to avoid that congestion, and yet we had the congestion.

Now take this fall: there has been no such condition. The railroad yards have been free except where special and temporary conditions have brought about temporary congestion,

but the contrast now as compared with then is of the most striking character. Certainly unified control does admit and has produced in fact a movement of freight instead of a congestion of freight. It has enabled the railroad administration to apply the plan of controlling the traffic at the source, and of preventing the loading of traffic when it cannot be gotten rid of. Under private management and under the competitive conditions which seemed inseparable from private control in the past when the railroads were not free to make a binding agreement to remove those conditions, generally speaking, when a shipper was given a car, it could be loaded and thrown into the channel of traffic whether it could reach or be disposed of at destination or not, and that is the way the difficulties arose. Even under war conditions, and with the imperative necessity of giving preference to a vast amount of war traffic, congestion has been avoided. Undoubtedly a great many shippers have been interfered with because of this condition, but if they had been able to ship at the time they wanted to, the transportation condition of the country as a whole would have been vastly worse. This is a large matter which affects the whole country. It affects the economy of transportation and the economy of industry whether the transportation is rendered almost impracticable by congestion, which seems to be the logical outcome of competitive conditions or whether it is better to have a unified plan which will avoid these conditions.

Looking at the labor situation, we can recall the conditions which existed prior to federal control—the inability of the railroad companies and the representatives of labor to agree on a program, and the menace that existed during so much of the time as to what was going to happen to transportation if there was no agreement. In the absence of some remedial legislation the question is whether we would go back immediately to a corresponding menace if private control would be resumed at the present time. This is a very important thing to consider.

Looking at the matter from the investor's standpoint, the conditions toward the end of private control were most embarrassing from the standpoint of the investors. They felt their condition was exceedingly critical and if federal control had not supervened, and especially in view of the unprecedented winter, it is obvious that many railroad companies which ordinarily could meet their requirements would have gone into bankruptcy. Now if the railroad companies go back into private control without remedial legislation, a question to consider is whether there will be a repetition of these conditions of uncertainty and embarrassment due to the many different and uncontrollable factors which seemed to be operating together in the reduction of net income.

I think these considerations are useful in dealing with this question as to what is the better choice as between an immediate return to private management without remedial legislation on the one hand and an extension of federal control for a period of five years on the other hand. The difficulties as to shipping in the large sense of getting traffic of the country moved to destination, the difficulties as to labor, the difficulties as to investors, I think all need to be carefully weighed. I believe when I have laid before you my own views of the facts bearing on the situation, I have rendered what service I can without attempting to urge you to adopt one course rather than another.

Replies to Questions

At the conclusion of Mr. Hines' address, he was asked to reply to questions. The questions and answers follow:

Q. What, in your opinion, is the amount of debt or debts of the railroads today to the government? In what position would they be to meet those debts if returned at once? Would they be able to finance themselves for additions and betterments after taking care of government debts?

A. I don't see that the answer to this question enlightens the issue as I see it, because whatever difficulty the railroads will have in dealing with that situation now, they will have in increased measure 21 months after the declaration of peace. The debts will be larger and it seems to me the difficulties will be greater, and the railroad organizations will be in less satisfactory condition to be drawn together to resume the private operation. As to the precise thing you put before me, while I don't think, however it is answered, it has a bearing upon the choice between a prompt return and an extension of time, I take it the policy of the railroad administration will be to endeavor to put those obligations on such a basis that they will not have to be paid in cash at once. My own opinion is that it can be better taken care of now than if there came an automatic termination 21 months after peace.

Q. As I understand it, there are two propositions advanced; first, letting the railroads go back to private control immediately, or second, an extension of federal control for five years. Suppose Congress should decide during the next two months to take over the railroads (which if it did would set at rest the minds of the public). What objections do you see to that course being pursued?

A. I understand your suggestion is that Congress would decide on outright government ownership and operation. Of course, if Congress decides on that course, that will solve the whole thing, and if Congress wants to do it, I have no objection to offer to it. I did not mention that in the instances I spoke of, but my thought about it is that, considering the far-reaching character of that step and the definite cleavage of sentiment there seems to be on it, Congress would be unable to reach that point in two months' discussion. However, if it did, that, of course, would solve the whole question.

Q. Mr. Hines' objection to the continuance of the present plan is based primarily on these two points—that we can't have the proper capital extensions, and will also have embarrassment on account of the morale of the organization. Does Mr. Hines contemplate during the five-year extension effectual completion of the program of capital extensions so that they will all virtually stop so far as the government is concerned at the expiration of the five years, and if on the other hand the program of capital extension and provision for necessary facilities is a continuous one, would not in some measure the very same objection and difficulties which were contemplated by Mr. Hines as to the 21-month limit, pertain also to the five-year limit? Would there not be very much the same kind of a danger with reference to the morale of the railways so far as all those methods and extensions are concerned which might be discussed as necessary within one or two years before the five-year limit and which would thereupon follow? I should like to have Mr. Hines explain to us clearly as to why the five-year limit would do away with all the difficulties which are no doubt connected with the 21-month limit.

A. I have a perfectly clear conception in my own mind as to that distinction and, speaking purely personally, it seems to me the explanation is convincing. My view is that if a five-year extension be granted this would be the situation: that this subject, upon which the thought of the country has not crystallized, will crystallize as the result of the ensuing discussion in the next two years. I should think inevitably it would be a prominent subject in the presidential campaign as to how it ought to be settled, and I should say that within one year after the new President and the new Congress came in, which will come in representing the crystallization of the thought of the country, a permanent solution of the question would be reached, so that by the time we get near the end of federal control as we are now, we will have had two years' discussion by the public and one year's discussion

by the President and Congress, and that then a solution could be adopted which might very readily result in the immediate transfer to the new conditions, whatever they are. The difference is that now we are at the beginning of the two-year period without a possibility of preparation, and then we would be at the beginning of the two-year period with a three-year period of thorough preparation.

Q. The alternative, as I understand, is a speedy reversion to private control without remedial legislation or the continuance of federal control for five years. Why isn't it a possibility that there should be a speedy reversion and speedy legislation developed immediately after the reversion?

A. It seems to me if that result follows it will be a more satisfactory solution than I hope for, but that does not affect a decision now on what needs to be done at the moment. The question now is what shall be done, and it seems to me that we ought all to face it on the theory that if there is not an extension of time there must be an immediate relinquishment. Now if there is that relinquishment and then there ensues very promptly a permanent solution, that is a thing to be hoped for, but it does not have any effect on our decision as between extension or relinquishment. I think it is possible that that may come about. On the other hand it may be suggested that control ought to be continued in the hope that in the 21 months there would be such a solution; but the difficulty about that is the complete uncertainty on that proposition. Every month that goes by makes the uncertainty greater and makes the whole state of mind of the staff and employees more uncertain, and all the time we are running against this impasse in the matter of improvements. Coming back to the precise question, I think it would help to ameliorate the situation if immediately after relinquishment there should be a permanent solution adopted. However, that does not affect, as I see it, the necessity for the prompt relinquishment.

Q. The director general suggests that provision be made for a capital expenditure of around \$500,000,000 per year, perhaps more, for betterments or on capital account. Would not the difficulties of financing, which would confront the railroads if relinquished now, be very greatly increased at the end of five years should the government have expended on capital account five or more hundred million dollars per year for the period of five years?

A. The situation is that if the roads go back into private control within the next few months, there being no extension of time, they have to care for the advances already made and it will be the desire of the government to ameliorate that condition as far as practicable, so that they will not be confronted with an immediate payment. If they are held 21 months and go back also without remedial legislation, they will have a great deal more difficulty in financing and will still be subject to all the embarrassments which confronted the investors at the beginning of federal control. My thought is that before the end of the five-year period there will have come about a solution of this problem, and a definite basis will have been established to sustain railroad credit. If the railroads are taken over by the government the debt will be taken care of in that way. If a new scheme of private ownership is formulated, the financing of all these obligations can be done in the light of that improved condition, so that if we have this extension of time with opportunity for a permanent solution before the end of that time I think the corporations will be better able to take care of the capital expenditures made during that period than they will be if they go back without a solution and without an improvement of the basis of their credit.

Q. If a definite program were laid out that trended admittedly toward private control or admittedly toward permanent government ownership then operations could be shaped to that end. But you are not carrying out a program toward a final plan which the country would accept as desir-

able, so will not the termination of the period bring up again at that time all the questions that now arise? I understand the difficulty of making a statement at this time, because the public opinion has not crystallized, but would not all of the operations during the extended period of five years be more or less in doubt unless there was a definite end to which we are driving?

A. In answer to your question, in the first place, that is, to the extent that your position is well taken, of course it is an argument for the immediate relinquishment of the railroads. I don't think, however, that your position altogether covers the case, for this reason. As to the matter of morale of the organization, as I have said before, I think a solution will have taken place so much in advance of the end of the five-year period that there would be avoided the intense uncertainty existing during the 21 months' period. As to capital expenditures, a very large part will be in connection with improved terminals. I believe we can fairly assume that the opinion of the American public, whether it wants government ownership or private ownership, does want consolidated terminals. The public doesn't want the waste of capital and space and the waste of time involved in having several railroad systems have unnecessarily separated terminals in great cities. A very large part of these capital expenditures for terminals which ought to be provided could be provided without in any way having any bearing one way or other on the question of the ultimate solution. Another important part of capital expenditures is for the improvement of the great main lines to increase their capacity and efficiency; these, too, could be made equally well whether private ownership or public ownership be the outcome. As to capital expenditures, therefore, I do not believe the absence at the outset of a definite decision as to the ultimate decision would create difficulty on the question of the morale of the organization. I think the difference is that now we are without time for preparation and are in a condition where the uncertain period of not exceeding two years of control will be a period of discussion and ferment and uncertainty and with a five-year extension there will be certainty and time for preparation and composure and for a permanent solution.

Q. Isn't the question that of who is going to carry the burden of management during the period of disadvantage—that somebody's got to carry it. Whoever manages the railroads during the period of uncertainty must manage them under a disadvantage, and you picture the disadvantage of private management and you picture the disadvantage of government management. What will lend itself best to clear thinking and an ultimate right settlement, whether they are held by the government on the one hand or by private owners on the other; in other words, the voting public is going to hold the management responsible for whatever goes wrong. What will lend itself best to clear public thinking and whether or not, if the government does carry this burden, anybody can think clearly about it. The public thinks that the railroad is responsible for the transportation disturbances due to the war. Will they not think they are responsible for every kind of disturbance growing out of this disadvantage?

A. It seems to me this is a very pertinent question bearing on which of these two courses is the better. There are two elements involved. One is the question of service rendered by the railroads to the public and the other the question of clear thinking on the ultimate solution of the problem. Relative to service, the question is whether the railroads going back under existing conditions without any remedial legislation will be able to give as good service and the public is greatly interested in that. I do not believe service under federal control can be satisfactory to the public during the dubious and rapidly vanishing 21 months, in the midst of constant speculation as to what is so soon to happen to the management and therefore to the individual, and in the midst

(Including the Names of the Federal and General Managers, the Chief Purchasing Officers, the Chief Mechanical Officers, the Chief Engineers and Their Headquarters)

Supplement No. 2 to the

of December 20, 1918

New England District, J. H. Hustis, District Director, Boston, Mass.

Railroad
New York, Chicago & St. Louis
New York, Ontario & Western
Pere Marquette
Pittsburgh & Shawmut

E. M. Costin	Cincinnati, O.	W. J. Hiner	D. J. Mullen
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Railroad

Atlantic City
Baltimore & New York
Baltimore & Ohio Lines East
Baltimore & Ohio properties and
Piers, Manhattan Island
Baltimore Terminal District
Beverly & L. Erie
Buffalo & Susquehanna
Central of New Jersey
Coal & Coke
Connecting Terminal R. R.
 (Huffalo, N. Y.)
Cumberland & Pennsylvania
Cumberland Valley
Gettysburg & Harrisburg
Hudson & Manhattan
Huntingdon & Broad Top
Jersey Shore Terminal District
Lake Erie & Eastern
Long Island
Monongahela
New York & Long Branch
N. Y., Philadelphia & Norfolk

P. H. Alfred	Detroit, Mich.	W. C. Atherton	J. E. Osmer, 6
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Philadelphia Belt Line (south
of Port Richmond yard)
Philadelphia Terminal District
Port Reading
Staten Island Rapid Transit
Washington Terminal District

West Side Belt
Western Maryland
West Jersey & Seashore
Wheeling Terminal Railroad

M. P.), Wa
N. Y.

Ohio River & Western

N. Y.

Penn Lines West of Pittsburgh

Railroad

Ashland Coal & Iron
Chesapeake & Ohio
Chesapeake & Ohio Northern

P. E. Crowley	New York	G. D. Wright, Jr.	D. R. M.
		G. B. Longtoll	Cleveland, O.

San's Valley & Elkhorn
Virginia-Carolina

Agency	Region	Chief Purchasing	Chief Mechanical
Alabama	1	W. H. Smith	W. H. Smith
Alaska	2	W. H. Smith	W. H. Smith
Arizona	3	W. H. Smith	W. H. Smith
Arkansas	4	W. H. Smith	W. H. Smith
California	5	W. H. Smith	W. H. Smith
Colorado	6	W. H. Smith	W. H. Smith
Connecticut	7	W. H. Smith	W. H. Smith
Delaware	8	W. H. Smith	W. H. Smith
District of Columbia	9	W. H. Smith	W. H. Smith
Florida	10	W. H. Smith	W. H. Smith
Georgia	11	W. H. Smith	W. H. Smith
Hawaii	12	W. H. Smith	W. H. Smith
Idaho	13	W. H. Smith	W. H. Smith
Illinois	14	W. H. Smith	W. H. Smith
Indiana	15	W. H. Smith	W. H. Smith
Iowa	16	W. H. Smith	W. H. Smith
Kansas	17	W. H. Smith	W. H. Smith
Kentucky	18	W. H. Smith	W. H. Smith
Louisiana	19	W. H. Smith	W. H. Smith
Maine	20	W. H. Smith	W. H. Smith
Maryland	21	W. H. Smith	W. H. Smith
Massachusetts	22	W. H. Smith	W. H. Smith
Michigan	23	W. H. Smith	W. H. Smith
Minnesota	24	W. H. Smith	W. H. Smith
Mississippi	25	W. H. Smith	W. H. Smith
Missouri	26	W. H. Smith	W. H. Smith
Montana	27	W. H. Smith	W. H. Smith
Nebraska	28	W. H. Smith	W. H. Smith
Nevada	29	W. H. Smith	W. H. Smith
New Hampshire	30	W. H. Smith	W. H. Smith
New Jersey	31	W. H. Smith	W. H. Smith
New Mexico	32	W. H. Smith	W. H. Smith
New York	33	W. H. Smith	W. H. Smith
North Carolina	34	W. H. Smith	W. H. Smith
North Dakota	35	W. H. Smith	W. H. Smith
Ohio	36	W. H. Smith	W. H. Smith
Oklahoma	37	W. H. Smith	W. H. Smith
Oregon	38	W. H. Smith	W. H. Smith
Pennsylvania	39	W. H. Smith	W. H. Smith
Rhode Island	40	W. H. Smith	W. H. Smith
South Carolina	41	W. H. Smith	W. H. Smith
South Dakota	42	W. H. Smith	W. H. Smith
Tennessee	43	W. H. Smith	W. H. Smith
Texas	44	W. H. Smith	W. H. Smith
Utah	45	W. H. Smith	W. H. Smith
Vermont	46	W. H. Smith	W. H. Smith
Virginia	47	W. H. Smith	W. H. Smith
Washington	48	W. H. Smith	W. H. Smith
West Virginia	49	W. H. Smith	W. H. Smith
Wisconsin	50	W. H. Smith	W. H. Smith
Wyoming	51	W. H. Smith	W. H. Smith

Hicksville & Plaquemine South Hills, Central & Paducah Ky. & Cairo, Ill.	C. H. Coapman	Atlanta, Ga.	F. K. Mays	C. G. Goff, Macon, Ga.
Knoxville & Paducah Knoxville & Paducah Terminal	E. M. Campbell (G. S.)	Chicago	A. C. Mann	R. W. Bell
Kinston & Carolina Louisville & Nashville	J. H. Young	Louisville, Ky.	L. M. Jones	I. W. Sautter
Louisville & St. Louis	W. L. Mapother	Louisville, Ky.	H. L. Sparks	C. P. Gills
Macon, Dublin & Savannah	W. J. Harshan	Norfolk, Va.	J. R. Frick, Macon, Ga.	W. R. Crambo
Mississippi Central	C. M. Kittle	Chicago	H. J. Rouse, De Camp, Hatterburg, Miss.	P. M. Ryan, Hatterburg, Miss.
Mobile & Ohio Nashville Chattanooga & St. Louis	R. V. Taylor W. L. Mapother	Mobile, Ala. Louisville, Ky.	J. J. Turner L. J. Woods, Nashville, Tenn.	J. J. Sullivan, Nashville, Tenn.
New Orleans Great Northern	C. M. Kittle	Chicago	Harvey De Camp, Hatterburg, Miss.	W. W. Heulin, Bogalusa, La.
Norfolk Southern Paducah & Portsmouth	J. H. Young	Norfolk, Va.	L. M. Jones	I. W. Sautter
Rich, Fredericksburg & Potomac St. Louis, Florence (East of Mississippi) & St. Louis	W. D. Duke L. Kramer	Richmond, Va. St. Louis, Mo.	Charles N. C. Hatterburg, Tenn.	Charles N. C. Hatterburg, Tenn.
Seaboard Air Line	W. J. Harshan	Norfolk, Va.	G. E. Scott	C. C. Higgins, Springfield, Mo.
Southern Railroad System	R. H. Coapman	Washington	R. B. Pizagam	H. J. Warren, Portsmouth, N. H.
Southern R.R. in Mississippi	R. V. Taylor	Mobile, Ala.	A. Turner	J. H. Thomas
Tulsa Falls, Ark.	E. M. Campbell	Chicago	R. B. Pizagam	L. Hanner
Tenn. & Carolina Southern	R. H. Coapman	Washington	R. B. Pizagam	L. Hanner
Union Railroad	W. L. Mapother	Washington, D. C.	R. B. Pizagam	L. Hanner
Washington Southern	W. D. Martin (G. S.)	Memphis, Tenn.	S. W. Borge	Union, Tenn.
Western Railroad of Alabama	W. D. Duke (G. M.)	Richmond, Va.	H. J. Rouse	H. J. Warren
Winston-Salem, Southbound	Lynnan Delano	Washington, N. C.	H. J. Rouse	Willard Kells
Yazoo & Mississippi Valley	C. M. Kittle	Chicago	A. C. Mann	H. W. Bell

Rocky Mountain Region				
Federal Manager ²	Headquarters	Chief Purchasing	Chief Mechanical	Chief Engineer
W. J. G.

Engin. Jones & Washin.	H. E. Byram	Chicago	W. A. Linn, Chicago	C. W. Kates, Wells, Mich.
Evansdale & Lake Superior	H. E. Byram	Chicago	W. A. Linn, Chicago	C. W. Kates, Wells, Mich.
Farmers, Grain & Shipping Co.	W. P. Kenney	St. Paul, Minn.	F. A. Bushnell	A. C. Deverell
Fl Dodge, Des Moines & South.	S. G. Strickland	Chicago	G. E. Motz, Boone, Ia.	J. Duncan, Boone Ia
Great Northern Railroad	W. P. Kenney	St. Paul, Minn.	F. A. Bushnell	A. C. Deverell
Green Bay & Western	F. B. Seymour (GM)	Green Bay, Wis.	H. E. Dutton	C. W. Dieman

*Where chief operating officer has a title other than federal manager, it is indicated by initials, as general manager. G. M.

(T. M.), etc

of the ferment and uncertainty and in the face of the practical paralysis of any improvement program. I believe private management would be relieved of many of these disadvantages and by comparison would give the public a better service during this ambiguous period. The other question is which way it seems to me on the second question that the extension gives the opportunity for a test. The public has had a long test of private management. It has had no test of federal control; will help the public to think more clearly on the proposition under peace conditions, and the public would be more enlightened if there were a period of unified control under conditions of composure and reasonable continuity to contrast with a long experience of private control. The public would have a larger asset in the way of clear thinking to have the two tests, one the long experience with multimodal private management and the other an experience of unified control under peace conditions.

Q. Suppose the railroads were turned back immediately to private ownership. That would terminate the machinery that has been set up by the railroad administration for adjustment of hours and wages. The private corporation will be at liberty to repudiate any of those understandings made by the railroad administration for the government of wages and working conditions and during this reconstruction period—changing from a war basis to a peace basis—might it not bring about a condition of dissatisfaction upon these railroads to turn them back immediately under those conditions? That could not possibly exist if there was a five-year period to absorb the men that return.

A. The labor problem is one of the great problems that

we have to consider. We have got to look at what was before federal control and what will be when it terminates. When it terminates, it will be a question then for each corporation to decide as to what it will do with these bases which have been established. Undoubtedly there will be a basis there for uncertainty which would not exist if the five-year extension were granted.

Q. Is it absolutely necessary to put the question of whether the railroads will be returned at once (would it be tomorrow, three months from now or a year from now) or five years from now as strongly as Mr. Hines puts it? Why not permit the country now, under the pressure existing of inconvenient conditions and disadvantages, to develop the situation?

A. The question has been very thoroughly discussed, and, knowing the difficulties incident to operation and the difficulties incident to carrying on a program of improvement, we have been forced to the conclusion that it would be much worse for the public service and indeed would produce a hopeless situation to try to hold on to the railroads for another two years without any assurance that anything will be done. We could not carry out improvements, we could not instill any sort of confidence, we already see the effects of the uncertainty which will be steadily intensified. With our constant contact with that situation and after the freest discussion the whole staff is in accord with the director general that it is an impracticable condition, and that we cannot go on in the present state of uncertainty. It will be better to terminate it and have a status of private management that will last until legislation, than have a status of federal control that will speedily terminate without legislation.

The Railroad Question in Congress

Little Sympathy Shown Toward the Director General's Five-Year Proposal

WASHINGTON, D. C.

PLANS FOR HEARINGS on the question of the disposition of the railroads before the Senate Committee on interstate commerce were discussed with Director General McAdoo on Tuesday by Senator Smith, chairman of the committee, who announced that it is planned to hold hearings immediately after the holidays and that an effort will be made to conclude them by January 15. It is proposed to hear representatives of the Railroad Administration, including Mr. McAdoo, and of shippers, state commissions and the public.

Director General McAdoo's proposal that the government shall keep the railroads for another five years has brought the question of private or government operation of the railroads squarely to the front, where an effort will be made in Congress to settle it on its merits, but prospects for legislation at the present session now appear very slim as an impression prevails that it is more important that the question be settled right than that it be settled quickly.

A postponement of any definite action until the new Congress comes in appears more likely. At this date Congress does not seem to be deeply moved by the suggestions thrown out by the President and the director general, whether they be characterized as promise, threat or bluff, that it will be necessary to promptly return the railroads to their owners unless permanent legislation is enacted shortly. A large number of leading Congressmen had already indicated an opinion that that should be done before the President proposed it, although after his address on December 2 there was a general agreement with his statement that "it would be a disservice alike to the country and to the owners of the railroads to return to the old conditions unmodified." But when

Mr. McAdoo declared it to be the only alternative to a five-year extension of the present system the idea of a return to private control lost some of its terrors, although some of the democratic leaders professed a hope that the McAdoo plan would find much support among bankers and security owners who would prefer a continuance of the government guarantee to taking the risks of a return to private management.

With the revenue and appropriation bills yet to be passed, Democratic leaders realize that it is almost impossible to get any other legislation through about which there is a sharp difference of opinion and it is perfectly apparent that the railroad question falls in that class. For that reason the subject is regarded as more appropriate for consideration at an extra session of the new Congress.

The director general had apparently calculated on the fear of a precipitate return of the roads and the difficulty of reaching a permanent solution to help "railroad" through Congress a simple resolution extending the period of federal control while Congress still has a Democratic majority naturally inclined to follow the wishes of the administration. If a shorter period would have suited his ideas it is believed the plan might have met with a greater degree of favor as a makeshift or as an experiment, but his proposal of a five-year period bore too close a resemblance to his insistence last January on an indefinite period of federal control. In other words, it was regarded as having all the earmarks of an effort to adopt a policy of permanent government control by indirection and without the necessity of facing the question of buying the railroad property. It was recalled that while Mr. McAdoo declared it is wholly impracticable to attempt to operate the railroads under the provisions of the present

law for two years more, because of the conflict of jurisdiction between the states and the federal government and because of the difficulty of forcing the railroads to finance improvements he did not specifically suggest any legislation to change the situation during a five-year period, although an appropriation and other changes in the law would be needed. It was also pointed out that even the passage at the present session of a resolution such as Mr. McAdoo proposes would by no means settle the question because the action could be reversed as soon as the next Congress comes into power, but action now would give a certain advantage in that a two-thirds majority of the new Congress would be required to override a presidential veto.

Some interest was manifested in the process by which the President changed his mind so rapidly after having declared to Congress in his address on December 2 that he had no confident judgment of his own on a question that caused him the greatest concern, that "nothing can be gained in becoming partisans of any particular plan of settlement," and that he frankly turned to Congress for counsel upon it. Two days later the President sailed for Europe and on December 11, before Congress had recovered from its surprise that he had asked its advice, Mr. McAdoo came forward with a particular plan of settlement, which he had disclosed to a few men on December 9, just a week after the President's address, declaring it to be the only alternative to a prompt return to private control, that it will be impossible for Congress to provide a proper legislative solution, and that this conclusion accords with the President's own view of the matter.

Mr. McAdoo's proposal aroused an immediate response in Congress, as well as from the representatives of the railroads and of the security owners, which indicated clearly that Congress is more inclined to accept the suggestion of the President than that it have a complete and impartial study of the whole railroad problem instituted than it is to accept the solution offered by the director general. Chairman Sims of the House Committee on Interstate and Foreign Commerce gave the plan his unqualified approval, as he has been in the habit of approving plans sent to him from the executive department of the government, but Chairman Smith of the Senate committee on interstate commerce expressed a desire to have the problem solved in the light of the best judgment that can be exercised without taking any one's preconceived notions about it. He did not understand that a recommendation on the part of Mr. McAdoo or of any one else now that the war is over is anything more than merely his opinion, which may have more weight by virtue of the fact that he has been the director general of railroads. He announced that he called his committee to meet on Thursday of this week in order to discuss the status of affairs and to inquire from all those from whom knowledge can be obtained the conditions which now exist, looking toward what action shall be taken for the future.

Marked opposition to Mr. McAdoo's plan was expressed by leading senators, including Democrats as well as Republicans, who indicated a desire to have Congress reach a solution of the railroad problem for the future, considering the five-year extension plan merely as one of the various plans which have been suggested.

Senator Kellogg of Minnesota addressed the Senate on the subject, vigorously opposing the idea of extending the period of federal control for five years and demanding a permanent legislative solution within the 21 months' period. Senator Kellogg began his speech by commenting on the President's statement that he had no confident judgment of his own only a few days before Mr. McAdoo comes forward with a deliberate, well-considered plan, which he says is made with the approval of the President. The senator thought the railroads ought to be authorized to co-ordinate all their facilities, equipment and terminals, to route freight where it can be routed cheapest, and to make most effective the entire transportation

of the United States under strong government control extending to regulation of the issuance of securities, but he did not see why it should be considered necessary to accomplish all this at this particular three months' session instead of an extra session of Congress after March 4.

"The railroads were taken over presumably for war purposes," he said. "It was denied at that time that they were taken over to make a test of government ownership. Now Mr. McAdoo says we want five years to make a test. A test for what purpose? Not a test for war purposes, but a test for government ownership. That is the real bottom of the whole thing. I do not believe that the American people today are very much in favor of government operation, judged by the experience that they have had during the last year. I am willing to admit that it was an experiment during war, and I am not on my feet to criticize it, but what we should do now is to take up this important problem, pass some legislation which will make the railroads of the country most effective in carrying the freight and handling the great commerce of this country, and then turn them back to their owners, or else decide for government ownership at once and end this period of uncertainty. Mr. McAdoo says that the 21 months will be a period of uncertainty. Therefore the result he wishes is to increase the uncertainty to five years and have the whole subject in the air at the end of five years."

Senator Lenroot interrupted to ask the senator whether he cared to express an opinion upon the power of Congress to take over the use of the railroads in time of peace without providing for the payment of the value of the property to the owners. Senator Kellogg replied that he had grave doubts of the power of Congress to take them over in time of peace simply for the purpose of experiment without paying the value of the property.

Senator Martin of Virginia, Democratic leader of the Senate, announced himself as opposed to the five-year plan and also to permanent government ownership of the railroads, saying they should be returned to their owners after necessary legislation has been enacted. Senator Watson of Indiana declared himself opposed to the retention of the roads by the government, but asserted that legislation is needed to enable the railroads to meet the nation's needs. Senator Weeks of Massachusetts declared that the railroads should be given back to their owners with the least possible delay. He said that every benefit growing out of federal control should be retained as a matter of course, but he was strongly opposed to the extension. Senator Pomerene of Ohio declared that so far as Mr. McAdoo's recommendation is concerned, he was "from Missouri." Senator Penrose of Pennsylvania expressed the opinion that Mr. McAdoo has brought about such a state of utter demoralization of railroads that he has set the cause of government ownership back 50 years. Senator Underwood of Alabama declared that it would be very difficult to secure any legislation at this session on which there is a difference of opinion, but that the time provided by the law would be sufficient in which to enact the legislation which should precede the return of the roads to their owners. Senator Borah of Idaho declared for a determination now whether we are going to have public ownership or private ownership. The present situation, he said, is unbearable, "it is neither public ownership nor private ownership and five years more of it would leave a wrecked and wholly worthless transportation system and a huge public debt." Senator Townsend of Michigan declared Mr. McAdoo's proposition to be impossible and, in view of the President's statement, "a clear manifestation of duplicity."

Representative Lunden filed in the House on Tuesday a series of petitions from railway employees on the Chicago, Milwaukee & St. Paul, and the Minneapolis, St. Paul & Sault Ste. Marie, advocating the proposed five-year extension of government control and permanent government ownership of railroads.

Illinois Central Reduces Grades on Kentucky Line

War Conditions and Complex Rock Formations Interfere with Prosecution of This Improvement

PRE-WAR TRAFFIC and the anticipated growth of business under future peace conditions were the determining factors in planning the construction of 13½ miles of low grade line to replace existing track of equivalent length on the Kentucky division of the Illinois Central. However, the increase in traffic under war conditions since this work was started in August, 1917, pointed to the immediate advantage of double track with the result that it has been found advisable to retain 8½ miles of the old line in service for

a total distance of 62 miles from Paducah. Although the completion of this section of the work will still leave 36 miles of the engine district unimproved, the object will be largely accomplished since the last work undertaken brings the completed section of the improvement to the source of a considerable portion of the traffic—coal from mines between Dawson Springs and Central City. Here 350 to 400 cars are loaded daily, constituting about 75 per cent of the southbound traffic. The remaining business is largely of a



Map of the Grade Change Territory

traffic in the down-grade direction, utilizing the new line for uphill traffic. Thus war conditions have led to provision for 8½ miles of second track at a cost practically equivalent to the salvage value of the rails in the old line which otherwise would have been taken out of service.

The country traversed by the line presents such erratic rock formations as to introduce serious uncertainties in the planning and execution of the excavation work. The material encountered in no two cuts was exactly the same. The work is of interest also as typifying the difficulties experienced by both the railroads and the contractors in conducting work under war conditions and in illustrating the manner of solving the problems encountered.

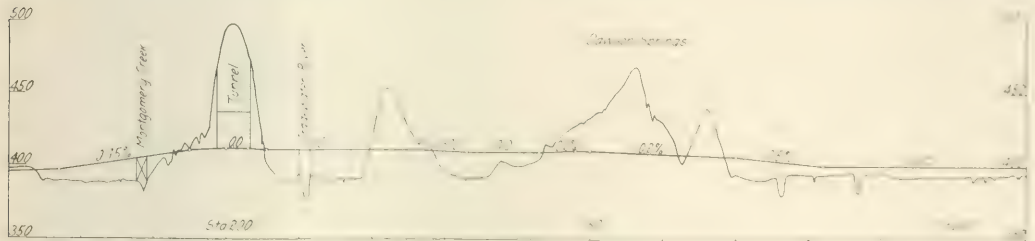
The work extends from Scottsburg, Ky., east to a point about 2½ miles west of Dawson Springs and constitutes one

general merchandise character between points north of the Ohio river and those in the lower Mississippi valley.

The grade improvements effect a material economy in train operation. Mikado locomotives with a tractive power of 51,000 lb., which handle only 1,300 tons over the old grades, are rated at 3,200 tons on the new 0.5 per cent southbound grades. The preponderance of the traffic is in the southbound direction so that the trains returning light are easily handled by the same locomotives over the 0.75 per cent northbound grades.

An Interesting Location Problem

Physically the location of the road between the limits of this improvement involves the descent from a summit near Scottsburg down the valley of Montgomery creek to its con-



Profile of a Part of the Dawson Springs Cut-off

step in a plan to reduce the ruling grade in the 98-mile engine district between Paducah, Ky., and Central City. The grades on the old line include maxima of 1.25 per cent with six degree uncompensated curves, while the new work is based on maximum grades of 0.5 per cent against southbound traffic and 0.75 per cent against northbound traffic. Earlier work on this project, commenced in 1915, eliminated all grades in excess of those established, in the territory between Paducah and Scottsburg, a distance of 49 miles, while the new work now under way, which will be completed early next year, carries this improvement through Dawson Springs,

fluence with the Trade Water river and the occupation of the valley of that stream for a distance of five miles to the foot of an ascent in an easterly direction up the valley of Caney creek. The descent along Montgomery creek involves a difference in elevation of 158.3 ft.

From the construction standpoint the work is divided into two sections, separated by one-half mile of line that is not disturbed. These are namely, the Scottsburg section, comprising the descent of Montgomery creek and the Dawson cutoff through the valley of the Trade Water river.

The Scottsburg section has a length of 8.43 miles and

effects a saving of 1,320 ft. as compared to the old line. At the east or lower end of this work, the new line follows the old location closely in the valley of the Montgomery creek, crossing the earlier location several times and securing a straighter alinement by cutting through shoulders in the sides of the valley. This leads to a succession of more or less short, deep cuts with long and somewhat shallower embankments between them. At Claxton, about 5 miles west, where the old line turns abruptly to the south, the new location continues on a tangent for nearly two miles further, the maximum separation on the two lines being about 3,300 ft. On this independent location the changes in the ground, although heavy, are less abrupt, so that the cuts are in general much longer.

The grade line from the east rises at rates varying from 0.4 to 0.5 per cent to a point about half way up the ascent, where there is a level grade for 3,200 ft. West of this the grade rises at the rate of 0.5 per cent compensated for nearly four miles, and then continues as a 0.4 per cent grade for 3,500 ft. further to a summit. The descent to the junction with the old line is on a 0.6 per cent grade about a mile long.

The Dawson Springs cut-off extends from about $1\frac{3}{4}$ miles west of the town of that name to a point about $2\frac{1}{2}$ miles east of it. As the old line makes a general detour to the north of this point, the location of the new line south of the old one, a maximum distance of 4,600 ft. in a total length of 20,673 ft., made possible a saving of 3,554.5 ft. in distance, and 179 deg. of curvature. In making this change the new line traverses high ground between two loops or detours in the Trade Water river in the southerly portion of the town of Dawson Springs. This involves a cut 60 ft. deep of

end of this section of the work is on level grade; the difference in elevation of the two ends is only about 10 ft. and the maximum elevation at any point in the line is only 15 ft. above the lowest, the high points being reached by about 1,200 ft. of 0.5 per cent grade from the east and 1,800 ft. of 0.75 per cent grade from the west.

Complex Geological Formation

The most remarkable feature presented by the project arises from the geological formation of the country traversed by this portion of the line. From two miles east of Princeton to a point some distance beyond Nortonville, a great many



New Line Crossing Over the Old One Near Station 416



The Tunnel During Construction

nearly 200,000 cu. yd. of excavation in addition to two smaller cuts to the east and west respectively. The west mile of this section of the work is virtually an independent cut-off through a projecting shoulder of rock separating the Trade Water river from Montgomery creek. It involved the driving of a tunnel 506 ft. long which the old line avoided by crossing the Trade Water river below its junction with the creek.

Except for the excavation problems mentioned above the new line is on embankment, the first 11,000 ft. from the east end being almost entirely on fill and entailing a change in the channel of the Trade Water river to avoid the construction of two crossings. The first 10,000 ft. at the east

faults in the rocks are encountered which produce sudden changes in the stratification, while the so-called Claxton fault, crossing the west end of the Scottsburg section of the work, has effected a sudden transition from the rocks of the Pennsylvanian age which prevail east of that point to those of the Mississippian period, which are exposed west of the fault. A further phenomenon of this region is the prevalence of distorted or inclined stratification. Thus, near Claxton along the existing line of the railroad the upturned ends of 800 vertical feet of Mississippian rock have been exposed. Under such circumstances, it was impossible to predict the nature of the material to be encountered in opening the cuts and to determine the character of cut section that would safely stand in excavation. As many as six or seven different rock formations were encountered in some of the cuts, while in a few the material was uniform throughout—a pure solid sandstone. However, the latter was the exception, for by far the larger proportion of the yardage consisted of the complicated, diversified materials, which in some cases proved so unstable upon excavating that the cuts had to be removed to much flatter slopes than originally proposed. As a result the yardage of excavation for the entire project was considerably increased over that originally estimated.

The most important feature on the Dawson Springs cut-off was the cut at Dawson Springs, which was excavated for a main track and two passing tracks. The material was mainly sand and sandstone, with some sandy shale above a thin stratum of coal overlying some fire clay. The material from this cut was used in fills both east and the west, only a small portion being made from borrow.

On the Scottsburg line the first heavy cut at the east end of the work extends from station 395 to 404. It is 74 ft. deep

and contained 12,600 cu. yd. of earth and 45,700 cu. yd. of rock. A stratum of shale not far from the grade line and having a sharp transverse dip caused serious sliding on the north side of this cut. The ground at the end of the cut is so steep, rising 100 ft. in a horizontal distance of 270 ft.,



Location of the Bridge Over Montgomery Creek Near Station 395

that it was with great difficulty that the contractor placed his equipment in position for the first cut.

Between stations 434 and 440 there is a side-hill cut that differs from nearly all of the other work in that the material is a solid, almost unseamed sandstone, as shown in one

main line and the old are close together, although the grades are separated by 30 to 40 ft. Two embankments in this stretch of the new line were built by the general contractor from material in the summit cuts nearly four miles away, by the use of the main track for some distance and 4,000 ft. of construction railroad descending from the new line to the old track near Claxton. This afforded a detour about 9,000 ft. long around a section of the work, assigned to the S. M. Boorhem Company, a sub-contractor. About 250,000 cu. yd. of material was handled in this way.

West of Claxton the rock in the cut assumed a much more erratic character. A short cut at station 500 contained 17,750 yd. of material in a length of 700 ft. This was largely conglomerate, solid in place, but which required slopes of $\frac{3}{4}$ to 1 to obtain the necessary stability in the cut. From station 534 to 542 a cut of 65 ft. maximum depth contained strata of shale, conglomerate, sandstone, limestone, and boulders. A still more remarkable combination of materials was disclosed in a cut 1,400 ft. long and 60 ft. deep, beginning at station 552. At the top there was earth containing floating boulders to a depth of 15 ft. Below this was a 20-ft. stratum of material having the appearance of natural masonry, and consisting of several courses of rectangular limestone blocks with a residual clay in the horizontal and vertical joints. Underneath this were two 4-ft. courses of soft black shale and hard shale respectively with a hard limestone formation for the remaining depth. The earth was taken out on a slope of $1\frac{1}{2}$ to 1, and the remaining material at $\frac{1}{4}$ to 1, but the behavior of the clay-imbedded limestone caused trouble through the fact that the clay joints between the blocks of stone ran out, allowing the rocks to fall. As a result this cut will have to be sloped to an angle of one horizontal to one vertical.

The summit cut, virtually 3,500 ft. long, with an average depth of 15 ft., and the next cut to the east, 5,300 ft. long, with the maximum depth of 45 ft., were excavated by the general contractor's own forces. The second-named cut



Location in the Lower Portion of the Montgomery Creek Valley

of the photographs. A large part of this material was wasted by a coyote shot which was accomplished by driving a tunnel for 100 ft. along the center line from an adit driven in from the outside. The tunnel was loaded with 537 kegs of black powder and the blast moved about 5,000 cu. yd. of rock.

Between Ruth and Claxton, a distance of $1\frac{1}{2}$ miles, the

was by far the most formidable, containing about 200,000 cu. yd. of material, 50 per cent of which was rock. Over 50,000 cu. yd. of additional excavation was required in this cut because of a slide that came out of the south slope. The material consisted of a sandstone carried on limestone with a stratum of shale between, the limestone being on a trans-

verse dip of 30 deg. from the horizontal descending from south to north. As soon as the lateral support of the sandstone was removed it slipped into the excavation for a length of 700 ft., the rock breaking away on the surface as far as 90 ft. beyond the established edge of the slope. One of the photographs illustrates the resulting condition.

Construction of the Tunnel

As previously mentioned the material encountered in the tunnel was unlike almost anything else on the work. It was hard, white sandstone of nearly uniform texture throughout the entire length of the bore. The excavation was conducted by a full width bottom heading 10 ft. high into which the rock from the rest of the section was trapped. Jack hammers were used for all of the work and the material was mucked by hand in small cars on a 2-ft. gage track. Double shifts were used at each heading and one-half of the tunnel was taken out in a single month. The work was done by Peter McVeigh, of Butte, Mont., as a sub-contractor. It is not expected that lining will be necessary, as a short tunnel on the old line through the same ridge has stood since 1872 with very little disintegration of the rock.

Structures

This project involved but a limited amount of bridge work. The only structure of importance is a bridge over the Trade Water river consisting of four deck plate girder spans, one



Diversified Materials in the Cut at Station 560

79 ft. 6 in. and three 51 ft. 1½ in. long. The substructure is of concrete on pile foundation with the exception of one pier at the site of which rock was encountered on a slope so great that there was a difference of 14 ft. in the elevation of the surface in the width of the cofferdam. The practical certainty of sliding with a pile foundation under such circumstances led to the conclusion to carry the pier to the rock. This necessitated a new cofferdam built around the old one to provide a puddle wall, and with the aid of this, the rock surface was unwatered and stepped off to afford a stable seat for the pier. These measures necessitated a maximum depth of the pier of 58 ft. below the base of the rail.

All of the piers in this structure are stepped out on the north side to provide for future second track.

At station 395 there is a bridge over Montgomery creek consisting of a 75-ft. girder span. One end of this is supported on an abutment built into the rock ledge of the hillside at the end of a cut, while the other end of the girder is supported on a pier 50 ft. high. The connection between this end of the girder and the head of the adjoining embankment is made by means of a 50-ft. approach span having its outer end supported on a bank block carried by creosoted piles driven into the embankment.

The new line crosses the old one three times in a distance



Bad Slide in the Cut Just East of the Summit

of a mile and one half in the lower end of Montgomery creek valley, but in each case the grades are separated by the new line crossing over the old one. Temporary structures have been provided at these places to carry traffic on the new line until it should be abandoned on the old line as originally planned, but since it has been decided to retain the old line in service as an eastbound track, these structures will be maintained until such time as it is found necessary to renew them with permanent construction.

The work was all conducted under a contract with the Walsh Construction Company, of Davenport, Iowa, some of it being done on a subcontract, and some by the forces of the general contractor. Conditions arising as the result of the war introduced such large increases in the cost of doing the work that it was necessary to relieve the contractor by changing the stipulations of the contract from a price-per-yard basis to a cost-plus-percentage form of contract.

The work is being prosecuted under the direction of T. H. Robertson, assistant engineer, Illinois Central, with H. W. Clowe as resident engineer on the Dawson Springs cut-off and G. C. Harris, resident engineer, on the Scottsburg line.

The entire work was under the general supervision of A. S. Baldwin, until recently chief engineer of the Illinois Central, and F. L. Thompson, formerly assistant chief engineer and now chief engineer. In connection with the project described above, work was started at the same time on what is known as the Providence line extending north from Dawson Springs to Providence, a distance of about 21 miles. The object of this line was to obtain a short connection with coal mines located in the vicinity of Providence, but this work was discontinued during the past year as being nonessential to the winning of the war.

Doings of the United States Railroad Administration

Plans Whereby War Finance Corporation May Make Advances to Railroads Receive Consideration

WASHINGTON, D. C.

PLANS BY WHICH THE War Finance Corporation may make advances to railroad companies to assist them in financing improvements, besides taking over some of the loans made to railroad companies from the revolving fund of the Railroad Administration, have been discussed by the War Finance Corporation, the new Secretary of the Treasury, Carter Glass, and Director General McAdoo. It is understood that only technical objections stand in the way of the plan, and that it will be possible in this way materially to replenish the revolving fund, relieving it from the necessity for rendering further financial assistance to the railroads. The revolving fund has been drawn upon not only to make advances to railroads on account of their compensation, but also for direct loans and for advances for cars and locomotives, for which the Railroad Administration has paid the builders, but which it expects to collect from the railroad companies. It is understood that the revolving fund has been nearly exhausted, although no statements have been made public indicating its exact condition. The latest reports of earnings and expenses issued by the Interstate Commerce Commission indicate that it would be necessary to draw upon the revolving fund to pay operating expenses if the Railroad Administration had paid the railroad companies all it will owe them in the way of compensation when the contracts are signed; also when the railroads receive the money due them under the contracts they will be able to repay some of the advances and it is hoped that the War Finance Corporation may be able to assist in both processes.

Barge Projects to Be Carried Out

Director General McAdoo is making an effort to enlist the support of the advocates of waterway development for his proposal for extending the period of federal control of the railroads. In reply to numerous reports that contracts for barges for the Mississippi river were to be cancelled, he telegraphed on December 13, to the presidents of the St. Louis Merchants' Exchange, and Chamber of Commerce, stating that the contracts will be carried out. He added:

"It is proper that I should call your attention to the fact, however, that unless the Congress shall extend the period of federal control so that a reasonable opportunity may be afforded for a fair test of the value of unified railroad operation along with co-ordinated inland waterways operation, the experiment on the Mississippi river may not hold out much promise. I doubt if the Mississippi river operation can produce satisfactory results if the railroads should be turned back soon to private control. The old methods of railroad competition with waterways transportation will be revived and it is probable that the waterways experiment may not be able to survive that competition. I suggest these phases of the problem because as an American citizen whose earnest interest in proper waterways development has been manifested frequently, I think your business men's organizations in St. Louis should consider very seriously the importance of extending the period of federal control of the railroads as I have just proposed, in order that a fair test of unified operation of the railroads may be made and that along with it the inland waterways may be developed and a fair opportunity given to demonstrate the usefulness of such development."

The Railroad Administration has decided to let contracts for barges and towboats for service on the Black Warrior river between Cordova and New Orleans and Mobile amount-

ing to \$1,600,000, which will make it possible to increase the coal traffic on the river by 375,000 tons a year. For the New Orleans service four self-propelled steel barges 275 feet long will be ordered, costing \$250,000 each, and for the Mobile service it is proposed to construct 20 wooden barges costing \$120,000, and three steel towboats costing \$160,000 each.

Weekly Report of Traffic Conditions

According to the weekly report of traffic conditions made public by Director General McAdoo on December 18, a striking improvement in traffic conditions, both passenger and freight, is noted throughout the entire country. Business is gradually readjusting itself and manufacturing plants, heretofore engaged on munitions, are changing to work on construction orders.

The movement of grain, coal and livestock is continuing without any appreciable interruption. The lake cargo coal handled at Lake Erie ports for the season exceeded that of 1917 by 1,000,000 tons. Perishable and live stock movements from Chicago to New York increased 3,947 cars during the past week.

In the Allegheny region the coal production increased. In the Pocahontas region there was a decrease in tidewater coal largely due to the lack of demand for water movement to New England.

A very healthy condition is noted in the Northwestern region. Revenue freight loaded increased 1,396 cars for the week ended December 10. The movement of livestock continues very heavy and grain loadings have increased. The arrivals of grain at the primary markets show 20,000,000 bushels this year as against 7,500,000 bushels for 1917. The temporary shortage of cars for loading grain in Minnesota, the Dakotas and Montana has been relieved.

The War and Navy Departments report that releases of cars at the port of New York exceeded the arrivals by 1,024 cars. The holiday travel being augmented by discharged and furloughed soldiers the ticketing facilities in the large centres and at the camps have been increased.

A summary of the report follows:

Eastern Region.—Grain is being freely permitted for export; shipments from Chicago for the week ending December 10 exceed the same period last year by 3,600,000 bushels. Automobile manufacturers are turning their forces into their former regular lines of work. Perishable and livestock movements from Chicago to New York show a decrease of 382 trains, but an increase of 3,947 cars. Continued increase in passenger traffic, particularly in high class trains. Extra suburban trains run in the vicinity of Cleveland to take up the travel tied up by the trolley strike, with favorable comment from the public. Union Station at Cleveland approved by city council will be voted on by the people January 6.

Allegheny Region.—Passenger travel increasing, five special workmen's trains withdrawn. Movement of perishable freight active. Temporary shortage of refrigerator cars, which will be corrected. Coal production and loading increased in Allegheny region during the week. Shipping Day Guide for Pittsburgh is being issued.

Pocahontas Region.—Loaded freight movement indicates general slowing up, with the particular decrease in tidewater coal, largely due to lack of demand for water movement to New England.

Southern Region.—Passenger travel normal. Movement of

discharged laborers is requiring special attention in the way of train service, but as a result of the discontinuance of government plants labor trains are being abandoned at various points. Numerous train schedules have been slightly lengthened, with better results in maintaining schedules. Birmingham foundries and furnaces are running full time, with orders months ahead. The cotton situation still sluggish. Car situation in good shape, and the Christmas rush of Florida fruits being anticipated in refrigerator car supply.

Northwestern Region.—Revenue freight loaded increased 1,396 cars for the week. Livestock movement very heavy, and grain loadings largely increased. Grain arrivals at the large primary markets show 20,000,000 bushels this year as against 7,500,000 bushels last year. Temporary shortage of car supply for loading grain in Minnesota, the Dakotas and Montana is being rectified. Condition of crops throughout the territory continues very favorable. C. M. & St. P. reports saving of 981 cars under the sailing day plan for the month of November. No marked change in volume of passenger traffic.

Central Western Region.—Livestock and grain loading increased; coal movement decreased. Car situation easy. Passenger business heavier than preceding week, the California travel being heavier than a year ago. Various changes in passenger trains, with some increases to accommodate heavier travel, and some discontinuances of unnecessary train service. Influenza epidemic still affecting travel adversely.

Southwestern Region.—Reports indicate winter crops in splendid condition. Oil developments continue actively in the Wichita Falls and Ranger Districts. Miscellaneous traffic increased over last week; lumber loading heavy. Revival of influenza epidemic has had its effect on the general traffic. Movement of furloughed and discharged soldiers being handled without complaint.

War and Navy Departments.—Transportation situation continues good. Elimination of overtime in the employment of labor adversely affecting the ability to unload, but situation improving.

Food Administration.—Fresh meat and packing house products—situation generally satisfactory, and complaint practically ceased. Livestock—situation on the L. & N., which was the only bad point, shows material improvement. Grain—moving freely into Kansas City, due to demands of the mills. Some difficulty at Boston on the export, owing to labor trouble, which is being given attention by regional director. Fruits and vegetables—movement generally good, and car supply satisfactory, except in some small instances, which have been corrected. Transportation conditions as a whole satisfactory.

The Allies' Traffic.—Transportation situation satisfactory as to movement of stores and foodstuffs, the only trouble being congestion at Newport News, which will be relieved by the decreased use of that port by the War Department.

Coastwise Steamship Lines.—All wooden and lake vessels heretofore allocated to the coastwise steamship lines have been released, with the exception of a few, which are enroute or loaded.

Exports Control Committee.—British, French and Italians are actively looking after the accumulations at seaboard of their stores, returning them to the shipping points for disposition. A large amount of ocean tonnage will be turned back to trade routes shortly. Grain situation at the ports satisfactory, excepting perhaps at Port Arthur, where there is an accumulation of grain at present. Puget Sound ports show further increase in cars on hand in spite of efforts being made to control the traffic, but California ports show decrease.

Short Line Contracts Signed

Director General McAdoo has signed co-operative contracts with the Pecos Valley Southern and the Eastern Carolina, short-line railroads.

Conditions in Allegheny Region

Marked betterment in traffic conditions during the month of November was noted by C. H. Markham, regional director of the Allegheny region, in a report to the director general. There was an adequate car supply in November, with the result that it had been possible to remove all important embargoes on carload freight except where the movement was controlled by permits. There are no embargoes in the Allegheny region at transfer platforms against less carload freight. Favorable progress was made in additions and betterment work during the latter part of the month because of increased supply of labor.

Mr. Markham's report in part follows:

Railroads in the Allegheny region were able during November to afford necessary transportation, although during the early part of the month there was a slowing up of business due to the serious influenza epidemic. During the latter part of the month the epidemic abated and conditions everywhere have improved, until it no longer seriously handicaps the steady flow of traffic. Weather conditions were favorable for successful operation.

"There was a decrease of 84,532 cars, or 12 per cent in revenue freight loaded, and 9,655 cars, or 1.7 per cent in revenue freight received from connections, compared with November of last year. Anthracite coal loading decreased 11,992 cars, or 20 per cent, and bituminous coal loading decreased 698 cars, or 0.4 per cent. The greater portion of the decrease in revenue cars handled and coal output was due to two peace day celebrations, Thanksgiving day, which was more generally observed this year, and to the influenza epidemic affecting the mining of coal and loading and unloading of other commodities. Tidewater coal dumped was 2,203,601 tons, an increase of 237,228 tons, or 12 per cent, compared with November of last year. There was an adequate car supply available, the cars in the Allegheny region equalled 99 per cent of ownership compared with 115 per cent June 1, 1918.

"Sailing day guides have been published covering Philadelphia, Trenton and Baltimore, and the remainder of the guides for this region are expected to be completed by January 1. This is resulting in the saving of a large number of cars and permits the loading of solid cars to remote points, resulting in better service to the public, avoiding delay at transfer platforms, and eliminates the additional expense of handling at such transfer stations.

"The report of blast furnace operations November 23 shows no furnaces out due to transportation deficiencies.

"Passenger travel during month was normal. Passenger train schedules were maintained with reasonable regularity, showing a big improvement over corresponding period of 1917. Due to cessation of hostilities seven trains serving war industries have been withdrawn, and since that time troop movements have been light.

"The number of bad order cars decreased 2578 compared with October, 1918. Locomotive output increased 6 per cent as compared with October, due to better working conditions, influenza not being so prevalent, but the locomotives out of service increased 50. The railroads received 15 locomotives built in their shops, and 10 from locomotive builders, leaving 319 to be received to complete 1918 program. Ninety-one unifications of facilities were effected during month, resulting in an annual saving of \$766,000. Total annual saving in the region due to unification of facilities and service since federal control amounts to \$7,945,000.

"Addition and betterment work during the latter part of the month made better progress due to ability to recruit more labor as the demand has not been so great in the war industries. By concentrating on enginehouse and yard improvements, a large portion of such work has been completed, or is nearing completion, so that benefit will be derived during present winter from these expenditures."

Classification of Passenger Train Employees

Passenger Traffic Statistics

Director General McAdoo has issued the following Supplement No. 12 to General Order No. 27. To carry out the intent of Article VI, of General Order No. 27, and retroactive to June 1, 1918, it is ordered:

1. Employees in passenger train crew, except conductors, collector and baggage-master, qualified and regularly required to perform the following essential duties will be designated as passenger employees of this road, and paid accordingly:

- Inspect cars and test signal and bell connections for the safety of train movement.
 - Use hand and lamp signals for the protection and movement of trains.
 - Open and close switches.
 - Couple and uncouple cars and engines, and the brake and chain attachments thereon.
 - Compare watches when required by rule.
2. Where white brakemen are not employed, the compensation and overtime rule for colored brakemen shall be the same, for both passenger and freight service, as for the same positions on the minimum paid contiguous road.
3. This order shall not curtail the duties of employees heretofore classed as train porters.
4. This order shall not infringe upon the seniority rights of white trainmen.

Railroads under federal control during the nine months ending September 30 showed an increase of 14.3 per cent in passengers carried one mile, as compared with the corresponding period of 1917, according to a report compiled by the Operating Statistics Section of the Railroad Administration. For the month of September, however, the increase was only 0.03 per cent, undoubtedly reflecting the effect, after the summer vacation season was over, of the increased fares which went into effect in June, as well as the admonitions to refrain from travel. For August a similar compilation had shown an increase of 11.6 per cent. For the nine months all of the regions and districts showed increases, the largest being that in the Southern district, 39.7 per cent. For September the Allegheny, the Pocahontas, Southern and Southwestern regions showed increases, while in the others there were decreases. The report follows:

Railroad	PASSENGERS CARRIED ONE MILE					Passenger Traffic Statistics				
	Month of September					1918				
	Average miles operated	1918	1917	Increase or Decrease	Per cent	1918	1917	Increase or Decrease	Per cent	
EASTERN REGION										
<i>New England District</i>										
Barnes & Armstrong.....	632	2,193,383	3,181,767	d4988,384	d31.1	18,430,926	22,252,988	d3,822,062	d17.2	
Boston & Albany.....	294	34,188,161	39,550,908	d5,362,747	d13.6	287,350,670	288,275,797	7,074,873	d2.5	
Boston & Maine.....	2,359	80,930,784	96,162,456	d15,231,672	d15.8	688,177,759	690,650,205	d10,472,446	d1.5	
Central Vermont.....	536	3,704,907	4,291,305	d586,398	d13.7	30,993,383	35,946,387	d4,953,004	d13.8	
Grand Trunk in New England.....	1,127	1,374,465	1,374,465	d0	d0.0	11,843,926	9,426,932	2,416,994	d25.2	
Maine Central.....	1,217	16,478,151	18,114,452	d1,636,301	d9.0	118,326,926	120,863,798	d2,536,872	d2.1	
N. Y., New Haven & H. (incl. C. N. E.).....	2,309	174,838,783	182,655,547	d7,816,764	d4.3	1,418,842,229	1,355,019,392	63,822,837	d4.6	
Rutland.....	415	4,553,420	5,493,556	d939,136	d17.1	32,093,258	40,432,448	d8,339,190	d20.6	
Total, New England District.....	7,934	317,844,094	350,824,256	d32,980,162	d9.4	2,596,682,267	2,557,904,996	38,777,271	d1.5	
<i>Central District</i>										
Ann Arbor.....	294	2,374,993	2,842,034	d467,041	d16.4	18,180,917	21,248,882	d3,067,965	d14.4	
Buffalo, Rochester & Pittsburgh.....	585	5,623,030	6,088,086	d465,056	d8.2	39,938,137	42,513,347	d2,575,210	d6.1	
Chicago & Erie.....	270	8,430,063	9,566,056	d1,135,993	d11.6	30,632,097	27,232,198	7,909,899	d34.8	
Delaware & Hudson.....	903	10,613,382	14,653,668	d4,040,286	d27.6	85,080,804	97,614,527	d12,533,723	d12.9	
Delaware, Lackawanna & Western.....	996	65,499,632	65,959,805	8,539,287	d15.0	458,428,391	438,416,722	20,011,669	d4.6	
Detroit & Mackinac.....	382	1,988	56,838,441	1,149,602	d2.1	496,491,775	330,768,749	165,723,026	d50.1	
Grand Trunk Western Lines.....	336	11,390,255	12,704,504	d1,314,249	d10.4	92,163,136	92,962,107	d798,971	d0.9	
Lehigh & Hudson River.....	137	137,200	199,199	d61,999	d31.1	1,351,889	1,352,173	d10,284	d0.7	
Lehigh & New England.....	232	47,147	44,043	3,104	d7.0	498,929	476,635	22,294	d4.7	
Lehigh Valley.....	1,439	24,318,778	26,037,012	d1,718,234	d6.6	214,209,873	182,140,061	32,069,812	d17.6	
Michigan Central.....	1,862	50,341,491	57,675,398	d7,333,907	d12.7	448,257,956	419,638,221	28,619,735	d6.4	
New York Central.....	5,049	247,469,633	263,728,139	d16,258,506	d6.2	1,908,419,931	1,911,722,912	d3,303,877	d0.2	
New York, Chicago & St. Louis.....	571	5,490,888	8,990,232	d3,499,344	d34.4	65,223,643	57,935,709	7,287,934	d12.6	
New York, Ontario & Western.....	568	10,002,873	8,592,865	1,490,008	d17.3	71,387,916	63,872,507	8,015,408	d12.6	
New York, Susquehanna & Western.....	132	1,113,757	4,186,894	d73,137	d17.3	34,834,250	36,946,496	d2,112,246	d5.7	
Pere Marquette.....	2,383	15,656,288	20,538,977	d4,882,689	d23.7	129,007,973	164,499,639	d35,491,666	d27.1	
Pittsburgh & Shawmut.....	125	139,497	95,086	44,411	d46.1	1,216,355	1,119,061	97,294	d8.7	
Ulster & Delaware.....	99	1,151,788	1,472,708	d320,920	d21.8	7,773,930	9,053,639	d1,279,709	d14.1	
Wabash.....	2,512	38,900,946	38,285,960	615,034	d1.6	319,150,349	291,271,273	27,879,076	d9.6	
Total, Central District.....	21,273	554,945,136	580,883,411	d25,938,275	d4.5	4,431,677,191	4,196,196,253	235,480,938	d5.7	
<i>Ohio-Indiana District</i>										
Baltimore & Ohio, West.....	2,596	40,973,315	43,765,565	d2,792,250	d6.4	314,088,583	283,569,251	30,519,332	d10.8	
Chesapeake & Ohio of Indiana.....	284	81,214	872,463	d53,359	d6.1	7,242,170	11,300,088	d4,057,918	d55.9	
Chicago, Indianapolis & Louisville.....	657	8,152,715	10,560,883	d2,408,168	d22.8	74,384,068	75,085,833	d701,765	d0.9	
Cincinnati, Indianapolis & Western.....	296	8,821,006	3,634,513	d1,813,507	d49.9	7,444,591	23,723,800	d16,279,209	d26.5	
Cincinnati, Cincinnati, Chicago & St. Louis.....	2,396	58,570,225	59,460,859	d890,634	d1.5	484,828,338	430,247,201	54,581,137	d13.6	
Cincinnati Northern.....	251	685,332	953,140	d267,808	d28.1	5,916,312	7,133,572	d1,217,260	d17.1	
Detroit, Toledo & Ironton.....	457	548,938	831,259	d282,321	d34.0	4,638,455	5,980,940	d1,342,485	d22.4	
Grand Rapids & Indiana.....	570	7,547,741	10,684,031	d3,136,290	d29.4	56,021,216	65,644,222	d9,623,006	d14.7	
Hackensack Valley.....	350	3,533,594	4,579,710	d1,046,116	d29.8	1,006,118	1,006,118	d0	d0.0	
Kanawha & Michigan.....	214	5,888,712	2,186,729	3,701,983	d169.3	43,065,287	14,894,886	28,170,401	d89.1	
Lake Erie & Western.....	878	2,181,504	3,625,989	d1,444,485	d39.8	21,378,246	26,983,088	d5,604,842	d26.0	
Penna. Lines West (incl. P. C. C. & St. L.).....	4,154	126,712,811	129,115,817	d2,403,006	d1.9	1,035,141,331	978,380,332	56,760,999	d5.7	
Toledo & Ohio Central.....	430	3,270,688	3,735,017	d464,329	d14.2	27,713,127	27,057,535	655,592	d2.4	
Toledo, St. Louis & Western.....	454	4,210,800	4,194,116	16,684	d0.4	32,667,910	28,346,965	4,320,945	d15.2	
Wheeling & Lake Erie.....	547	1,750,915	3,051,982	d1,301,067	d42.6	17,275,826	29,905,425	d12,629,599	d42.2	
Zanesville & Western.....	87	345,272	270,263	75,009	d27.8	1,241,961	1,241,961	d0	d0.0	
Total, Ohio-Indiana District.....	14,621	264,686,751	281,563,020	d16,876,269	d6.3	2,137,805,460	2,008,253,198	129,552,262	d6.5	
Grand total, Eastern Region.....	43,828	1,137,475,981	1,213,270,687	d75,794,706	d6.3	9,166,164,918	8,804,146,251	403,818,667	d4.7	
ALLEGHENY REGION										
Baltimore & Ohio, East.....	2,347	76,811	59,311,376	17,322,333	d29.2	567,808,690	416,359,880	151,548,810	d36.4	
Bessemer & Lake Erie.....	225	1,484,574	3,452,552	d1,967,978	d57.0	12,027,969	17,091,352	d5,063,383	d29.6	
Buffalo & Susquehanna.....	272	206,879	222,765	d15,886	d7.1	1,825,950	2,010,135	d184,185	d9.5	
Coal & Coke.....	684	32,792,159	41,318,847	d8,526,688	d20.6	308,904,136	330,154,965	d21,250,829	d6.2	
Cumberland Valley.....	1,044	2,844,817	3,169,024	d324,207	d10.2	26,110,813	25,702,523	408,290	d1.6	
Cumberland & Pennsylvania.....	61	1,111	1,111	d0	d0.0	2,029,262	2,118,951	d89,689	d4.2	
Long Island.....	398	91,531,884	82,192,932	9,338,952	d11.4	703,978,598	583,326,788	120,651,810	d20.7	
Maryland, Delaware & Virginia.....	83	342,500	370,260	d27,760	d7.5	1,006,118	1,006,118	d0	d0.0	
Monongahela.....	198	1,111	704,839	121,273	d17.3	6,333,333	4,685,905	1,647,428	d35.2	
New York, Philadelphia & Norfolk.....	122	4,293,187	7,323,067	561,120	d15.0	34,970,882	23,576,124	11,394,758	d48.3	
Pennsylvania, Eastern Lines.....	5,412	442,601,759	363,617,767	78,983,992	d21.7	3,068,244,062	2,325,411,011	742,833,051	d31.9	
Philadelphia & Reading.....	1,023	49,368,013	58,658,132	d9,290,119	d19.5	447,512,342	457,021,574	d10,509,232	d4.4	
Pittsburgh & Lake Erie.....	63	11,116,457	11,903,014	d786,557	d6.6	84,840,768	92,189,264	d7,348,496	d8.8	
Pittsburgh & West Virginia.....	63	491,316	166,182	325,134	d20.3	4,267,926	5,127,137	d859,211	d16.0	
Staten Island.....	24	4,974,269	3,947,818	1,026,451	d26.0	39,502,362	36,294,187	3,208,175	d8.8	
Western Maryland.....	748	4,195,768	5,766,386	d1,570,618	d23.2	32,234,753	40,745,456	d8,510,703	d20.6	
West Jersey & Sea Shore.....	339	1,111	1,111	d0	d0.0	310,617,243	301,191,900	9,425,343	d3.1	
Total, Allegheny Region.....	13,054	724,563,020	639,794,457	84,768,563	d13.3	5,652,134,019	4,669,187,406	982,946,613	d21.5	

PASSENGERS CARRIED ONE MILE (Continued).

Railroad	Average daily operated	Month of September			Nine months ended September 30				
		1918	1917	Increase or Decrease	1918	1917	Increase or Decrease		
POCAHONTAS REGION									
Chesapeake & Ohio.....	2,195	40,244,306	34,755,304	5,489,002	15.8	356,033,610	259,026,496	97,007,114	37.5
Norfolk & Western.....	2,101	33,374,383	33,493,127	d11,744	40.4	290,865,000	226,559,460	64,305,540	28.4
Virginia.....	189	2,301,416	2,782,945	d481,529	d17.3	16,707,054	16,728,300	d21,246	35.0
Total, Pocahontas Region.....	4,285	75,920,105	71,031,376	4,888,729	6.9	663,603,664	502,314,256	161,291,408	32.0
SOUTHERN REGION									
Alabama & Vicksburg.....	141	1,774,593	1,785,870	d11,277	d0.6	15,863,010	13,785,155	2,077,855	15.1
Atlanta & West Point.....	243	7,925,898	5,335,955	2,589,943	48.5	62,672,259	42,115,149	20,557,110	48.8
Atlanta, Birmingham & Atlantic.....	640	2,926,936	3,103,334	d176,398	d5.7	21,995,626	20,416,423	1,579,203	7.7
Atlantic Coast Line.....	484	53,796,206	41,069,435	12,726,771	31.0	480,746,050	372,151,426	108,594,624	29.2
Carolina, Clinchfield & Ohio.....	291	1,145,545	1,346,788	d201,243	d14.9	13,578,030	9,228,676	4,349,354	47.1
Central of Georgia.....	1,918	2,001,336	1,632,018	3,771,318	18.1	18,670,132	14,198,528	4,471,604	31.5
Charleston & Western Carolina.....	343	1,443,909	1,700,087	d256,178	d15.1	16,499,147	12,922,787	3,576,360	27.7
Florida East Coast.....	765	5,834,945	5,002,190	832,755	16.6	67,334,725	73,647,830	d6,313,105	d8.6
Georgia.....	339		(*)		(*)	61,463,165	33,946,205	27,516,959	81.1
Georgia, Southern & Florida.....	402	3,374,735	4,013,806	d639,071	d15.9	19,980,472	17,552,477	2,427,995	13.8
Gulf & Ship Island.....	308	1,904,871	2,151,517	d246,646	d11.5	17,210,359	12,000,976	5,209,383	43.4
Gulf, Mobile & Northern.....	402	1,509,901	1,175,104	334,797	28.5	11,167,212	8,732,066	2,435,146	27.9
Illinois Central (incl. Y. & M. V.).....	6,216	92,391,166	90,653,344	1,737,822	1.9	769,094,354	693,853,072	75,241,282	10.9
Louisville & Nashville.....	4,996	87,660,327	72,641,921	14,995,406	20.5	716,426,781	528,668,008	187,758,773	27.5
Louisville, Henderson & St. Louis.....	200	2,551,798	2,271,384	280,414	12.3	20,193,392	16,955,151	3,238,241	19.1
Mississippi Central.....	164	2,158,380	2,070,721	87,659	4.2	14,224,604	7,040,460	7,184,144	102.0
Mobile & Ohio.....	991	7,648,272	7,769,921	d121,649	d0.4	60,259,537	50,237,992	9,731,545	19.3
Nashville, Chattanooga & St. Louis.....	1,134	25,541,380	17,924,184	7,617,096	42.5	189,980,472	117,552,477	72,427,995	61.6
New Orleans Great Northern.....	285	1,717,365	1,886,399	d169,034	d9.0	14,621,887	14,117,673	504,214	3.5
Norfolk Southern.....	907	6,865,399	7,161,055	d295,616	d4.1	52,877,555	52,031,848	845,707	1.6
R. F. & P. (incl. Wash. Southern).....	112	25,430,422	12,735,649	12,694,773	108.9	157,245,278	87,261,508	69,983,770	80.2
Seaboard Air Line.....	3,563	57,638,374	35,856,470	21,781,904	60.7	406,887,956	236,770,141	170,117,815	71.9
Southern (inc. A.G.S., C.N.O.&T.P., N.O.&N.E.).....	8,151	188,473,715	147,878,067	40,595,648	27.5	1,498,407,101	935,066,010	563,341,091	60.1
Southern Railway in Mississippi.....	278	1,674,555	1,469,680	204,775	13.9	13,152,826	10,419,660	2,733,166	26.2
Tennessee Central.....	294	5,290,669	1,794,967	3,495,702	194.8	35,840,790	12,278,274	23,562,516	191.9
Total, Southern Region.....	33,637	608,683,037	486,502,866	121,780,171	25.0	4,904,443,248	3,503,476,296	1,400,966,952	39.7
NORTHWESTERN REGION									
Chicago & North Western.....	8,090	113,433,611	129,960,598	d16,526,987	d12.7	954,532,943	934,190,397	20,342,006	2.2
Chicago Great Western.....	1,496	16,946,577	19,897,053	d2,950,476	d14.8	153,022,507	134,204,459	18,818,048	14.0
Chicago, Milwaukee & St. Paul.....	10,305	104,035,366	102,052,919	1,982,447	2.0	693,858,832	727,360,742	d33,501,910	d4.6
Chicago, St. P. M. & Omaha.....	1,749	24,689,318	29,669,421	d4,980,103	d16.8	199,637,236	185,475,757	14,161,479	7.6
Duluth & Iron Range.....	285	607,033	1,002,138	d395,105	d39.4		(*)	(*)	
Duluth, Missabe & Northern.....	417	1,305,678	1,276,688	28,990	2.3	14,097,192	14,939,172	d83,980	d0.7
Duluth, South Shore & Atlantic.....	800	1,391,073	4,268,835	d2,877,762	d20.7	27,259,980	30,521,142	d3,261,162	d10.0
Elgin, Joliet & Eastern.....	807	408	566	d158	d12.0				
Great Northern.....	357	57,833,583	66,650,894	d11,817,311	d17.0	466,178,748	492,406,781	d26,228,033	d5.3
Indiana Harbor.....	101	84,437	84,437			812,302	1,194,244	d381,942	d31.9
Minneapolis & St. Louis.....	1,647	7,100,005	9,882,192	d2,782,187	d38.2	62,564,152	65,028,758	d2,464,606	d3.7
Minneapolis, St. Paul & Sault Ste. Marie.....	4,243	20,564,907	29,243,367	d8,678,460	d39.7	192,892,923	228,996,324	d36,103,401	d16.0
Northern Pacific.....	6,720	65,474,398	69,656,153	d4,181,755	d6.0	511,485,161	486,258,390	25,226,771	5.2
Oregon Washington R. R. & N.V.....	965	21,719,394	21,945,863	d226,469	d1.0	180,124,938	143,398,480	36,726,458	25.6
Spokane, Portland & Seattle.....	555	6,022,220	6,710,162	d687,942	d10.3	61,955,388	53,219,128	8,736,260	16.4
Total, Northwestern Region.....	47,182	422,257,141	497,743,736	d75,486,595	d15.0	3,518,422,302	3,511,343,314	7,078,988	0.2
CENTRAL WESTERN REGION									
Arizona Eastern.....	378	1,133,885	1,251,718	d117,833	d9.5	9,815,936	10,721,227	d905,271	d8.4
Atchison, Topeka & Santa Fe.....	8,646	112,848,239	119,979,738	d7,131,499	d6.2	1,119,734,359	979,691,043	140,043,316	14.3
Chicago & Alton.....	1,051	20,803,864	25,093,754	d4,289,890	d17.1	172,197,276	175,528,923	d3,331,647	d1.8
Chicago & Eastern Illinois.....	1,131	17,077,470	17,528,418	d450,948	d2.6	148,011,708	138,589,232	9,422,476	6.8
Chicago, Burlington & Quincy.....	9,733	106,077,725	119,877,176	d13,799,451	d11.5	884,684,032	877,979,630	6,704,402	0.7
Chicago, Peoria & St. Louis.....	247	942,238	1,175,352	d233,114	d29.8	7,811,440	9,024,844	d1,213,414	d13.4
Chicago, R. I. & Pacific (incl. C. R. I. & G.).....	8,209	107,056,730	110,755,249	d3,698,519	d3.3	880,784,624	790,086,002	90,698,622	11.5
Chicago, Terre Haute & S. E.....	374	1,901,278	1,911,368	d10,090	d0.5	17,396,399	15,543,981	1,852,418	11.9
Colorado & Southern.....	784	7,029,620	7,374,218	d344,598	d4.7	55,017,005	33,661,117	21,355,888	2.5
Denver & Rio Grande.....	2,652	15,516,137	24,471,484	d8,955,347	d36.6	146,477,318	150,961,127	d4,483,809	d3.0
Denver & Salt Lake.....	1,028	8,227,094	7,581,082	646,012	8.5	59,068,255	57,645,247	1,423,008	2.5
El Paso & Southwestern.....	1,168	10,591,013	11,391,914	d800,901	d7.0	104,703,044	103,382,842	2,363,202	2.3
Los Angeles & Salt Lake.....	307	10,626,956	11,661,194	d1,034,238	d8.9	93,617,377	96,122,885	d2,505,508	d2.6
Northern Pacific.....	2,144	19,206,601	22,681,854	d3,475,253	d15.3	174,755,111	160,367,026	14,388,085	9.0
Oregon Short Line.....	773	3,232,284	3,877,070	d644,786	d16.6	37,696,808	31,041,664	6,655,144	21.4
Panhandle & Santa Fe.....	258	1,181,002	1,339,784	d158,782	d13.9	10,776,427	10,407,986	368,441	3.5
Southern Pacific.....	705	134,066,390	144,830,557	d10,764,167	d7.4	1,317,120,094	1,077,307,498	239,812,596	22.2
Toledo, Peoria & Western.....	3,610	67,562,694	73,484,946	d5,922,252	d8.1	566,193,290	469,956,398	96,236,892	20.5
Western Pacific.....	1,011	4,500,000	7,243,836	d2,743,836	d37.9		(*)	(*)	
Total, Central Western Region.....	44,744	651,787,988	714,939,429	d63,151,441	d8.8	5,825,290,710	5,230,238,030	595,052,680	11.4
SOUTHWESTERN REGION									
Fort Worth & Denver City.....	454	9,270,167	6,733,104	2,537,063	37.7	54,657,448	45,041,807	9,615,641	21.3
Gulf Coast Lines.....	920	6,968,587	4,261,683	2,706,904	63.5	57,348,834	53,860,783	3,488,051	6.5
Hugh, Colorado & Santa Fe.....	19,327	16,927,924	13,300,072	3,627,852	27.2	148,997,925	103,605,678	45,392,247	43.8
Houston & Texas Central.....	887	7,025,500	8,179,428	d1,153,928	d14.1	72,318,020	73,800,661	d1,482,641	d2.0
Louisiana East & West Texas.....	232	1,313,113	1,770,517	d457,404	d35.5	11,338,115	10,876,134	461,981	4.3
International & Great Northern.....	1,160	12,721,541	15,808,396	d3,086,855	d19.5	110,891,881	87,860,784	23,031,097	26.5
Kansas City, Mexico & Orient.....	272	498,053	448,100	49,953	11.1	4,505,718	4,257,704	248,014	5.8
Kansas City, St. Louis & Orient.....	307	7,025,500	8,179,428	d1,153,928	d14.1	72,318,020	73,800,661	d1,482,641	d2.0
Louisiana & Arkansas.....	302	1,141,211	879,720	261,491	29.7	10,079,271	4,525,894	5,553,377	122.7
Midland Valley.....	366	2,142,476	2,060,027	82,449	4.2	18,981,729	17,333,472	1,648,257	9.5
Missouri, Kansas & Texas.....	1,737	24,438,766	25,453,364	d1,014,598	d4.4	233,235,505	179,395,731	53,839,774	30.0
Missouri, Kansas & Texas of Texas.....	1,796	25,892,017	21,809,527	4,082,490	18.7	193,857,231	132,296,034	61,561,197	46.5
Missouri Pacific.....	7,108	67,404,745	60,010,571	7,394,174	12.3	585,451,989	456,078,678	129,373,311	28.9
San Antonio & Aransas Pass.....	724	5,253,035	4,847,453	405,582	8.4	44,334,127	39,898,557	4,435,570	11.3
St. Louis San Francisco.....	4,475	72,364,884	64,740,698	7,624,186	12.5	584,596,089	494,142,242	90,453,847	18.3
St. Louis Southwestern.....	989	6,988,899	8,643,091	d1,654,192	d19.1	75,972,050	54,130,307	21,841,743	40.4
St. Louis Southwestern of Texas.....	815	6,907,462	5,504,038	1,403,424	25.5	54,396,761	33,684,066	20,713,695	61.5
Summit.....	1,947	3,961,043	24,125,774	d20,164,731	d41.6	297,636,333	285,815,867	11,820,466	4.2
Texas & Pacific.....	171	2,335,622	23,974,774	d21,639,152	d7.4	207,287,243	181,156,955	26,130,288	14.7
Wichita Falls & Northwestern.....	329	800,795	1,061,881	d261,086	d33.7	7,847,089	4,267,534	3,579,55	

Conditions in Central Western Region

Unusually satisfactory traffic conditions for the present period of the year were reported by Hale Holden, regional director of the Central Western region, for the month of November.

A summary of Mr. Holden's report follows:

Conditions generally were favorable to operation. The influenza epidemic, so pronounced during the month of October, continued during the early part of November, but not to the extent of causing any serious interruptions in the movement of business and no accumulations or congestions of consequence occurred. The car supply was ample to meet all requirements. As a result of decreased demand for coal and general loading, a surplus of coal and box cars has been accumulated on practically all roads. The large amount of grain in storage at the principal primary markets (utilizing from 70 per cent to 85 per cent of total elevator capacities) made necessary the continuance of the permit system, which plan accomplished the purpose intended with general satisfaction.

Car loading was as follows:

Total Cars Coal Loaded			
1918	1917	Difference	Percent
111,955	170,699	Decrease	16.3
Total Cars Grain Loaded			
1918	1917	Difference	Percent
27,384	27,173	Increase	.8
Total Cars Lumber Loaded			
1918	1917	Difference	Percent
70,080	61,437	Increase	14.3
Total Cars Revenue Freight Loaded			
1918	1917	Difference	Percent
515,160	594,254	Decrease	13.3
Total Cars Revenue Freight Received from Connections			
1918	1917	Difference	Percent
275,197	299,840	Decrease	8.7

The heavy decrease in coal loading is explained by lack of market resulting from heavy storage supplies and reduced demand.

Livestock.—Kansas City market handled a total of 16,913 cars inbound, an increase of 2,031 cars or 13.6 per cent; outbound 6,760 cars, an increase of 230 cars or 3.5 per cent. South Omaha market had inbound 11,488 cars, an increase of 464 cars, or 4.2 per cent; outbound 3,643 cars, an increase of 1,760 cars or 32.6 per cent. St. Joseph market had inbound 6,819 cars, an increase of 1,931 cars or 39.5 per cent; outbound 1,742 cars, an increase of 346 cars or 24.8 per cent.

Oil Traffic.—Operated out of the Mid-Continent fields a total of 544 special oil trains, with 14,336 cars, an average of 26 cars per train, of which the Santa Fe road handled 119 trains, with 3,406 cars an average of 29 cars per train.

Troop Movements.—The number of troop movements decreased materially compared with previous months. A total of 42 special troop trains, with 15,632 men were operated during the month, in addition to which about 9,000 men discharged from the service were handled.

Coal Traffic.—The coal situation in the Illinois, Indiana, Iowa, Colorado, Utah and Wyoming fields during the month of November has been easy from a transportation standpoint. The car supply was more than ample, the daily reports of the coal roads showing accumulatively many more cars available than the mines were ordering. The decrease of 16.3 per cent as shown in tabulation above, shows the lowest loading since June. The decrease was primarily due to lack of market, although the two peace day celebrations and Thanksgiving also contributed to the result. Indications are that there will be very little change in the situation during December and the use of storage coal will result in continued light shipments from the mines.

Sailing Day Plan.—During the month of November the Sailing Day Plan has been established at twenty additional smaller stations, resulting in a saving of 508 cars per week. The total saving since this work was inaugurated now amounts to 4,672 cars weekly. Loading for the week ending November 9, as a test, indicates an increase in the average weight per car, from 13,414 to 14,737 pounds. The Sailing Day Committee is giving considerable attention to the loading of cars to avoid transfers and has already established through cars from San Francisco to New York and from Ogden and Salt Lake City to Chicago and expects shortly to have through cars from California points to Chicago.

Terminal Situation.—All of the large terminals in the region have been operating effectively and there has been no congestion in carload or less than carload business. All terminal managers report a free movement through their terminals and generally satisfactory conditions. There has been a full supply of warehouse labor at terminal freight houses and business has been handled with remarkable dispatch.

Locomotive Department, November 16, 1918			
	1918	1917	Increase
Locomotive Department.....	65,213	58,528	6,685
Total.....	88,916	80,219	8,697
Number of Locomotives Turned Out of Shop			
	1918	1917	Increase
	814	691	123
			17.8

We have given general overhauling to 19 B. & O. locomotives at shops in our territory and we are working at the present time on 22 more. We still have 44 western locomotives loaned to eastern lines and in service there; many of our new locomotives being turned out of the shops in the east are assigned for temporary service to some eastern lines. We received from the builders during the month of November, only 19 new locomotives on our 1918 allotment.

Maintenance of Way.—Federal managers as a whole, report the condition of their track and property to be as good as it was last year with few exceptions.

Saving in Passenger Train Mileage.—During the month of November there were the following reductions in train mileage:

	Train
C. & A. trains 62 and 65 between Chicago and Peoria, annual saving	113,150
Readjustment Western Pacific and Southern Pacific service in Nevada and California, annual saving.....	71,175

In addition the Southern Pacific discontinued two round trips per day of motor car service between Oroville and Marysville, thereby effecting a saving of 37,230 miles per annum. There was no passenger train mileage added during the month, so that the savings mentioned are net. Several lines were also able to discontinue one or more sleeping cars.

Passenger Traffic.—The passenger travel during the month of November was light. This was in large part due to influenza epidemic. The cessation of troop movements to ports of embarkation also had its effect upon passenger earnings. The work of demobilization which is now in progress means a heavy movement from cantonments. Additional facilities and ticket sellers have been installed to handle the movement.

Dining Car Service.—After the dining car service had been in effect a month the chief passenger traffic officers of lines in this region were asked to develop how the service is regarded by the public. Their reports indicate general ap-

proval of the change from a la carte to table d'hotel luncheons and dinners. Southern Pacific for instance, advises that in October they served 81,880 table d'hotel meals, and during that time received but four complaints from passengers who stated they preferred a la carte service. Of course, this does not indicate that all the balance prefer table d'hotel service, but the fact that only this inconsequential number expressed disapproval of the change shows quite clearly that it has been received with popular favor.

Unification of Facilities.—There have been some minor unifications of facilities in the Alton terminal resulting in a saving of \$500 a month in the payroll. The consolidations in the vicinity of Salt Lake City and Ogden are progressing favorably. Some minor consolidations have been made in the Southern Pacific and Western Pacific territory amounting to \$1,650 a month. On November 7 consolidations were made of the facilities of the Rock Island and Santa Fe at Chickasha, Oklahoma, resulting in a net saving of \$710 a month. There are a number of similar consolidations under consideration and progress is being made as rapidly as conditions permit.

Traffic at Principal Termini

The Railroad Administration's weekly statement showing the traffic handled by the railways under federal control at 25 of the more important railroad termini of the country during the week ending November 16, shows a decrease of 13.29 per cent in the tonnage and a decrease of 14.83 per cent in the number of cars used, as follows:

	Cars		Tons	
	1917	1918	1917	1918
Atlanta	2,720	2,032	68,475	54,802
Birmingham	5,128	4,739	216,177	204,870
Boston	8,201	6,641	125,547	132,076
Buffalo	8,110	8,013	388,174	323,947
Chicago	52,580	44,782	1,676,423	1,478,546
Charleston	1,138	1,753	19,442	34,892
Cleveland	9,474	8,826	346,244	327,356
Duluth and Superior	26,681	18,797	1,174,198	801,739
Galveston	1,660	1,559	54,045	36,026
Hampton Roads	13,012	11,737	543,652	531,805
Kansas City	7,933	7,487	182,203	170,453
Los Angeles	1,938	1,156	46,231	45,705
New York	29,335	24,323	700,910	628,837
New Orleans	4,472	5,729	129,493	165,960
Omaha	3,807	3,002	103,590	86,342
Portland, Ore.	1,977	1,768	54,924	40,476
Philadelphia	15,533	15,045	546,837	353,139
Pittsburgh	7,328	6,602	271,777	245,388
St. Louis	13,051	10,364	441,735	355,782
Seattle	2,779	2,857	80,791	85,321
San Francisco	2,661	2,771	71,727	102,507
Savannah	2,356	1,463	36,212	29,941
Tacoma	1,274	1,005	36,184	30,508
Twin Cities	12,771	9,398	326,098	238,484
Toledo	8,621	8,026	355,908	330,436
Total	246,930	210,314	7,882,947	6,834,898
Decrease		36,516		1,048,049
		=14.83%		=13.29%
Average ton. per car		31		32

In Case of Fire

Circular No. 67 provides that in cases of loss of or damage to property by fire while under federal control, the matter should be handled on the following basis:

First—Reports of all fires involving property under federal control are to be made in accordance with instructions heretofore or hereafter issued by the regional directors as directed by the Division of Finance and Purchases, Fire Loss Protection Section.

Second—In the case of damage by fire to any property under federal control, other than rolling stock equipment, which will be governed by special rules or practices now or hereafter in force, there should be an immediate determination by the federal manager, subject to the approval of the regional director, as to re-building.

Third—If the decision is to rebuild either in kind or on a different plan or with enlargements, the federal manager, with the approval of the regional director, shall determine upon such expenditures as may be required for the replacement of property in so far as such expenditures are chargeable to operating expenses. The approval of the director of the Division of Capital Expenditures shall be secured in all

cases involving expenditures chargeable to additions and betterments.

Fourth—Adjustments of fire losses, other than loss of rolling stock equipment, are to be made as between the corporation and the United States Railroad Administration as follows:

An immediate effort should be made through the staffs of the federal managers to arrive at an agreement with the corporation as to the value of the property of the corporation destroyed or the amount of the damage due to the fire at the time of the fire, in case the property is not restored or replaced, or as to the cost of restoration or replacement thereof, chargeable to operating expenses, and the cost of such part of the restoration or replacement as is chargeable to investment in road and equipment, respectively. Such agreement shall be subject to the approval of the regional director and of the directors of the Divisions of Finance and Purchases and of Public Service and Accounting and shall be filed by the federal manager with his federal auditor. In case of failure to agree with the corporation, the amounts chargeable shall be determined under regulations established by the director of Public Service and Accounting.

Export Situation

According to the report of the Exports Control Committee for the week ended December 14 much progress has been made in disposing of U. S. army freight and freight for the Allies. War materials of all kinds intended for shipment to the Allies and not now needed are rapidly being disposed of in this country through the various governmental agencies.

Provisions on hand during the week for the Commission for Relief of Belgium amounted to 89 cars.

The Delinquent Bureau has succeeded in arranging for the clearance of a lot of corn syrup which has been held at the terminals for a long time on account of the prohibition against the exportation of this commodity when treated with bisulphide of soda.

According to latest advices, the Food Administration's program for the remainder of December indicates that sufficient ocean tonnage has now been allocated to take care of all demands.

For the week ended December 5 there were 229,566 tons of grain in elevators at North Atlantic ports, while 194,894 had been cleared. At the Gulf ports 216,526 tons of grain were in elevators, while but 48,016 had been cleared.

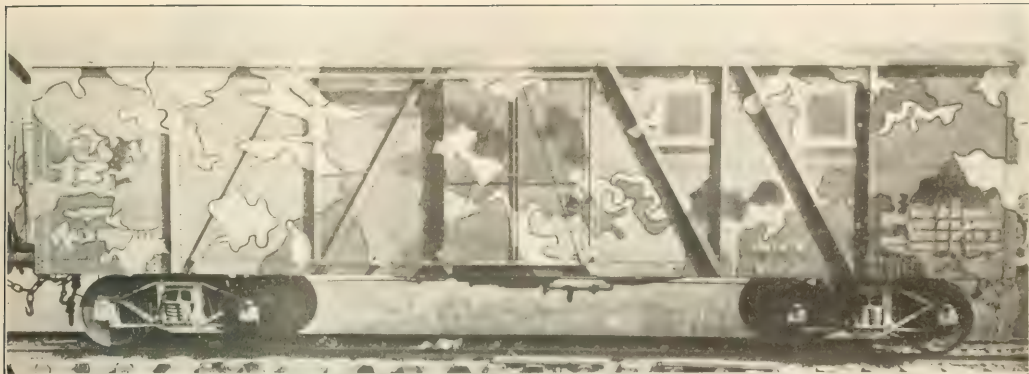
It is expected that the vessel program will show a decided improvement at the Gulf ports and create a full elevator turnover.

Rates for Clergy

The Railroad Administration proposes to put into effect on January 1 standardized arrangements whereby ministers of the gospel, brothers of religious orders, sisters of charity, deaconesses and others engaged exclusively in religious duties will be accorded the privilege of purchasing tickets at one-half the normal one-way passage fare, with no reduction in the sleeping-car rate. The concession will be administered by clergy bureaus maintained in New York, Atlanta and Chicago, operating under the supervision of the several passenger traffic committees.

Lehigh Valley and Other Contract Signed

Director General McAdoo has signed the compensation contract of the Lehigh Valley providing for an annual payment by the government of \$11,321,233.25, the amount of the "standard return" as certified by the Interstate Commerce Commission. The director general also signed the contract of the Buffalo, Rochester & Pittsburgh, on Thursday, providing for annual compensation of \$3,276,410. The contract with the Great Northern was expected to be signed on the same day.



Camouflaged Standard Ammunition Supply and Fire Control Car for Railway Artillery in Use with General Electric Gun

The War Department Railway Artillery

Shown to Public for First Time at a Demonstration
at the Aberdeen, Md., Proving Grounds

A DEMONSTRATION of the various types of artillery developed by the Ordnance Department of the U. S. Army for use during the war with Germany was held at the proving ground at Aberdeen, Md., on Tuesday, making public for the first time the various types of guns on railway mounts which were used in France or will be used for mobile coast defense batteries in this country.

The demonstration included 7-inch, 8-inch, 12-inch, 14-

being able to handle it with ease. The car is of a special design adopted by the Ordnance Department after much experimentation, and is a standard car for mounting several different calibers of guns. The elevating mechanism enables the gun to be raised from 0 to 42 degs. elevation by one man. This gun fires a projectile weighing 200 lb. a distance of 12½ miles and may be fired from any position of track selected. The car is raised about an inch by means of jacks built into



Eight-Inch Railway Mount Narrow Gauge Equipment

Showing Method of Placing the Gun on Narrow Gauge Car for Movement by Electric or Steam Locomotive

inch and 16-inch guns on railway mounts, some of which are illustrated herewith. A 14-inch gun on railway trucks which was used in France by the Navy was described in the *Railway Age* of November 29, 1918.

The eight-inch gun is mounted on a carriage having a traversing mechanism by means of which the gun can be traversed around the entire azimuth of 360 degs., one man

the underframe and a firing platform of oak cross-ties placed under it, taking the weight off the trucks during action. Out-riggers brace the car and afford greater stability. The total weight of the equipment and gun is 174,000 lb. It is the only mount of its kind in existence and is perhaps the highest type of railway mount in point of time element required to put it in battery position and its virtue of having all-around

fire. It can be placed in position anywhere along a railway track in 25 minutes and removed in the same time. It is possible to transport this mount on 60 cm. gage tracks by the use of special narrow-gage trucks which replace the standard-gage ones.

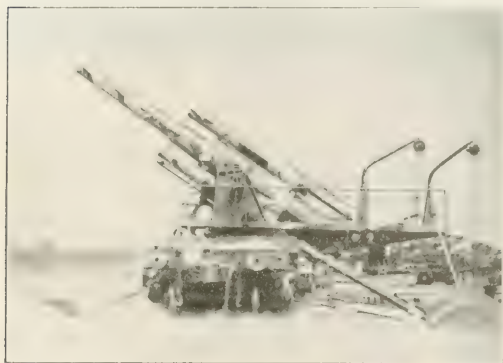
The gun is carried on a narrow gage transport car during transit and is returned to the mount by means of auxiliary equipment accompanying the train. This enables the battery to approach firing position over narrow-gage tracks, a feature of great importance in concealing lines of communication at the front.

The 12-inch sliding railway mount has no recoil mechanism, the energy of recoil being absorbed by friction produced by sliding the mount on the special track which supports it. It is operated on a curved track and is trained on the objec-

nance Department, completely, with the exception of the gun itself, in 85 days.

After the track is laid and beam stringers placed, only about five minutes are required to move the mount into position and get it ready for firing. It may be removed from firing position in an equally short time.

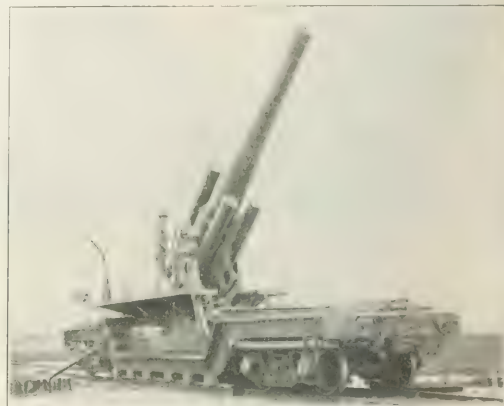
The 14-inch model E railway mount was designed prior



Eight-Inch Railway Mount at Instant of Firing

tive by moving the mount backward or forward. When the gun is fired it recoils about 10 inches and is moved back into its original position by means of a gasoline winch, electric motors, or by hand power.

The entire mount is 105 inches long, weighs approximately 600,000 lb., and is carried on four trucks of eight wheels each. It is so designed that it can be transported



Eight-Inch Railway Mount

to the beginning of the present war, and is intended primarily for seacoast defense in this country. The gun and cradle are mounted on a heavy steel plate girder, the entire mount weighing about 250 tons. The gun is of the wire wound type 14 in. in diameter, and 47 ft. in length. The projectile weighs 1,200 lb. and the powder charge amounts to 400 lb.

The velocity of the projectile at the muzzle is 2,900 ft. per second and the range about 19 miles. The energy of recoil is partly absorbed by a hydraulic recoil brake, and the gun is returned to the battery by counter-recoil springs. The gun is placed in firing position on a cast steel bed plate which is adapted to give a traverse of 360 deg. The time required



Twelve-Inch 50-Caliber Long Range Gun on Sliding Railway Mount at the Instant of Firing

over all American or French railways and has been moved at the rate of 40 miles an hour. The gun on this mount is 12-inch caliber, 50 feet long, weighs approximately 145,000 lb. and is one of the most powerful guns in existence. It shoots a high explosive projectile weighing 700 lb. and has a range of approximately 28 miles. The muzzle velocity is 3,200 feet per second. This mount was built by the Ord-

nance Department, completely, with the exception of the gun itself, in 85 days. After the track is laid and beam stringers placed, only about five minutes are required to move the mount into position and get it ready for firing. It may be removed from firing position in an equally short time. The 14-inch model E railway mount was designed prior

Development of a Standard Refrigerator Car*

An Outline of the Department of Agriculture's Investigations and the Attending Results

By M. E. Pennington

Food Research Laboratory, Bureau of Chemistry, U. S. Department of Agriculture

A SHORT TIME AGO the Railroad Administration issued Mechanical Department Circular No. 7.** the opening paragraph of which reads as follows: "In order to insure the greatest possible degree of efficiency in refrigeration and conservation of foodstuffs, refrigerator cars having trucks of 60,000 lb. capacity or over, will, when receiving general repairs or being rebuilt, be made to conform to the following United States standard refrigerator car requirements." Then follow specific details and references to blueprints for the construction of the car in general, its insulation, its ice boxes and the many details which go to make up a refrigerator car. Throughout one finds that the railroads are instructed to build in conformity with the "United States standard refrigerator car."

Considering the fact that we have in this country more than 100,000 refrigerator cars, and that ultimately all will probably conform to the essentials just laid down by the Railroad Administration, it may not be amiss to review the circumstances which have led to the issuance of this circular.

In the latter part of the nineties and early hundreds the difficulties in the distribution of our perishables attracted an increasing amount of attention because the length of the hauls increased as more distant markets demanded supplies, and the losses from decay in transit kept pace with the distance traveled. Some of the shippers applied to the United States Department of Agriculture for assistance, among them the Georgia peach growers. In 1903 G. Harold Powell and his associates undertook to investigate the matter. They studied the effect on ripening of cooling the fruit quickly after picking and before loading in the car, as well as the development of decay in transit. Precooling, however, was not a reliable remedy because the insulation of the refrigerator cars of the south was, and is, insufficient to retain the chill imparted to the fruit and the air circulation in the cars was, and is, inadequate to transfer the refrigeration from the ice bunkers to the center and top of the load. This is a handicap which limits the distribution of the Georgia peach crop and from which the industry has never been able to escape.

From Georgia peaches the investigators were called to California oranges. The industry was severely handicapped because of decay in transit. Again the inadequacies of the refrigerator cars were apparent. The investigations of the temperature in cars in transcontinental trips brought out the differences in the different parts of the car and their relation to the excessive decay in the middle of the load and its upper portions.

In 1908 the Food Research Laboratory, which had been studying the effect of long cold storage on poultry, extended the work to the handling of the fresh goods in the packing houses and in transit. Our object was to prevent deterioration, and to that end the best packing house methods available were sought. However, we soon found that standardized methods at the packing house did not give standardized results at the market; in other words, the refrigerator cars

were a variable factor. It was not and it is not uncommon to find chickens on the floor at the bunker hard frozen, those quarterway of the car in a good chilled condition and between the doors green struck, and this in spite of the fact that the condition of the packages was practically uniform when they were loaded.

Then began the study of the construction of these cars. In 1913 the results were published as Bulletin No. 17 of the United States Department of Agriculture. The conclusions presented in that bulletin outline fairly well the lines of work since followed by the investigators and which have led to the information on which the construction of the standard refrigerator car is based. The concluding paragraph of the bulletin says, "It is eminently necessary that such questions as the most efficient and economic size of the refrigerator car, the exact amount of insulation required to insure the maintenance of low temperatures, or, conversely, to protect the contents of the car against frost, the equalization of temperatures in all parts of the car, and many others, be pressed for more exact and far reaching answers." The bulletin points out the importance of roof and floor construction in relation to insulation efficiency, especially the waterproofing of the floor. It also calls attention to the efficiency of the wire basket bunker which permits of abundant air access to the refrigerant.

It is needless to state that the defects found in the cars hauling plant products were identical with those hauling animal products. It was obvious, too, that no amount of work to teach better field, orchard and packing house methods would have the desired result—namely, freedom from decay at the market—until the construction of the refrigerator cars was suited to the work which they were expected to perform. To determine in detail what that construction must be opened a new phase of the problem.

It must not be inferred that the railroads were either indifferent or antagonistic toward this research work. On the contrary they had almost without exception cordially assisted the investigators. A number of them were willing to build a few experimental cars, and a few practically put their shops at our disposal.

In the course of the fruit and vegetable precooling work the investigators had observed the increase in efficiency when a slatted rack, a few inches above the floor, was used. The addition of such a rack to a refrigerator car seemed eminently desirable. Accordingly, we asked the railroads to add them to certain cars for trial purposes. The studies already reported in Bulletin No. 17 had shown the desirability of the basket bunker. To this we asked the roads to add an insulated, solid bulkhead, open top and bottom for air inlet and outlet.

By the early spring of 1916 we had ready quite a number of experimental cars built by four roads in as many shops. The details of construction varied widely. This we considered advisable because we first had to establish the fundamentals of construction, such as the type of bunker and the action of floor racks, regardless of the size or particular desirability of the car itself. To go into the details of the many experiments with various products in various parts of the country and under varied weather conditions will be a lengthy

*Abstract of a paper read before a meeting of the American Society of Mechanical Engineers and the American Society of Refrigerating Engineers.

**See *Railway Age*, November 8, page 810.

task, even for a government bulletin. What concerns us here are the broad facts and the deductions which have been drawn from them, especially those concerning air circulation and the amount and distribution of insulation.

Air Circulation

It did not take long to decide that the basket bunker, insulated bulkhead and a rack four inches off the floor, with lengthwise stringers and cross slats about three inches wide and about two inches apart, are essential for the distribution of the refrigerated air. The wire basket hanging free in the end of the car permits the warm air entering at the top to flow without obstruction over the entire surface of the ice, and as it cools, to fall to the floor. At the floor it is not pocketed, but finds a ready exit under the rack, and so along the car floor and up through the load, gathering heat as it goes and carrying it to the upper bulkhead opening where again the ice has a chance to absorb it.

If we place thermometers in the air of the car to determine its temperature at the lower bunker opening, again at the middle between the doors, then at the ceiling, midway of the car, then at the ceiling quarter way, and finally about 10 in. in front of the upper bunker opening, we find a steady rise in temperature, the upper bunker opening thermometer being the highest. Generally we find from two to four degrees difference between the air in the upper, middle part of the car and that at the upper bunker opening. If the thermometers are similarly placed in a car equipped with a box bunker with open bulkhead and without the floor rack, the graduations of temperature in the upper part of the car are just reversed. Here the temperature at the upper bunker opening is ordinarily from two to four degrees lower than at the middle of the car. This observation has been made again and again and is further confirmed by the performance of a box bunker combined with solid bulkhead and a floor rack, with which there is good cooling in the top of the load at the bunkers, but unsatisfactory results in the upper middle parts of the load. In other words, we have only a partial air circulation.

Even more striking are the results obtained when salt is added to the ice in the basket bunker combined with the insulated bulkhead and floor rack, or the standard type bunker, as it is now termed. So rapid is the removal of the very cold air from the bottom of the bunker that fruit and eggs may be rapidly cooled throughout the car without frosting the packages at the bulkhead. Of course, the bulkhead insulated with one or two inches of a standard insulator is an essential if the packages against it are to be protected from the frigid air close to the ice and salt, but that this protection is not due entirely to the bulkhead is proved by the pocketing of the cold at the bottom of the bunker when the box bunker with an insulated bulkhead is salted. Then the packages at the bottom of the load, next to the bunker, are frosted. In other words, there is no force to the air movement and it cannot be distributed with sufficient rapidity to prevent the intensive chilling of itself. With the standard bunker and floor rack and a lading such as cantaloupes or oranges, as much as nine per cent of salt may be safely used in the initial icing, and the same percentage or a little less may be used on the two successive days, by which time the load is cooled throughout. It is unnecessary to point out the great advantages accruing to the transportation of such perishables as berries, peaches and cherries by this ability to cool them rapidly while rolling. It is also of benefit to eggs which, because of the character of the commercial package and the tight load, are exceedingly slow to cool in the ordinary car. Indeed, the top and middle of the load is but little affected by the refrigerant.

The question of insulation has been more complex. We have not only a compound wall, but one which is continually

in vibration and which is moving constantly. To this constant movement of the insulator must be added the difficulties of making it continuous because of the framing of the car and the habitual use of tie rods and bolts which offer runways for heat. The sills as usually placed in the floor, the belt rails and the carlines were very real obstacles to the efficient placing of the insulation. The thickness of the insulator was by no means the only question to be answered; how it should be attached to the framing was almost as important. It was also necessary to determine the most vulnerable parts of the car and guard them accordingly.

Insulation

The thermometers which were fastened tightly against the lining of the car very promptly and consistently indicated that roofs and floors must be better protected than the walls and in the case of the floor and the lower part of the walls it is imperative to waterproof. Comparisons of cars having varying amounts of insulation, loaded with representative commodities, showed that for the safety of the load, as well as economy in loading and in refrigerant, it is necessary to have the equivalent of two inches of pure cork board in the side walls and ends, at least two and one-half inches in the roof and at least two inches in the floor, the insulation in the floor to be continuous from side to side and end to end. In other words, the insulation on the floor must not be broken by sills and it must be at least two inches of pure cork board.

It has not been possible, heretofore, to waterproof the floor. Consequently there has been wet insulation and a serious loss of efficiency. Therefore, the findings of the department emphasize the need of cork board in the floor.

The Government Standard Refrigerator Car

Such essentials of a refrigerator car as an adequate amount of insulation and air circulation had been agreed upon by the investigators prior to government control of the railroads, and certain lines had incorporated some or all of the findings into their new and rebuilt cars. In the standard refrigerator car* developed by the Railroad Administration, so far as possible, the trucks, draft gear, framing and other general construction features are standardized with the United States standard double wall box car. The essentials upon which rest efficiency in protecting perishables against heat and cold have followed very closely the findings of the investigators of the Department of Agriculture. The plans include unbroken insulation on both floor and roof. On the walls the insulation is continuous from door post to door post. It was not possible to devise a scheme by which the insulation could be run over the belt rails, but the exposed surface was reduced. All the insulation is applied in a solid mass, unbroken by air spaces. It is supported by pressure and not by direct nailing. The excess space afforded by the framing is left on the inner side, under the lining, to receive such nails as the shipper cannot be prevented from driving into the walls and which have played havoc with the insulation. Bolt heads and tie rod exits are protected by insulation. The bunker is a woven wire basket holding approximately 10,000 lb. of ice, surrounded by a two-inch space and separated from the body of the car by a bulkhead carrying at least one inch of insulation, and last, but far from least, is a floor rack, four inches in the clear, built of 2-in. by 4-in. runners with 1-in. by 3-in. cross slats 1½ in. apart. This rack is hinged to the side walls. Each half may be turned up and the doorway section folds back to facilitate cleaning the car. The length of the car over end sills should be approximately 41 ft. and the loading space should be 33 ft.; it must not be more than 33 ft. 3 in.

The foregoing is a very brief description of the essentials of the car designed to protect perishables in transit which the

*See *Railroad Age*, November 22, 1918, page 907.

Railroad Administration has designated as "standard" and to which the lines when rebuilding must conform. Such instructions to the railroads should insure quick results in an increase of reliable refrigerator cars. Of course, there should and doubtless will be a program covering the building of new cars to replace at least 10,000 so-called refrigerator cars now in the service which are camouflaged box cars and a menace to every pound of foodstuff loaded in them.

Future Developments

On the basis of a standard car the department is now predicating a standard icing service which should save foods and money. It is also working on standardized methods of stowing loads and the standardization of packages. The ability quickly to cool certain commodities in transit by the use of salt with the ice has given a new impetus to orchard, field and packing house handling, while the reasonable assurance of proper care in transit of such products as dressed poultry lends a stability to the industry which is much needed. There has been much discontent on the part of shippers of products requiring intensive refrigeration because they could not obtain such cars as the large meat packers are

using. The United States standard refrigerator car will carry meat hung from rails quite as successfully as the cars built especially for meat. In addition it will carry package loads on the floor under the meat better than the meat cars. An important difference in the standard car as compared with the meat car is the reserve of ice in the bunkers which are often amply supplied when the tanks of the meat cars need replenishing. Neither is there visible in practical results the advantages supposed to accrue from the retention of the brine, provided coarse rock salt is placed *on top of the ice* and so forced to bore its way through the whole mass before finding an exit. We have wasted much salt in the past, as well as ice and foodstuff for lack of knowledge.

For every standard car turned out of the shops there will follow a saving of food, a saving of money and a saving of labor. To that end the Department of Agriculture has worked long and patiently and to that same end the Railroad Administration has now issued Mechanical Department Circular No. 7, and has also indicated its intention of reminding the railroads of the instructions.

Truly, facts, faith and friendly co-operation have brought about a consummation long and earnestly desired.

Hard Knocks for McAdoo Five-Year Plan

Public Sentiment in All Parts of the Country Apparently Against Government Ownership and Alive to the Danger

THE FOLLOWING CLIPPINGS were selected without any attempt to discriminate as between different sections of the country or the value of editorial opinion or weight that might be attached to editorial opinion. They are simply a collection of editorials which were readily available, as might be easily proved by the inclusion of the conclusions of the Buffalo Courier.

An attempt was made in each case to quote that part of the editorial which most succinctly expressed the sentiment of the paper quoted.

[*New York Sun*]

Only nine days after President Wilson declared that he had no confident judgment of his own upon the subject, thus provoking a hearty, if good natured laugh in the Congress to which he "frankly" turned for counsel, Mr. McAdoo informs that same Congress that he has permission to say that the President is in favor of at least five years of governmental control, not on account of war emergency, but wholly of experimentation and possible preparation of public opinion for a momentous enterprise of paternalism and of vast extension of executive responsibility and power.

When did the President arrive at the confident judgment which was lacking in his intellectuals forty-eight hours before he sailed?

[*New York Times*]

Mr. Hughes said the other day that "it is regrettable, but it is true, that governmental enterprise tends constantly to inefficiency." Mr. Hughes is a witness whose testimony cannot be lightly disregarded. If we are to make this venture, it should be made with full understanding of what it means. But first of all we should understand that Mr. McAdoo's plan of five-year control puts the country on the straight road to government ownership.

[*Brooklyn Eagle*]

One result is that Mr. McAdoo, having ridden for a fall, has sustained one, plus a severe shock. Another is that the President himself fails to escape unscathed. Allowances may be made for him because of the tremendous pressure of other and even more momentous business, but for Mr. McAdoo it must be said

there are no excuses. Practically in one breath he has disclaimed government ownership proclivities and sought to continue public control long enough to insure it in perpetuity.

[*New York Journal of Commerce*]

One point made by Mr. McAdoo is that now, after the special dislocation by government control, "it is of the utmost importance to the commerce, industry and life of the American people that a comprehensive program of improvements to railroad prospects shall be carried forward over a period of at least five years," which would involve "expenditures of at least \$500,000,000 per annum, or \$2,500,000,000 for the five-year period." * * * If the railroads are put in condition for the return of peace conditions at such a cost, and the government supplies the funds on account of the financial stringency, shall that become a government obligation for directing operations? Or shall the corporations be bound to make the payments back to the government and be in a condition to do so from their earnings with all other obligations duly met?

There is no denying that there is a great problem here and it is of the utmost importance that it should be duly studied and wisely solved. It may be easier to have this accomplished with the best results for all concerned if the government direction is continued during the process than if the roads are turned back to the different corporations on such terms and conditions as may be devised with that great financial problem unsolved. It is not a matter for offhand judgment on such knowledge and such consideration as are at once available. The best minds concerned with the situation and the interests involved should give it their most thoughtful consideration.

[*Brooklyn Eagle*]

From but one point of view, which is that of the advocates of permanent operation by the government, is there an imperative necessity for haste. The present Congress will go into history in a few months. It will be succeeded by a Legislature which may—or may not—harmonize with Administration purposes. It is a foregone conclusion that the next Congress will make short work of anything calculated to commit the country to public ownership of its transportation facilities, and none will contend that the director general's program is short of a giant's stride in that direction.

[*New York Tribune*]

He pleads merely for a prolonged test of governmental operation. He professes to believe that this would not necessarily mean government ownership. But, whatever Mr. McAdoo thinks, or thinks he thinks, that is precisely what it would mean. If after only a few months it is so difficult to work out a plan whereby the roads may be fairly restored to their owners, what would it be after five years?

[*New York Commercial*]

Politics, there's the rub! What could the private corporation not do to attain efficiency and give service if relieved of that curse! Mr. McAdoo tells how detrimental to the transportation system of this country is the conflict between federal and state laws and regulations. He asks for a free hand and the use of the credit of the United States to carry out a comprehensive program of improvement. He can accomplish nothing of value in the space of two years while facing a change of management at the end of that period. * * *

Congress should protect the public against stock watering and the pyramiding of issues of securities such as ruined the old Rock Island and other railroads. There must be no discrimination in rates or service, but the railroads must receive a living wage just as their employees do. If the private owners were allowed to charge the rates Mr. McAdoo imposed, and to pool their traffic, equipment and terminal facilities, as he has been doing, they could serve the public as well as the government can.

[*Houston Post*]

Naturally, the observation in Director General McAdoo's report that his plan would serve to take the railroads out of politics will make men smile, it being one of the few jests Mr. McAdoo has perpetrated in the literature of his public service. Neither the McAdoo plan nor any other could accomplish that. * * *

This [the railroad problem] is easily the most complex of all our postbellum problems, since its solution must come out of a confusion of conditions, influences and considerations, not the least of which is that of political expediency. It is nothing short of a national misfortune that the determination of all the questions and factors at issue in the problem of transportation can not be had without the intrusion of partisan politics into the councils of those who must find the solution. * * *

Demagoguery and ignorance have for years complicated our transportation difficulties. If experience is worth anything at all, it should teach us that politicians are not competent to solve such difficult economic problems, largely because they link their own unimportant political fortunes with these questions of prime concern. The very fact that the recent taking over of transportation control by the government was rendered necessary because the law prohibited the owners from doing what was essential to the highest measure of effective service is proof enough that the politicians have not improved transportation conditions in the United States during the long period in which they have tinkered with a great interest of which they were ignorant.

[*Cleveland Plain Dealer*]

The country knows pretty well how government control works in war time. It has no opportunity to learn how it may work in peace, nor, says Mr. McAdoo, will it have opportunity to learn unless further legislation is passed by Congress. * * * America's future railroad policy is too big a question to be settled upon inconclusive evidence. Plenty was to be said in favor of government control as a war measure; what can or should be said for it as a peace proposal, who knows? Why not try it for a strictly limited period and find out?

[*Minneapolis Tribune*]

If Mr. McAdoo wanted to create a sensation, stir things up and make talk, he ought not to be disappointed in the result. If he wishes to afford a fair opportunity for putting into effect the President's third alternative of modified private control without government ownership, he is in entirely too big a hurry. * * *

How characteristic of this administration! It made a gesture toward consultation and co-operation with Congress, a concession so unusual as to create a smile in Congress when it was proposed, but within a fortnight that is forgotten and the old habit of dictating to Congress reasserts itself. It is impossible

that this announcement has been made without the sanction of the President, if not at his instigation. * * *

It remains to be seen how far war powers go, and whether Congress can be forced to adopt at once one or the other of the alternatives offered, or whether it can take up the question with sufficient deliberation to work out a solution "in the interest of the public and in fairness to the owners."

[*New Orleans Times-Picayune*]

It seems strange that the President, within nine days after declaring that he had "no answer ready" and urging Congress to institute a "complete and impartial study" of the whole railway problem, should reverse his judgment and indorse a recommendation of snap judgment—for that, as it seems to us, is what Mr. McAdoo's proposal amounts to. * * * Sound public policy requires that the people be consulted in this vital matter—or at the very least, that the Congress of their latest selection, and presumably closest to their views, be permitted to deal with it.

[*The Topeka Capital*]

Any way the railroad problem is looked at, the importance of a decision by Congress as to the future policy stands out. If this decision is made in the next year, then an extension to five years may be unnecessary. If no decision is made for five years, then public and railroad owners and shippers will be engaged in constant wrangling over the vast expenditures for the railroads, different roads will be wrangling over expenditures and extensions on their account for or against their ultimate interest in comparison with others, and there will be no touchstone by which these disputes can be determined.

[*Chicago News*]

It is very singular that this "only practicable and wise alternative" should have been informally suggested as a sort of afterthought to chairmen of congressional committees. If the President fully approves of the idea, why did he not directly and personally submit it to Congress? * * *

There are formidable arguments against the plan. Certainly a five-year period of government control might make the return of the railroads to their owners much more difficult than now, if not practically impossible. A comprehensive plan of improvements made by government order according to an unfettered government program and duly charged against the properties so improved might make them when "unscrambled" of small value to their owners.

[*The Detroit Free Press*]

It seems to us that in a general way, Mr. McAdoo convicts himself of failure to "prepare for peace in time of war," that at the least he confesses to a neglect of a part of his duty which demanded that management of the transportation lines be carried on with a view to their ultimate restoration to their real owners as well as with a view to immediate needs of the country. So far as his contention that a five-year extension of government control would take the railroad question out of politics is concerned we quite fail to follow his reasoning. Only the privately run enterprise can be kept out of politics. Public ownership or control immediately and as a matter of necessity, places an enterprise in politics. Its administration becomes a matter of public policy.

Possibly an immediate return of the roads to their owners would be hurtful to public interest and to the railroads themselves. Mr. McAdoo knows best what the situation may be as the result of his administration. However, an immediate return is not necessary, nor called for. All that the law demands is a restoration within a year and nine months after the war is formally concluded, and if the railroad properties cannot be put into shape for restoration within what will probably be a two-year period, a condition exists that ought not to exist, and the assertion by the Railroad Administrator that it does exist should almost warrant an investigation by Congress.

[*Spokane Spokesman Review*]

Secretary McAdoo recently declared there was danger of the railroad question becoming a political issue in the election of 1920. His plan of extending government ownership to 1924 would make that question a very lively issue. There is only one way to prevent that—for Congress to settle the matter, one way or the other, before the presidential campaign of 1920.

[*Boston Herald*]

This would mean that two million railroad employees in the next presidential election, would be asked to decide whether they preferred to work for the government, as the Democratic party in Congress and the cabinet had arranged, or for private owners, as the Republican opposition would be likely to provide for.

[*Virginian Pilot*]

With all due deference to the judgment of Mr. Adoo, who expresses the conviction that the proposed extension of government control would not mean permanent government ownership, it would be nothing less than miraculous if such was not the final outcome. And what permanent government ownership, in time, would mean is a prospect not to be contemplated with any degree of equanimity by anyone who would not be content to see the country's material progress and prosperity handicapped by inefficient transportation service, its tax-payers bled for the benefit of multitudes of placemen and a large beginning made towards perversion of socialistic purposes of the democratic principles underlying the Republic founded by the fathers.

[*St. Louis Globe Democrat*]

Mr. McAdoo's argument that extension of railway control for five years would "give composure to railroad officers and employees" needs a diagram. He got no composure, resigning so he could make money enough to provide for his family. Some of the officers may be forced to the same course, although if they know nothing but the railway business they will not have Mr. McAdoo's advantages. * * *

There is no need to experiment with the 250,000 miles of American railways for five years. Experience in government ownership of 223,907 miles of railway throughout the world for long and short periods is available for the information of Congress. Let it consider it and act upon it as soon as possible.

[*Albany Journal*]

The reasoning is not at all clear. Rather, it is confusing. It indicates the purpose somehow to arrive at the presented conclusion. And insistence upon that conclusion indicates the desire for establishment of government ownership. * * *

The administration having failed to secure compliance with its demand for the election of a Democratic Congress through whose subservience to executive dictation the socialistic purposes of the present administration could have been accomplished at leisure, is attempting to use the present Congress as an agency for "nailing" some things to suit its purposes during the brief remaining period of its existence.

[*Boston Transcript*]

Congress can count upon a large body of popular support, we believe, if its members will take the President at his public word and respond to his hope, publicly expressed, that "they will have a complete and impartial study of the whole problem instituted at once and prosecuted as rapidly as possible." That does not mean that we must resort to five years of "watchful waiting." It means the adducing of all the evidence quickly, then a decision, then the legislation necessary to make that decision effective. All of this can be done before 1920 if the current Congress will commence the investigation.

[*New York American*]

Mr. McAdoo has shown splendid good sense in his letter to Representative Sims, promulgating the plan to give public operation of the railroads at least a sporting chance to show what it can do under the easier peace conditions, by continuing public operation for five years.

It is too bad that Mr. McAdoo felt compelled to relinquish his management of the railroads. If he could handle them so well in war time with responsibility divided between the railroads and the Treasury, what could he do in normal times if he devoted his great energies to the railroad management alone!

[*New York Herald*]

On every side industries are rapidly returning from war emergency conditions to the normal and the railways may as well join the procession. The experiment with unified federal operation has been expensive, but it has not been without its value,

as in demonstrating the practicability of sending freight by the shortest routes regardless of the "systems" to which the lines belong and in the joint use of important terminals. These lessons will not be lost. Meanwhile we face the fact that important civic and commercial organizations favor a speedy return of the lines to private ownership and that Mr. McAdoo, like President Wilson, admits that he has formed no opinion as to the best disposition of the railroad problem.

An extension of federal operation for five years would in all human probability lead to government ownership, and to that the best thought of the country is unalterably opposed.

[*New York World*]

To extend the period from twenty-one months to five years would merely afford Congress the opportunity for procrastination. It would be tempted to let matters drift, postponing to the future what should be done with diligence. The uncertainty that prevails today would be needlessly prolonged. The future of the railroads would be left in doubt for no good reason except that Congress found that the easy way to shirk a difficult problem.

[*Macon Telegraph*]

If they are to go back, and President Wilson has expressed his willingness to restore them as soon as a plan is worked out, it had better be as soon as possible. Mr. McAdoo's idea of a five-year period in which to arrive at a policy would create in that very lapse of time difficulties and problems greater than those its extension is designed to dissipate. In short, if they are to go back, and they should, they'd better be "going while the going is good." The farther in they go the more desirable—and the harder—it will be to get them out.

[*Wilmington Evening News*]

No doubt the best results of our experiment in the line of government control and operation of the railroads is the revelation that has been made of how the different railroad systems may be co-ordinated in the details of their operation, in the direction of giving a much more effective service in transportation, especially of freight. But it need not be feared that the lesson thus learned will be forgotten after the railroads are restored to separate corporate control. The benefits surely will be continued. The general opinion of the public, we believe, is that the railroads should be restored to their respective corporate control and operation as soon as may be possible. There is no assurance of real benefit to the people in the continued operation and control by the Federal government.

[*Philadelphia Ledger*]

What he says to Congress is, in effect, give us more time—five years in fact—to carry through the experiment of unified control, otherwise the present administration will turn the railways back to their owners before the end of the present session and leave to the incoming majority the heritage of complicated litigation which is inevitable.

[*Indianapolis News*]

He [Mr. McAdoo] also declares that an ounce of experience is worth a ton of theory. In this connection he might consider whether he and the nation are not going to get tons of experience if they keep the railroads for a five-year period.

[*Knoxville Sentinel*]

The truth is, we suspect, that the politicians need the railroads in their business and above everything else want them to be kept in politics, while the railroad executives want to continue the government's Gibraltar of financial backing behind the railroads and let the control of the properties at the same time pass to them.

But Wilson and McAdoo are a canny pair of Scotchmen—if Mac is not a Scotchman he ought to be—and it is next to impossible to outwit a Scotchman in a dicker and get the better of him.

[*Indianapolis News*]

Many of the considerations advanced by Mr. McAdoo are of undoubted force. There is a consensus of intelligent opinion that the railroads ought not quickly to go back to private control. Action by Congress will undoubtedly be necessary to prevent what the President called the "disservice" of returning to "the old conditions unmodified." But all this only heightens

the unwisdom of attempting such short-cuts as Mr. McAdoo advises. To turn a blind eye upon complexity does not make it simplicity. And hasty improvisations of policy, no matter from what source, can never be a satisfactory substitute for patient study and cautious experiment.

[Hartford Courant]

The hitch about taking the properties back at once, which is so urgently advocated, is in their condition. They are indebted for vast amounts of money to the government, which from time to time makes advances. Numerous January dividends already announced are explained to hinge on the government providing the money to be paid out. What would be the condition of a road, if it went back into the stockholders' hands now, is not made clear.

[New York Sun]

There is no justice and there is no reason in Mr. McAdoo's conclusion that if the director general cannot have at once another five-year license for further laboratory work on the transportation system of this nation the government must pick up the pieces and throw them all in a jumbled wreck back at the heads of the owners from whom they were taken without a notice of five seconds, with the well ordered systems immediately so reshaped that they are scarcely recognizable today by their own parents. After its complete dislocation of the American railway system the government could not do such a thing as that without bringing upon itself the irrefutable charge that it had muddled and mused this railway problem only to duck it when the time came for it to make good on its experiment or to try.

[Buffalo Courier]

Mr. McAdoo has certainly demonstrated that he is a high officer whose judgment in dealing with large affairs is entitled to respectful consideration.

[St. Louis Republic]

Secretary McAdoo says that unless Congress agrees to extend railroad control for a period of years the present effort to revive river traffic by government aid may not hold much promise.

The idea is that if the railroads are unleashed they will set about killing the infant river industry. If Congress should believe there is truth in that view, and there may be, then, assuredly, steps should be taken to keep a firm hand on the situation until river traffic is well established. In the long run, the waterways will not need to ask favors. * * *

Any policy of discouragement, any policy which would mean the loss of what has been gained is unthinkable.

Accident Prevention "at the Source"

AS THE TWIG IS BENT the tree's inclined, as we all know; and this fundamental fact has been recognized by the safety-first specialists of numerous railroads in their varied and ingenious methods of introducing the propaganda into the common schools, large and small, city and country. To give system and regularity to this useful teaching, and with a view to making the benefits of the lessons permanent and at all times available to all pupils, the public schools of Rochester, N. Y., are using a regular course of instruction, an outline of which is shown below. This outline, prepared by A. C. Clark, a former principal of one of the grammar schools of that city, is said to be giving very satisfactory results.

A COURSE OF STUDY IN ACCIDENT PREVENTION

First Grade: The House

Slogan—"Better be safe than sorry."

- How I may help:
 - Put away playthings;
 - Straighten rugs;
 - Keep halls and stairways clear;
 - Put sand or ashes on icy walks.
- Dangerous playthings:
 - Pointed scissors, knives, toy pistols, snowballs, firecrackers.
- Dangerous places to play:
 - Near lake, river or canal;
 - Fences, porch rails, banisters;
 - High windows and trees.

- Caution against:
 - Scalding liquids;
 - Footstaps of unknown thickness—medicine, plants;
 - Teach the "Poison" label;
 - Animal kicks and bites;
 - Interfering with gas fixtures, stoves, lamps, etc.

Second Grade: Common School Accidents.

Slogan—"You have no right to take a chance; someone else may have to take the consequences."

Review work of previous grade.

- Responsibility for the care of younger children.
- The danger of pushing, shoving or tripping others.
- Danger of riding a bicycle or of roller skating near the school.
- Danger of throwing snowballs, stones or other things.
- Necessity for order in fire drill.
- Care for ourselves and for others in games and at periods of relaxation.

Third Grade: Street Accidents.

Slogan—"Folks who have no wings must use their wits."

Review work of previous grades.

- Traffic officer.
- How street accidents may be avoided:
 - Play in yard or playground;
 - Look both ways before crossing the street;
 - In passing behind a moving vehicle always look to see what is coming;
 - When crossing the street look first to the left and then to the right;
 - Cross at cross-walk;
 - Running into streets;
 - Hitching onto wagons and automobiles.
- Why is there a city ordinance against playing ball or snowballing in the street?
- Notify your teacher or a policeman if you find dead branches or hanging limbs in trees.
- All hanging wires are dangerous. Never touch a wire that is swinging, or lying on the ground. In case you find one, stand guard over it until someone comes. Have them notify the Rochester Railway & Light Company.

Fourth Grade: Street Car Accidents.

Slogan—"Get the safety habit, practice it and preach it."

Review work of previous grades.

- Things to be observed when using a street car:
 - Always ride inside the car;
 - Know the right way to get on and get off a street car;
 - Be cautious when crossing opposite bound tracks from behind a car.

Fifth Grade: Travel Accidents.

Slogan—"Stop, look, listen."

Review work of previous grades.

The essential part of the work of this grade shall be to educate the pupil in the rules of the road. Have children collect and make cautionary signs and make a practical use of the best of them.

- Railroad wrecks, their cause and prevention.
- Safety-First campaigns of transportation companies.
- Danger of standing on the platform of a car, or of letting any part of the body project from the car.
- The danger of grade crossings.
- Traffic regulations:
 - Speed regulations for automobiles and motorcycles;
 - Keep on the right side of the street;
 - Care when turning at sharp corners;
 - Lights on vehicles at night.

Sixth Grade: Industrial Accidents.

Slogan—"And the end is that the boy shall grow up to enjoy his manhood and the girl her womanhood; that parents shall not be deprived of the delight of their children in youth or of their support when old age comes; and that cripples and hopeless workers, who might have been strong men and women, shall no longer be a byproduct of our community life."—(With acknowledgment to P. N. Junke.)

Review work of previous grades.

- The right of the worker to be protected from accident and the right of society and the employer to his co-operation to prevent accidents.
- Purpose of factory inspection by state and city.
- Safeguards on machinery and dangerous places.
- Foolishness of taking unnecessary risks.
- Consideration for other workers.

Seventh Grade: Safe Living Conditions.

Slogan—"Build wisely to live safely."

Review work of previous grades.

- Duties of the fire marshal.
- The building codes of Rochester.

Eighth Grade: Economic Loss Through Accidents.

Slogan—"Compensation never compensates."

Review work of previous grades.

Discuss with the class the great economic loss involved when society loses the life production of some boy or girl who has been killed by accident. What it means to the family when the father or the wage earner is killed or incapacitated by accident. The economic value of an arm or an eye.

Discuss in a general way: Employers' liability laws, accident insurance, workmen's compensation acts.

Some Important Points in Fuel Conservation

Why We Must Still Save Fuel; Plan of Organization; Lessons Learned from Personal Experiences

By Robert Collett

Assistant Manager, Fuel Conservation Section, U. S. Railroad Administration

THE SHORTAGE OF FUEL was so acute last winter that anything resembling coal found a ready market at exorbitant prices, and it is estimated that the additional average of five per cent ash content in the coal in 1917 over 1916 represented a loss of something like \$1.20,-000,000, aside from the collateral loss of poor service rendered by the use of this grade of fuel. The loss sustained by reason of heatless holidays has been variously estimated from one billion dollars up. A recent request from General Pershing called for six million tons of fuel to be shipped abroad. Our present shipbuilding program was estimated to require fourteen million tons of coal, merely to make and transport the steel. And for the eight million tons of vessels, it will require five tons of coal for each ton of shipping which leaves the ways. Each 15,000-ton ship that leaves our harbors for Europe consumes about 3,000 tons of coal or 12,000 barrels of fuel oil. Before the war, ships coaled abroad and made the round trip. Now the reverse is true. We can readily see, therefore, that the need for conservation, aside from cost is such as to challenge our best efforts. What then are we doing, and what can we do, to effect further economy?

By reason of the large corps of fuel inspectors under the Federal Fuel Administration, aided by the railroad fuel inspectors, who have also been given federal authority, the general quality of the fuel has been, and will continue to be, very much improved. The miners have responded wonderfully. Better car movement has also helped. The number of coal cars in service in ten years has increased only 20 per cent, while the coal production has increased nearly 70 per cent. In 1915, the fuel consumption on railroads was 122,000,000 tons, at a cost of \$240,000,000; for 1918, it is estimated it will be 175,000,000 tons, at a cost of \$650,000,-000, an increase in tons of about 44 per cent, and in cost of 170 per cent. To bring it closer home, the fuel bill for the three roads entering Boston in 1917 for locomotives was nearly \$21,500,000; the fuel used for stationary and power plants will bring the cost close to \$25,000,000. If by concerted effort nine shovel fulls of coal could be made to do where ten shovel fulls now are used, it would mean an annual saving for these three roads alone of \$2,500,000. It is fair to assume that this much will be accomplished.

Organization

Investigation has shown that actual supervision of the use of fuel is often not in similar proportion to other items of operation. But the fuel expense on railroads is such as to justify the necessary organization. Different railroads have different methods, the chief consideration is to have the supervision complete and responsibility for every angle of the problem definitely established. It is our recommendation that one general man without other duties than fuel conservation, be charged with general supervision, reporting to the chief operating or chief mechanical officer; if to the latter, it should be understood by all departments that matters so requiring will be referred to the chief operating officer whose

support, it is needless to add, will be given all practicable suggestions. The particular reason for this is, that many features vitally affecting fuel performance can only be handled as a system matter. It is but natural that the local division officers and even the various departments will not be in a position to regulate all matters locally. The monthly fuel cost should be furnished at the earliest possible date after the close of each month to all divisional as well as general officers, and be made a subject of discussion at staff meetings; it is also a good plan for superintendents and other responsible division officers to make monthly report of reasons for fuel increases and decreases. The plan of having fuel conservation committees, as a number of roads now have, is a good one. The fuel costs furnish an excellent guide for establishing responsibility as well as showing the justification in some instances for increased supervision or facilities.

In the matter of the general man referred to; in addition to disseminating a great deal of valuable information gained through contact with all of the division master mechanics, superintendents and other officers, as well as employees, the division road supervision needs the counsel, advice and influence that his position can furnish.

The maintenance of equipment department carries the responsibility for the waste of fuel by reason of engines not being in good condition. It is responsible for excessive fuel used at terminals and is naturally striving to continually improve these conditions. The transportation department is responsible for the conditions causing fuel waste in that department and the maintenance of way department likewise.

Those charged with supervision of the locomotive crews when in service feel their share of responsibility for the proper methods of operation and a proper return from the money invested in fuel. To the greatest possible extent they should be given every opportunity to come into personal contact with the crews and the engines when in service.

Where practicable, each road foreman of engines or supervisor should have a certain number of crews and engines and be thoroughly familiar with the fuel costs in such service. We will assume one road foreman of engines with an assistant, and one traveling fireman—which is more supervision than is usually provided—has 50 engines in service at all times under his direction. At present costs these 50 engines are worth, if at all modern, we will say \$40,000 each, or a total of \$2,000,000. We will estimate they will burn 300 tons of coal each month at \$6 per ton, a fair average for New England; this gives a fuel cost of \$1,800 per engine per month, a total of \$90,000 per month, or \$1,080,000 per year. This supervision then is virtually responsible for the proper operation for every minute it is in actual service, of \$2,000,000 worth of machinery and the proper use, so far as the work of the crew is concerned, of \$1,080,000 worth of fuel annually. It is very natural, therefore, they should be anxious to make a good return for their stewardship.

*Abstract of a paper presented at the New England Railroad Club.

Personal Experiences on a Large Road

Several years ago the writer was assigned to the work of fuel economy on quite a large railroad, reporting directly to the general manager. My job, as the general manager outlined it at the time, was to find out what our locomotives were doing in the use of fuel in the various classes of service and what they ought to do. In this experience I early learned that the one thing that goes further than anything else in obtaining results, is the unqualified support of the officers—from the chief operating officer down—which should be manifested by a personal interest *in*, and familiarity *with*, what is going on in the work. The important factors which it was my duty to study and control, as outlined by the general manager, were as follows:

- Waste of fuel by reason of engines being delayed at the road.
- Waste of fuel by engines being out of order, or unnecessarily at terminals.
- Improper handling of the engine.
- Excessive use of fuel by firemen.
- Engines not in good condition.
- Fuel not up to contract specifications.
- Shortage of coal bunkering facilities.
- Fuel used for other purposes and improperly charged to engine use.
- Any other matters that may require attention.

A locomotive performance sheet based on pounds per 1,000 ton-miles in freight service and per passenger car mile in passenger service, was established. To find out what we were doing and what we ought to do meant just one thing: Getting right into the heart of things and finding out by actual observation. My equipment to start with was a pretty fair capacity for work, a couple of suits of overclothes, a tally counter, an electric torch and the knowledge that the job was up to me. I had to get results, not paper, but real results, and also I had to live on good terms with all departments, for obviously if anyone was going to be "fired" from the job, it wasn't going to be the superintendent of motive power or the general manager himself.

Locomotive Performance Sheet.—By the performance sheets we were enabled to make a very close study of fuel distribution, that is, the charges to individual engines and other miscellaneous purposes. A daily record was kept by charging the coal consumed on each trip, including that used at terminals, against the gross ton-miles in freight service and passenger car miles in passenger service for the trip. By calibrating the old style chutes and at the mechanical chutes where there were no coal measuring devices, delegating certain men to do the coaling—having them work close with the fuel foreman—we were able to account for all of the coal used without large adjustments at the close of the month and felt also that we got a fair distribution to the individual engines. I might add that we always used the fuel foreman's and not the engineer's estimate. At the same time, we found that no matter how closely we watched the distribution feature and although the law of averages worked out very satisfactory for a given class of service, we could not depend on the performance sheet alone to locate excessive consumption. The performance sheet does, however, show up a great many things, especially the effect of light tonnage, light mileage, etc., but there are so many factors that can influence the performance even on similar runs, that a very close personal knowledge of the conditions of all of the locomotives and also close contact with the crews, shop forces and dispatcher's office is necessary. My stereotyped questions in the dispatcher's office soon came to be, "Are all engines handling the required rating and how are they getting over the road?" In the roundhouse the question was, "Were any engines not steaming?"

Waste of Fuel by Reason of Engines Delayed on Road.—It is impossible to get a fuel performance record that will accurately record waste from this cause. Where practicable, delay reports should show time lost for each cause, instead of consolidating delays as sometimes happens, in order that each cause for delay can be properly followed. Here again

close contact with the crews will develop valuable information. These matters should be made important features at the staff meetings.

One road recently had a number of its most experienced conductors and engineers ride the freight trains for a time and had improper conditions corrected on the ground where possible. Without reducing tonnage, the average time of freight trains on the road was reduced two hours. Another case which came to my attention recently was that of a passenger train schedule which was badly divided and had been for years. The engineers were unable to make the schedule between certain points and engine failures were being charged. It was found that road foremen of engines or engineers were never consulted when new time cards were made. Another case I recently observed was that of three mail clerks unloading mail to one small boy. The engineer at the end of the trip told me that was not an uncommon delay and that it took nearly a ton of coal to make up the time, unnecessarily lost.

Fuel observations taken by counting the scoops of coal, showing the difference between favorable and unfavorable trips will disclose interesting information. If these matters are followed up closely from a fuel cost standpoint, and crews encouraged to call this to the attention of their officers, much will be accomplished.

Waste of Fuel by Engineers Kept Under Steam Unnecessarily at Terminals.—It had been the practice with us and it is not at all uncommon for the mechanical department to keep engines ready for service at all times. This method was reversed and the transportation department gave three hours' notice for the required engines. All of the time above three hours the engines were held under steam, was charged at a rate determined by tests for the various class of service and considered as excessive fuel used at the terminal. This is a matter for local handling, but requires very close watching. Firemen instructors should spend a certain portion of their time educating fire-tenders and there should be terminal fuel committees, consisting of the master mechanic, yardmaster, and others. Proper division officials should be looked on as responsible for economical use of fuel at terminals, including stationary plants.

Improper Handling of Engines.—Engineers are quite naturally anxious to make a good performance. They realize the importance of the fuel bill and the better performance they can make the better trip they have. It sometimes happens, however, that even some of the more experienced men have not adopted the most economical methods. The statement has sometimes been made that "You can't teach an old dog new tricks." That is not my experience. Any man who can successfully hold down a job of running an engine over a period of years, I maintain not only *can*, but has the disposition to learn the most economical methods of operation. We will presume a man is not quite so skillful with the reverse lever and throttle or injector as some other men. Let the road foreman or supervisor go with him and say, "We want to see, or the boss wants to know, what is the best that can be done on this run in the way of fuel. I may make a few suggestions, but I will take the responsibility for making the time, etc." He may even handle the engine or fire for a part of the way. Let a note of commendation come back from the general manager or superintendent on the good performance and you will find that it will have the effect of encouraging any man to make a close study, as to how he can improve his methods. On some roads, however, the plan has been to attempt to get this through the performance sheet and writing letters to the enginemmen, calling attention to apparently poor performance. Sometimes these letters go to the wrong man. Another thing, the enginemmen see things neglected which to them seem of great importance, and which causes them to believe that fuel economy is not really so much

the desire of the management, or they would have been corrected. It is desirable that the crews be advised as to what steps are taken to remedy defective conditions which come under their observation and to which they call attention.

Excessive Use of Fuel by Firemen.—Not unlike many other roads, our plan was to give new firemen a letter to be signed by three different engineers, when in their opinion he was qualified. We found they did not always ride with crews who were the best instructors. We then arranged to select the crews they should ride with and whom we knew would train them properly. We also established the first, second and third year progressive examinations and made a rule that as nearly as practicable, the road foreman of engines would approve the application of new firemen before they entered the service for pay. In the past eighteen months scarcely any rule would apply in the employment of new men, but speaking in general it is possible to attract good men for the position of locomotive firemen.

I believe it worth while to maintain a competent force of traveling firemen or firemen instructors. There are always firemen on every division of the railroad who are very skillful, and the other firemen should be taught their methods. Everything depends on the new firemen getting a proper start and this has not been given enough consideration on the average railroad. The treatment accorded by the engineer, especially with new men, is important.

Engines Not in Good Condition.—Aside from the support of general officers and thorough co-operation between all departments, the condition of the locomotive is the greatest factor in the economical use of fuel. We will pass the matter of design and well known appliances with the statement that appliances of whatever nature, tend to make the engine more complicated and require that they be properly maintained and operated. Certain devices operating under 100 per cent condition guarantee a certain result, but it is sometimes found that practically all of the benefits of the investment are lost by reason of lack of attention to detail, in its care.

Definite front-end and nozzle arrangements should be established and maintained at standards proven to be the most economical for the grades of fuel to be used. Air openings through ash pans should not be less than .15 per cent of the grate area, and preferably more than this. Tight steam pipes, front ends, tight valves and cylinder packing, grates properly maintained and first class steam distribution are the more important items. Engines cannot be in too good condition. If properly encouraged and especially if they know just what it means in dollars and cents in fuel costs, engineers will assist by their reports in keeping engines in good condition.

It is a good plan for the road supervision to ride engines for the first trip out of shop or during the breaking-in period, giving the shop superintendent or master mechanic a detailed report. These reports can be gone over at the staff meetings of the shop superintendent or the master mechanic with their foremen. We should also commend them for their good work. There should be the closest co-operation between the road supervision and the terminals and shops. It has been often stated that if all of the unnecessary work occasioned by improper reports could be avoided, all of the necessary work could be done.

Fuel Not Up to Contract Specification.—The people who use the coal should know all about where it comes from, and when it meets specifications, and work very close with fuel purchasing department. Where it cannot be inspected at the mines, it should be inspected at junction and unloading points and held for inspection if it is not up to the proper grade. The railroad inspectors have now been given federal authority. In cases where, notwithstanding inspectors' efforts, coal of poor quality is persistently shipped, fuel inspectors' reports are verified and such mines or parts of mines are being prohibited by the Fuel Administration from making

further shipments. Under their regulations concerning clean coal, dated May 27, 1918, and Order No. 2,889 of August 26, and the Railroad Administration is withdrawing the car supply from such mines. In addition to this, the Conservation Section has recently been inspecting mines concerning which complaints have been made. Where it is found the product is unfit for locomotive use, we have asked the Central Advisory Purchasing Committee of the Railroad Administration to instruct the railroads to cease purchasing or accepting coal from these mines.

Shortage of Coal Reaching Pockets.—This applies particularly to the weights, to coal lost by the overloading of cars, coal wasted on account of the condition of the equipment, coal left in cars or pilfered. It is essential, if we are soliciting full co-operation in the use of fuel, that these matters should also receive their full share of attention.

Fuel Used for Other Purposes and Improperly Charged to Engine Use.—It sometimes happens that the locomotive fuel supply is drawn on for many other causes, such as round-house stoves, sandhouses, and a great many other uses, and proper credit is not given. This is a matter of charging coal to what it is used for, and if necessary to take it from the locomotive supply, to give it the proper credit. Unless this is followed the engineers are apt to feel that they are not getting credit for what they are actually doing.

One who devotes the greater part of his time to the use of fuel on railroads, will find that it opens a wide field of opportunity and interest, not the least of which is the study of human nature, and it will be found that valuable suggestions will come from employees in the most humble occupations, and from every branch of the service.

S. M. Felton Resigns as Director General of Military Railways

S. M. FELTON, who as director general of military railways has had charge of the organization and despatch abroad of all railway forces and the purchase of all railway material for the American Expeditionary Forces, has resigned, effective on December 31, and after closing up the affairs of his office in Washington will return to his railroad work at Chicago as president of the Chicago Great Western. Mr. Felton has been connected with the railway activities of the war department in his present position and as consulting engineer and railway adviser to General Black, chief of engineers, since June 24, 1916. On that date he was selected, on the recommendation of a committee representing five national engineering societies, to take charge of the work of getting together men and materials for possible railway operations in connection with the expedition into Mexico, including the problem of taking over and operating the Mexican railroads, if necessary.

After the entrance of the United States into the European war Mr. Felton sent a railway commission headed by William Barclay Parsons to investigate transportation conditions abroad while he took charge of the organization of the first nine railway regiments, the recruiting of which was begun within a month after the declaration of war. When it became apparent that a separate organization must be created within the engineering department to handle the transportation problem, the office of director general of military railways was established in July, 1917, and Mr. Felton was appointed to the position by the Secretary of War. This involved not only the organizing, equipping and military training of railway troops for the construction, maintenance and operation of standard and narrow-gauge roads necessary for the supply of our armies in France, but also the purchasing, inspection and shipment of the immense quantities of railway materials and

equipment, rails, ties, locomotives, cars, shop tools, cranes, tugs and barges, etc., necessary for the development of adequate port facilities, the construction of new lines and their successful operation. The immediate responsibility for the work in France was intrusted to Brig. Gen. W. W. Atterbury, formerly vice-president of the Pennsylvania Railroad, who was appointed director general of transportation.

Mr. Felton's organization in July, 1917, consisted of himself, two engineer officers, Major M. C. Tyler and Major F. A. Molitor (now colonels) and two stenographers, located in three small rooms. It has expanded until at its peak this summer it comprised 1,304 officers and men, in addition to 2,775 in the engineer depots connected with the office. Many of these officers and men were later sent to France. The office has purchased materials and supplies amounting to \$700,000,000, including about \$400,000,000 for American-built rolling stock, and has organized 75,000 railway troops, of which 63,344 men and 1,810 officers had been sent overseas, while about 12,000 were ready to go when the armistice was signed.

A general description of the work of the department as given in the annual report of the Secretary of War was published in last week's issue. Regarding Mr. Felton's work, Secretary Baker said: "His intimate knowledge of railroad problems, coupled with a personal trip of inspection over all our lines of communication in France, has rendered his advice particularly valuable, and have greatly facilitated the progress of the war department in these particulars."

Orders of Regional Directors

TRANSPORTATION FOR EXPRESS COMPANY EMPLOYEES.—In order 132 the Southwestern regional director announces that existing regulations with respect to the furnishing of free transportation to employees of the American Railway Express Company have been modified by the director-general:

(a) During the first year of their employment, employees will be granted half rate transportation for themselves and dependent members of their families only in case of extreme necessity and between points where the fare is in excess of \$1.

(b) During the second year of employment passes for one round trip may be supplied to employees and each dependent member of their families between points not over 500 miles distant.

(c) During the third and subsequent years of service passes for one round trip may be supplied to employees and to each dependent member of their families between points 1,000 miles distant.

(d) Departures from the above rules will be authorized in emergency cases, such as sickness or death, and will be exercised according to the judgment of the vice-presidents of the express company.

Joint train, baggage men and express messengers who are carried on the express company's payroll and a portion of whose salaries is billed against the railroad will be treated as railroad employees. The same rule will apply to those who are carried on the railroad payroll and a portion of whose salaries is billed against the express company.

Telegrams from Troop Train Commanders to Red Cross Representatives.—The Southwestern regional director announces in Order 133 that the Canteen Service of the Red Cross is authorized to use railroad wires in sending telegrams from troop train commanders in connection with calls for the relief of sick men on board and necessary supplies. Accredited representatives of the Canteen Service will establish such contact with railroad telegraph offices where canteens are established as will enable them to take delivery at the telegraph office of the railroad at such a point.

Development of Coal Mines.—In Order 134 the Southwestern regional director states that the Fuel Administration has relinquished control over the opening of new coal mines and consequently the question of constructing tracks and other necessary railroad facilities sought in connection with the development of new mines, will be handled in the first

instance by the federal manager; if he recommends the project he will so report to the regional director. If the latter passes favorably upon the project he will so report to the director of the Division of Operation who will transmit the papers involved to the director of the Division of Capital Expenditures with his recommendation.

Maintenance of Wires During Winter.—Order 138 of the Southwestern regional director calls attention to a number of precautions which should be observed during the winter to insure the prompt repair of telegraph and telephone wires after a storm. It is similar to an order of the Eastern regional director, see *Railway Age*, December 13, page 1078.

Reports on Loading of Uncompressed Cotton.—Authority having been granted permitting the movement of uncompressed cotton, linters, hull fibre and hull shavings to ports for coastwise movement, conditional upon the loading of cars to their visible capacity, the Southwestern regional director in Order 136 asks that reports be prepared of any cases of light loading. Such reports should be made by the originating road to the Car Service Section direct, showing the car initial and number, the name of the shipper, consignee and destination, the number of bales and how many additional bales could have been loaded into the car. Copies of these reports should be sent to the office of the regional director. Export rates through the Pacific ports apply only on compressed cotton; consequently no uncompressed cotton can be forwarded to Pacific coast terminals for export, as it will be refused by steamship lines on arrival.

Pensions and Similar Benefits.—In Supplement 1 to Order 102, the Southwestern regional director announces that Order 102 protecting the pension rights of employees, also applies to accident, sick, death, superannuation and savings benefits which were maintained by the corporations, with or without contributions from the employees, at the time of the beginning of federal control. The Eastern regional director has issued a similar order, File 3000-445.

Assessments for Expenses Illinois-Indiana Coal Traffic Bureau.—In Supplement 2 to Circular 136, the Southwestern regional director announces that carriers are authorized to make payments for assessments to cover the current expenses (excepting for statistical work) of the Illinois-Indiana Coal Traffic Bureau. These payments are to be charged to operation. Expenditures for statistical work will be charged by the bureau to the United States Fuel Administration and will not be assumed by the Railroad Administration.

Power Reverse Gear.—The Eastern regional director, file 500-69A328, asks what power reverse gear the roads have used; to what extent they have been used; for how long, and what type is preferred.

Shop Hours.—The eastern regional director, file 1200-2-25A329, gives the following interpretation from the director general: "The purpose of this order was to reduce the hours worked in locomotive shops and roundhouses and in car shops and repair yards to a basis of eight hours per day on December 9. At roundhouses and other places where the work is continuous 24 hours a day three eight-hour shifts should be established. In shops where a single eight-hour shift will not properly maintain the equipment a second shift should be organized as soon as men can be obtained, pending which the work should be taken care of by necessary overtime in accordance with agreements with the employees."

Telegraph Franks 1919.—The Eastern regional director, file 2100-33A316, states that for the year 1919 the individual railroads should be governed by their contractual obligations and past practice in furnishing transportation direct to Western Union officials or employees. This will also apply to Postal Telegraph Company, other telegraph or telephone companies, and to other concerns with whom contracts provide furnishing a certain amount of transportation, such as the

Galena Oil Company, Westinghouse Air Brake Co., etc. *Industry Side Tracks.*—In connection with Supplement No. 1 to General Order No. 15, the Eastern regional director, file 401-14A326, states that it will be considered reasonable to enter into a contract under the original terms of General Order No. 15 whereby the railroad will pay at the outset for the cost of that part of the track between the switch point and the clearance point when the federal manager believes that for the first two years after beginning operation of the track the average monthly gross revenue accruing to all railroads under federal control on business to and from the industry will be equal to 15 per cent of the expense assumed by the director general for the construction. This is not stated as an invariable rule to require the making of such a contract under the circumstances stated, or to prohibit the making of such a contract in the absence of expectation of such an amount of revenue. It is, however, believed to be a fair working rule for application except in cases where special circumstances

indicate that some other reasonable rule should be applied. Where the federal manager does not apply the working rule here suggested, he should report his action, either favorable or unfavorable, and his reasons therefor, so that suggestions for the guidance of the federal manager may be made to cover future cases. While Supplement No. 1 expresses no reservation, it is to be understood that in cases where a shipper claims that under federal or state law he is entitled to a track on other terms, his claim shall be considered and transmitted through this office to the director, Division of Public Service and Accounting, for his consideration.

Chartered Passenger Cars.—The eastern regional director, file 1600-11-22A325, states that it has been decided that the movement of private cars in all parts of the country on the basis of 30 fares as a minimum payment will be permitted. This will apply to coaches as well as sleeping cars and the necessary tariffs to cover this situation in the territory east of Buffalo and Pittsburgh will be issued immediately.

Report of Chief Inspector of Locomotive Boilers

General Condition of Locomotives Improved; Inspectors Helpful in Relieving Congestion

THE SEVENTH ANNUAL REPORT of the chief inspector of locomotive boilers for the fiscal year ended June 30, 1918, covers the work done under the locomotive-boiler inspection act as amended to apply to the entire locomotive and tender and all their parts and appurtenances. The data includes all of the defects found on any part or appurtenance of locomotives and tenders; also all of the casualties resulting from failure thereof.

The tables show, in concrete form, the number of locomotives inspected, the number and percentage found defective, and the number ordered out of service on account of not meeting the requirements of the law. They also show the total number of accidents due to failure from any cause of locomotives or tenders and all parts and appurtenances thereof and the number killed and injured thereby.

LOCOMOTIVES INSPECTED, NUMBER FOUND DEFECTIVE, AND NUMBER ORDERED OUT OF SERVICE

	1918	1917	1916
Number of locomotives inspected.....	11,941	47,847	59,750
Number found defective.....	1,196	5,909	14,685
Percentage found defective.....	53	54.5	47
Number ordered out of service.....	2,125	3,294	1,943

NUMBER OF ACCIDENTS, NUMBER KILLED, AND NUMBER INJURED, BY COMPARISON

	1918	1917
Number of accidents.....	641	616
Increase over previous year.....per cent..	4.1	...
Number killed.....	46	60
Decrease from previous year.....per cent..	25.8	...
Number injured.....	756	721
Increase over previous year.....per cent..	4.8	...

The table in the next column shows the total number of persons killed and injured by failure of locomotives or tenders, or any part of appurtenance thereof, during the three years ended June 30, 1916-1918, classified according to occupations.

A summary of the accidents and casualties resulting therefrom during the year shows an increase of 4.1 per cent in the number of accidents, with a decrease of 25.8 per cent in the number killed, and an increase of 4.8 per cent in the number injured.

The decrease in the number of locomotives inspected during the year is due to the fact that a substantial percentage of the inspectors of locomotives were engaged in special work during most of the year. During the months of November and December, 1917, almost all of the inspectors were en-

gaged, at the request of the Interstate Commerce Commission, in checking the congestion at terminals in an effort to see that locomotives were promptly furnished so that the coal movement might be facilitated and the fuel shortage relieved; and during the months of January, February, and March, 1918, were performing similar work at the request of the director general of railroads, and this work contributed materially toward breaking the blockade and expediting the

	1918		1917		1916	
	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:						
Engineers.....	11	45	1	5	1	5
Firemen.....	1	1	1	1	1	1
Brakemen.....	1	1	1	1	1	1
Conductors.....	1	1	1	1	1	1
Switchmen.....	1	1	1	1	1	1
Roundhouse and shop employees:						
Boiler makers.....	1	11	1	11	1	11
Mechanics.....	11	1	1	1	1	1
Electricians.....	1	1	1	1	1	1
Inspectors.....	4	1	1	1	1	1
Watchmen.....	1	1	1	1	1	1
Boiler washers.....	4	1	1	1	1	1
Hostlers.....	1	1	1	1	1	1
Other roundhouse and shop employees..	2	19	1	1	1	1
Other employees.....	1	1	1	1	1	1
Non-employees.....	1	1	1	1	1	1
Total.....	40	76	13	38	13	38

movement of coal and other freight. It is also due in part to the fact that a number of inspectors of locomotives were permanently transferred to the service of the director general of railroads because of their general knowledge of equipment and their special training in the work of conducting investigations.

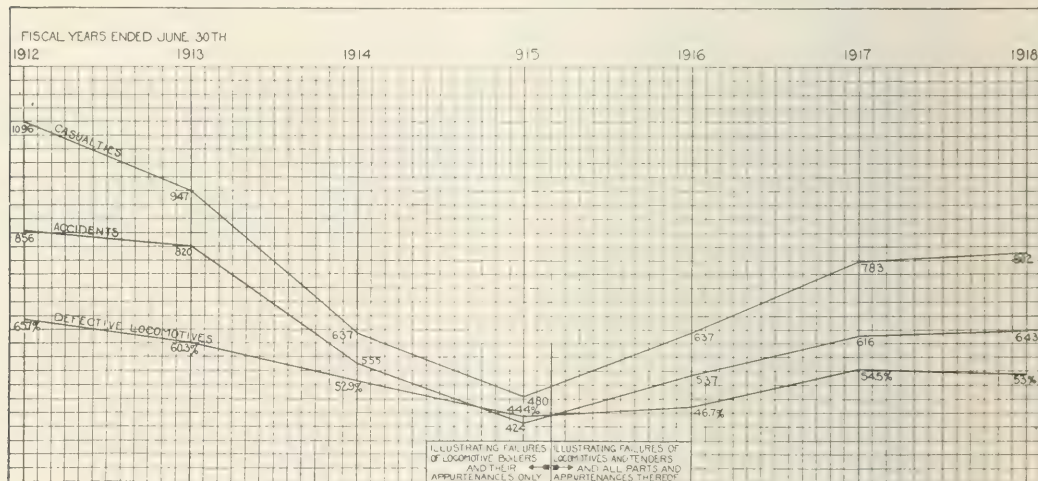
The period covered by this report represents what is admitted to have been the most difficult in the history of American railroads to properly maintain locomotives. This is primarily due to the war conditions which made it necessary to use to their maximum capacity all locomotives that were serviceable, and to return to service many locomotives that had been out of service for years awaiting disposition and which, in some cases, were put in service without having been thoroughly repaired. Proper maintenance of locomotives was also made difficult by the large number of mechanics that entered military service.

The excessive demands for power resulted in the use of many locomotives that were in violation of federal laws, no doubt, with the thought that the movement of traffic was being expedited thereby, but the results of this practice were clearly demonstrated during the past winter.

These conditions rendered the work of the inspectors exceedingly difficult, and considerable pressure from various sources was brought to bear on them to prevent the enforcement of the law where locomotives were sorely needed. The shortage of power made it necessary in every case for inspectors to exercise the utmost good judgment and discretion in their work in order to avoid any possibility of causing additional congestion which an inflexible enforcement of the law might have brought about. The fact that the enforcement of the locomotive inspection laws during this trying period did not unnecessarily hamper the movement of traffic, but on the contrary the work of the inspectors, in hundreds of instances, facilitated the operation of locomotives and the movement of trains, is evidence not only of the discretion and judgment of inspectors in their enforcement of the law, but also of the wisdom and farsightedness of its framers, because it is generally admitted that the law and the work of the inspection bureau was of substantial benefit during the past winter, and when we consider, in addition to this, the fact that the

7, 1918, by the withdrawal by the complainant and at the complainant's cost, of bill in equity No. 226, United States District Court, District of Indiana, *New York Central Railroad Co. v. United States*, in which it was sought to restrain the Interstate Commerce Commission from enforcing its order. This withdrawal was made after arguments on the bill had been heard by the court and the position of the complainants declared to be unsound. This, it is believed, finally disposes of the question at issue concerning the authority of the Interstate Commerce Commission to establish a standard test for locomotive headlights, and the Locomotive Inspection Bureau to enforce such orders.

In the sixth annual report recommendations were made that locomotives should be equipped with automatic fire doors and that a steam connection to air-operated power reverse gear should be applied. It is not considered necessary to repeat these recommendations at this time for the reason that both recommendations have been adopted by the United States Railroad Administration, and all standard United States locomotives are being so equipped, and it is expected that the recommendation for automatic fire doors will be generally followed on locomotives passing through the shop for general repairs, so far as material and labor are available. The recommendation that a steam connection to air-operated power



Relation of Defective Locomotives to Accidents and Casualties Resulting from Locomotive Failures

general condition of locomotives has improved during the year, due, in part, to the work of the inspectors, the results become particularly creditable.

During the year 353 applications were filed for extension of time for removal of flues under the provisions of Rule 10. Investigation showed 18 of these locomotives in such condition that no extension could properly be granted. Forty-two were in such condition that the full extension requested could not be granted, but an extension for a shorter period was allowed. Thirteen extensions were granted after defects disclosed by our inspectors had been repaired. Sixty-two applications were withdrawn for various reasons, and the remaining 218 were granted for the full period asked for. It will be noted that the number of applications for extension of time for removal of flues decreased about 50 per cent. This is largely due to the modification of the rule which was recommended to the Commission and approved by it, and indicates that, under the circumstances, the modification was a proper one.

As provided in Rule 54, 3,124 specification cards and 8,080 alteration reports were filed.

The locomotive headlight case, which has been pending for approximately three years, was finally disposed of June

reverse gears has been adopted by the United States Railroad Administration for old as well as new locomotives.

No formal appeal from the decision of any inspector was filed during the year.

Investigation of the Brooklyn wreck of November 1, when 74 passengers were killed, has resulted in the issuance, by the mayor of New York, of warrants charging manslaughter against five officers of the Brooklyn Rapid Transit Company, namely: Timothy S. Williams, president; John J. Dempsey, vice-president and chief operating officer; John H. Hallock, president of the New York Consolidated Railroad, which appears to be the operating company having charge of the line on which the derailment occurred; W. S. Menden, chief engineer, and Thomas F. Blewitt, superintendent. Each of the five defendants was held in \$10,000 bail; and Edward Luciano, who was motorman in charge of the train, had been previously held in \$5,000 bail. Mayor John F. Hylan, who issued the warrants in his capacity as magistrate, was judge of a court prior to his election as mayor; and before that had been a locomotive engineman on the Brooklyn Elevated Lines.

Hollow Concrete Poles Made by New Methods

Important Savings in Weight Over Solid Construction Are
Effected by a Centrifugal Process

THE RECENT DEVELOPMENT on a commercial basis of hollow concrete poles is of special importance since it came at a time when the use of steel for pole lines has been largely out of the question and the use of wood has been hampered by the great demand for that material for other purposes. Although the superiority of concrete as compared to timber from the standpoint of service life has long been recognized, its substitution in the form of poles such as are used for supporting lines of electric wire has been much slower than the merits of this material have warranted. The main obstacle to the introduction of concrete has been its weight, since concrete weighs fully three times as much as timber. The cost of shipping and of the labor for erecting solid concrete poles

The poles are made by a centrifugal process, an idea by no means new, but which has only recently been developed to a degree of perfection that insures a uniformly high grade product while giving production economies that make the poles commercially attractive. The first step is to build the cage of reinforcement similar to that used in a reinforced concrete pile. The longitudinal reinforcing rods are assembled and tied securely at the intersections. The completed cage is placed inside the molds, the two halves of which are securely bolted together and the required amount of wet-mixed concrete is poured into the mold. This mold is inserted in a centrifugal machine by means of which it is rotated on its longitudinal axis, the velocity being increased gradually until a high rate of rotation is



Test of a Pole. Initial and Stressed Positions. A Concrete Pole Line

has made them very expensive, although the highly superior ornamental effects possible have led to a considerable use of this more permanent material in spite of the difficulty of erection.

However, this objection to concrete has been largely overcome by the introduction of hollow poles, which effect a great saving in weight over solid construction, while providing strength sufficient for any ordinary requirements. A pole carrying electric wires is subjected principally to bending stresses and as a considerable portion of the interior of a cylinder may be removed without producing any appreciable reduction in the strength of a beam, in the case of reinforced concrete it is possible to provide a shell thickness and percentage of reinforcement in proportion to the strength requirements. Aside from the reduction in weight and the flexibility of design, the production of a hollow pole, which would be practically impossible with ordinary concrete casting methods, has involved the perfection of a novel process of manufacture which incidentally produces a concrete of high density, thus affording both high strength and imperviousness to moisture and frost.

attained. The centrifugal force resulting from this motion effects a uniform distribution of the concrete against the surface of the mold so that the thickness is uniform throughout and at the same time compacts the concrete in a thorough manner, the surplus water running out of the cylinder by gravity at the large end. So concentrated does the concrete become as a result of this process that in a few minutes the mold may be withdrawn from the machine without any liability of collapse. This process lends itself readily to the production of ornamental effects.

The poles are made in five classes, namely, classes 1000, 1500, 2000, 3000, and 4000, the class number indicating the pull in pounds which the poles are guaranteed to withstand, if applied two feet from the top with the butt buried a specified minimum distance in the ground varying from 4 ft. for a 20-ft. pole to 8½ ft. for a 60-ft. pole. Typical dimensions and weights of standard poles of the lengths commonly used on railroads are given below. Poles much stronger and of much greater length are also within the scope of this process.

An elaborate series of tests has been made of poles con-

structed according to this process which confirm mathematical calculations of the strength. They also demonstrated a rather unexpected resilience of this type of construction in that the poles attained a most appreciable deflection before any visible signs of failure became appar-

Class	Length, feet	Diameter at top, inches	Diameter at butt, inches	Approximate weight, pounds
1,000	30	8 1/4	10 3/4	865
	30	8 1/4	13 1/4	1,180
	30	7	1	1,180
1,500	30	7	13 1/4	1,670
	30	7	14 1/4	2,230
	30	8 1/4	14 1/4	1,720
2,000	30	8 1/4	14 1/4	2,440
	30	8 1/4	15 1/4	3,310

ent. This is indicated by the following tabular report of a test made on a 30-ft. class 2000 pole with outside diameters at top and bottom of 7 in. and 14 1/2 in. respectively and a weight of 1,900 lb.

Load, pounds	Deflection at top, inches	Load, pounds	Deflection at top, inches
100	0	3,000	8 1/2
500	3 1/2	3,500	9 1/2
900	17 1/2	4,050	12 1/2
1,500	31 1/2	4,500	13 1/2
2,000	47 1/2	4,550	Break

The hollow concrete pole described above was developed by the Universal Concrete Products Company, Chicago, under the direction of C. F. Massey, president of the C. F. Massey Company, and is generally known as the universal pole. This pole is to be marketed in the future as the Massey reinforced hollow concrete pole.

Agricultural Development in British Columbia

THE UNITED STATES GOVERNMENT, in co-operation with the railways, is working out plans for the settlement of the remaining undeveloped lands of the country. This is being done not only for the purpose of reclaiming swamp, cut-over, and irrigable arid land for cultivation, thereby adding to our natural resources, but to provide farm homes for thousands of returning soldiers.

The United States is behind its northern neighbor, Canada, in this work. In an article in the *Railway Age* of January 11, the part the Canadian Pacific is taking in developing western Canada was described and reference was made to the specific provisions for the settlement of land by veterans of the world war. The Grand Trunk Pacific also deserves credit for being forehanded in the promotion of land settlement projects. At the request of the minister of agriculture of British Columbia, it co-operated in laying out two large areas for settlement on its lines in that province. The Bulkley Valley tract consists of 15,000 acres suitable for cereal growing, vegetable culture, dairy and mixed farming, as well as the propagation of the harder fruits. The Nechako Valley area includes about 35,000 acres. The land is somewhat similar to that of the Bulkley tract, but is more of the plateau type.

The owners of idle lands in these areas have been advised by the government that their lands have been appraised at a certain figure and will be sold by the Land Settlement Board of British Columbia or through the office of the Tourist and Colonization Agent of the Grand Trunk Pacific on terms of long payment. A payment of not less than 20 per cent of the selling price must be made in cash on the delivery of the agreement of sale and the balance is payable in equal yearly installments extending over a period of not exceeding

15 years, with interest payable annually on the unpaid balance at the rate of 7 per cent per annum. The settler is required to establish a bona fide residence in a habitable dwelling upon the land purchased within 12 months from the date of the sale, and must continue to maintain it as long as any part of the selling price or interest remains unpaid. The settler is required to make improvements to all cultivable lands, exclusive of buildings and fences, to the extent of six dollars per acre, within six years from the date of the sale.

If the settler be a returned soldier the price of the land purchased is reduced to the extent of \$500 and the amount of cash required in the first payment is reduced to 10 per cent. If a returned soldier obtains a loan from the Soldiers' Settlement Board of the Dominion government for the purpose of improving or stocking the lands for agricultural or pastoral purposes, he will not be required to observe the conditions governing improvements to the land in the first six years, previously mentioned.

No sale of lands within either of the areas will be made to any person who by reason of his religious doctrines or otherwise is averse to bearing arms and refuses personal military service, or who under any law, Order in Council, or otherwise has for a like reason been exempted from military service in Canada.

Service Tests of Cross Ties

By P. R. Hicks

Engineer of Forest Products, Forest Products Laboratory, Madison, Wis.

BULLETIN NO. 210 of the American Railway Engineering Association contains the 1917 report of the service records of cross ties which have been maintained by the committee on wood preservation of the American Railway Engineering Association in co-operation with the American Wood Preservers' Association. The report consists essentially of tables covering treated and untreated ties, which either had been in service for a period of the last eight years or records where at least 25 per cent of the ties had been removed. The scope of the report is indicated by the table below showing the source of the 350 test records from which information was obtained:

SILICATE TEST RECORDS OF CROSS-TIES-1917													
Railroad	Creosote				Zinc creosote							Total numbers	
	Full cell	Open tank	Lowry	Rupping	Untreated	Zinc chloride burnett	Card	Not slated	Zinc tannin	Wellhouse	Others		Species of wood
Atlantic Coast Line.....	1	..	..	..	2	..	..	..	..	..	..	2	3
Atchison, Topeka & S. F. e.....	..	..	16	..	4	..	..	..	..	..	..	..	20
Chic., Burlington & Quincy.....	1	..	..	..	4	..	..	..	..	..	..	10	15
Chic., Milwaukee & St. P. e.....	..	..	4	..	1	6	4	..	..	..	..	5	10
Chicago & North Western.....	1	..	..	..	12	6	..	..	56	..	..	75	75
Chic., Rock Island & Pac.....	..	..	..	..	2	..	..	..	1	..	..	3	3
Chic. & Western Indiana.....	..	..	..	..	12	12	..	..	..	..	..	24	24
Gal., Harrisburg & San Ant. 19	1	..	..	..	7	12	..	9	..	3	..	22	51
Great Northern.....	2	..	..	..	6	21	..	..	..	..	..	27	32
Georgia.....	2	..	..	..	..	..	..	..	..	..	..	1	3
Louisville & Nashville.....	1	..	..	..	..	..	..	..	..	..	..	1	1
Missouri Pacific.....	..	..	..	..	..	..	..	..	..	..	..	..	0
Northern Pacific.....	..	..	5	..	26	4	..	..	..	1	..	36	36
Norfolk Southern.....	2	..	..	..	8	..	..	..	6	..	..	14	16
N. Y., New Haven & Hart.....	..	..	..	1	..	..	..	..	..	..	..	1	1
Oregon-Wash'n. Railroad & Navigation Co.....	1	..	..	..	2	3	..	..	..	1	..	7	4
Pennsylvania.....	1	..	1	..	..	..	..	..	..	..	..	2	4
Pittsb., Shawmut & Nor.....	..	..	..	..	3	..	..	..	..	..	..	3	3
Southern Pacific.....	..	..	..	..	5	..	..	..	..	..	..	1	6
St. Louis-San Francisco.....	1	..	3	..	..	..	..	..	..	4	2	8	8
Tenn. Coal, Iron and Rail.....	..	..	..	..	2	..	..	..	..	6	4	8	8
Washington Terminal.....	..	..	..	..	1	..	..	..	..	..	..	1	1
Total.....	35	2	5	25	87	74	13	13	68	28	71	350	350

General News Department

The New York Central has announced the establishment of an employees' monthly magazine, "The New York Central Magazine," the first number of which will be issued on February 1. It is to include all features heretofore published in several smaller periodicals, together with much other matter. The editor is Pitt P. Hand. The magazine will go to every one of over 100,000 employees.

Director General McAdoo, in conference with newspaper men on Thursday, declared that if his plan for a five-year extension of federal control over the railroads is given a fair test, he is confident it would be possible to so improve the efficiency of the transportation machine that the increased wages established this year could be maintained, and freight and passenger rates could be materially reduced, and it was his impression that it would be possible to reduce rates within the year.

Railroads recently transferred from the Eastern to the Allegheny Region number twelve in all; and the authority of H. A. Worcester over these roads, as district director, Eastern region, terminated on December 16. The twelve companies are: Akron & Barberton Belt; Akron Union Passenger Depot; Baltimore & Ohio, west of Parkersburg and Pittsburgh; Cincinnati, Lebanon & Northern; Dayton & Union; Dayton Union; Lorain, Ashland & Southern; Louisville Bridge & Terminal Railroad; Pennsylvania Lines, west of Erie and Pittsburgh; Pittsburgh, Chartiers & Youghiogeny, Ohio River & Western; Zanesville Terminal Railroad.

The Professional Division of the United States Department of Labor, office at 16 East 42nd street, New York City, invites employers of all classes, who want university graduates in mechanical, electrical and civil engineering, and in chemistry, to make use of the facilities of that office in securing men who are retiring from the army or the navy. J. O. Winslow, special agent, in charge of the office, is making a list of engineers and other technically qualified men who are retiring from the military service and desires to have the names of all men of this class seeking employment. The record of each man is carefully investigated before registration.

From the New York Sun

Word was received in this city Sunday that William G. McAdoo, director general of railways, at a private and confidential meeting of the Senate interstate commerce committee Saturday last made this statement, believed to be accurately quoted: "Unless there is an immediate and better response by Senators and Representatives to my proposal for five year control of the railroads by the federal administration, I shall advise President Wilson by wireless that the railroads should be returned to private owners on January 2."

Mechanical Association Committees Meet To Talk Over June Convention

A joint meeting of the executive committees of the American Railway Master Mechanics' Association, the Master Car Builders' Association, and the Railway Supply Manufacturers' Association is to be held at the Hotel Biltmore, New York, Friday morning to arrange for a convention of the two mechanical associations in June and to discuss the possibilities of holding an exhibit of supply firms. The members of the executive committee of the Railway Supply Manufacturers' Association have been asked to get in touch with as many of their associates as possible with a view to getting their ideas as to the advisability of having an exhibit. It is understood that the general opinion is in favor of so doing, it being felt that the reasons which prevented it in 1917 and

1918 have nearly all been removed, while, on the other hand, the success of the exhibits at some of the smaller mechanical conventions during the past few months has induced strong argument in its favor.

Passengers Burned to Death

A press despatch of December 17 reports the destruction by fire of a tourist coach on an eastbound Canadian Pacific train and says that thirteen passengers are missing. The train stopped for orders at Bon Heur Station, 120 miles west of Fort William, Ontario, at 6:57 a. m. The conductor, walking back toward the rear of the train, saw flames bursting from the front end of the tourist car. Eight passengers rescued were slightly injured.

Salaries of Railroad Engineers

The Engineering Council, New York City, said to represent the American Society of Civil Engineers, the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, and the American Institute of Mining Engineers, wrote recently to the director general of railroads calling attention to the grievances of many engineers on account of the failure of the Railroad Administration to give them sufficient consideration in the fixing of compensation. It was requested that all technical engineers be given suitable separate classification with rates of compensation in accord with their duties and the expense to which they have been put for their education. The letter, signed by A. D. Flinn, secretary of the Engineering Council, asked early action on its request, in behalf of 35,000 members of the different branches of the profession. In a reply dated December 4, signed by G. H. Sines, chairman of one of the wage boards, the Administration says that where the complainants are not taken care of by supplements No. 7 and No. 8, to general order No. 27, their cases should receive special treatment at the hands of the federal managers. Men in the service of the railroads not satisfied with this action are recommended to take their cases up with the Division of Labor, in accordance with the provisions of Circular No. 3.

Dinner to A. W. Trenholm

Yardmasters in St. Paul and Minneapolis gave a banquet at the Hotel Radisson, Minneapolis, on December 10, in honor of A. W. Trenholm, federal manager of the Chicago, St. Paul, Minneapolis & Omaha, who is in charge of the Twin City terminals. The dinner was in the nature of a testimonial to the ability Mr. Trenholm has shown in directing terminal operations and the good feeling which exists between him and the railroad officers and employees in the switching district. Among the guests were R. H. Ashton, Northwestern regional director, who made a brief address; M. J. Gormley, assistant regional director of the Northwestern district, and J. G. Woodworth, traffic assistant in the same district. In addition, a number of prominent railroad officers and business men of Minneapolis and St. Paul were present.

One of the features of the dinner was an address by G. M. Gillette, vice-president of the Minneapolis Steel and Machinery Company, who declared that government ownership of railroads is a menace to the nation and advocated private ownership under government control. Edmund Pennington, president of the Minneapolis, St. Paul & Sault Ste. Marie, also spoke. Prices of food and of all commodities must come down, and, therefore, wages will have to come down also; and it is the duty of employers to make this situation clear to their men so that unnecessary trouble may be avoided.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1919

Name of road.	Average mileage operated during period.	Operating revenues—				Maintenance of way and structures.		Traffic.	Trans- portation.		General ad- ministrative.	Total.	Operating ex- penses—		Net railway operating ex- penses.	Interest paid on bonds.
		Freight.	Passenger.	(Inc. misc.)	Total (Inc. misc.)	Way and structures.	Equipment.		Operating ex- penses (not in- cluded with operating ex- penses).	Railway ex- penses (not in- cluded with operating ex- penses).						
Alabama & Vicksburg	141	\$47,143	\$25,582	\$2,360	\$74,271	\$2,360	\$74,271	\$1,840	\$86,728	\$6,927	\$8,927	\$100,585	\$8,927	\$91,658	\$8,927	\$185,511
Albany, Great Southern	31	120,444	170,444	82,882	61,772	260,564	61,772	12,889	180,280	1,300	1,300	181,580	1,300	180,280	1,300	181,580
Arizona Eastern	177	27,043	35,094	358,034	62,000	358,034	62,000	12,889	180,280	1,300	1,300	181,580	1,300	180,280	1,300	181,580
Arizona, Topeka & Santa Fe	59,66	11,578,438	2,804,468	15,435,189	1,938,753	3,272,609	53,415	114,154	4,641,339	13,189	13,189	4,654,528	13,189	4,641,339	13,189	4,654,528
Atlantic & West Point	3	134,411	10,663	31,363	76,121	31,363	76,121	2,384	85,220	6,993	6,993	92,213	6,993	85,220	6,993	92,213
Atlanta, Birmingham & Atlantic	68	1,427,628	31,645	1,330,951	107,359	421,127	91,801	437,927	1,101,433	1,469	1,469	1,102,902	1,469	1,101,433	1,469	1,102,902
Atlantic Coast Line	4,87	3,916,626	1,896,715	48,761,088	7,500,800	47,386	7,500,800	45,608	7,330,589	31,996	31,996	7,362,585	31,996	7,330,589	31,996	7,362,585
Baltimore & Ohio	4,418	14,368,000	2,632,834	18,761,057	3,166,404	8,643,079	136,042	133,707	2,253,983	7,775	7,775	2,261,758	7,775	2,254,003	7,775	2,261,758
Baltimore & Annapolis	1	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	1,000,000	3,000,000	1,000,000	1,000,000	3,000,000	1,000,000	3,000,000	1,000,000	3,000,000
Belt Ry. Co. of Chicago	31	87,611	19,130	111,562	2,999	111,562	2,999	402	234,360	7,753	7,753	376,060	7,753	376,060	7,753	376,060
Bessemer & Lake Erie	68	1,427,628	31,645	1,330,951	107,359	421,127	91,801	437,927	1,101,433	1,469	1,469	1,102,902	1,469	1,101,433	1,469	1,102,902
Birmingham & Cincinnati	7	85,544	4,610	90,857	29,077	47,622	29,077	9,130	437,927	1,101,433	1,469	1,102,902	1,469	1,101,433	1,469	1,102,902
Birmingham Southern	7	85,544	4,610	90,857	29,077	47,622	29,077	9,130	437,927	1,101,433	1,469	1,102,902	1,469	1,101,433	1,469	1,102,902
Boston & Maine	8	3,753,531	1,551,048	6,114,337	872,725	1,176,133	37,137	3,315,070	18,280	8,285	8,285	18,362,516	10,882	18,351,634	10,882	18,362,516
Buffalo, Rochester & Pittsburgh	54	1,567,242	89,713	1,744,177	287,720	768,744	14,074	784,003	34,177	34,177	34,177	818,180	108,531	709,649	108,531	818,180
Canadian Pacific Lines in Mar.	33	90,211	130,991	11,443	79,286	106,533	5,941	193,841	10,837	455,930	68,48	70,014	17,515	33,339	1,164,33	1,164,33
Carolina, Charlotte & Ohio	82	37,653	23,550	1,170,803	18,746	18,746	18,746	1,871	1,367,353	11,545	11,545	1,378,898	11,545	1,367,353	11,545	1,378,898
Central of Georgia	1,918	1,844,449	480,332	1,274,430	363,641	651,046	35,185	17,790	7,700	7,700	7,700	3,071,017	104,6	3,063,317	104,6	3,063,317
Central of New York	684	3,844,189	707,302	4,441,685	908,840	908,840	908,840	17,790	7,700	7,700	7,700	4,015,380	104,6	4,004,680	104,6	4,004,680
Central New York & Ontario	301	1,112,115	456,095	1,274,341	342,239	768,744	14,074	784,003	34,177	34,177	34,177	818,180	108,531	709,649	108,531	818,180
Chesapeake & Ohio	342	358,004	25,889	383,893	97,138	100,478	6,533	106,011	19,968	464,042	14,108	478,150	19,968	458,182	19,968	458,182
Chesapeake & Ohio Lines	2,468	1,519,891	470,678	2,386,569	603,849	417,337	36,717	1,636,356	16,341	16,341	16,341	1,652,697	27,84	1,624,856	27,84	1,624,856
Chicago & Eastern Illinois	1,131	2,118,809	353,308	2,772,117	515,411	1,209,803	119,038	19,968	464,042	14,108	478,150	1,652,697	19,968	1,632,729	19,968	1,632,729
Chicago & North Western	8,000	10,513,741	2,115,411	12,629,152	2,115,411	12,629,152	2,115,411	19,968	464,042	14,108	478,150	1,652,697	19,968	1,632,729	19,968	1,632,729
Chicago, Burlington & Quincy	9,573	11,145,538	2,115,411	12,629,152	2,115,411	12,629,152	2,115,411	19,968	464,042	14,108	478,150	1,652,697	19,968	1,632,729	19,968	1,632,729
Chicago, Great Western	1,406	1,038,582	367,234	1,740,765	337,056	940,556	207,117	17,790	7,700	7,700	7,700	3,071,017	104,6	3,063,317	104,6	3,063,317
Chicago, Indianapolis & Eastern	614	773,575	221,586	1,084,409	137,332	290,817	13,091	431,455	13,091	431,455	13,091	431,455	13,091	431,455	13,091	431,455
Chicago, Milwaukee & St. Paul	10,236	11,611,131	2,046,213	14,014,322	2,046,213	14,014,322	2,046,213	19,968	464,042	14,108	478,150	1,652,697	19,968	1,632,729	19,968	1,632,729
Chicago, Peoria & St. Louis	474	1,544,909	305,938	1,850,847	368,065	57,601	57,601	19,968	464,042	14,108	478,150	1,652,697	19,968	1,632,729	19,968	1,632,729
Chicago, Rock Island & Gulf	7,735	2,116,135	501,048	2,496,103	1,378,458	1,404,264	19,968	464,042	14,108	478,150	1,652,697	19,968	1,632,729	19,968	1,632,729	
Chicago, St. Paul, Manly & Pacific	1,741	1,544,909	305,938	1,850,847	368,065	57,601	57,601	19,968	464,042	14,108	478,150	1,652,697	19,968	1,632,729	19,968	1,632,729
Cincinnati, Indianapolis & Western	332	696,483	37,615	774,098	53,007	140,335	14,036	20,737	140,335	14,036	14,036	154,371	14,036	140,335	14,036	154,371
Cincinnati, New Orleans & Texas	332	696,483	37,615	774,098	53,007	140,335	14,036	20,737	140,335	14,036	14,036	154,371	14,036	140,335	14,036	154,371
Cincinnati, Northern	71	273,411	14,711	298,122	43,895	69,637	2,364	69,637	2,364	69,637	2,364	72,001	2,364	69,637	2,364	72,001
Cincinnati, Northern & St. Louis	71	273,411	14,711	298,122	43,895	69,637	2,364	69,637	2,364	69,637	2,364	72,001	2,364	69,637	2,364	72,001
Colorado & Southern	1,100	1,358,450	217,150	1,575,600	288,803	55,518	55,518	87,007	2,680,705	64,834	64,834	2,745,543	64,834	2,680,705	64,834	2,745,543
Colorado & Western	12	31,565	1,504	1,085,466	19,968	19,968	19,968	883	45,707	4,185	4,185	49,892	4,185	45,707	4,185	49,892
Cripple Creek & Colorado Springs	116	71,811	6,616	79,425	9,634	7,505	883	883	45,707	4,185	4,185	49,892	4,185	45,707	4,185	49,892
Danbury, Danbury & Western	163	497,438	40,143	537,581	130,296	130,296	130,296	6,195	141,785	1,018	1,018	142,803	1,018	141,785	1,018	142,803
Denver & Rio Grande	2,651	5,066,319	914,240	6,770,559	1,190,536	1,190,536	1,190,536	38,248	2,496,341	105,817	105,817	2,602,158	105,817	2,496,341	105,817	2,602,158
Denver & Salt Lake	2,651	5,066,319	914,240	6,770,559	1,190,536	1,190,536	1,190,536	38,248	2,496,341	105,817	105,817	2,602,158	105,817	2,496,341	105,817	2,602,158
Detroit & Malabar	381	100,624	98,097	135,437	40,385	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Detroit & St. Louis	67	141,015	18,000	159,015	17,806	26,708	3,868	1,137	50,159	11,956	11,956	62,115	11,956	50,159	11,956	62,115
Dubuque, Dubuque & Western	67	141,015	18,000	159,015	17,806	26,708	3,868	1,137	50,159	11,956	11,956	62,115	11,956	50,159	11,956	62,115
Dubuque, Mississippi & Northern	13	3,684,766	19,137	1,907,903	19,137	19,137	19,137	1,137	50,159	11,956	11,956	62,115	11,956	50,159	11,956	62,115
Dubuque, Minnesota & Pacific	13	3,684,766	19,137	1,907,903	19,137	19,137	19,137	1,137	50,159	11,956	11,956	62,115	11,956	50,159	11,956	62,115
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065	3,163	336,228
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065	3,163	336,228
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065	3,163	336,228
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065	3,163	336,228
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065	3,163	336,228
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065	3,163	336,228
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065	3,163	336,228
Elgin, St. Louis & Connecting Roads	1,097	687,154	111,181	1,179,466	163,035	387,019	8,136	333,065	3,163	3,163	3,163	336,228	3,163	333,065		

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER, 1918 (CONTINUED)

REVENUES AND EXPENSES OF RAILWAYS

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REVENUES AND EXPENSES OF RAILWAYS

(continued) 2012 and 2013

New Chicago Electrification Ordinance Proposed

The Chicago Railway Terminals Commission has presented a new tentative ordinance to the Railway Terminals Committee of the Chicago city council providing for the construction of a new passenger terminal by the Illinois Central and the progressive electrification of all the lines of that road in conjunction with lake front improvements proposed by the Chicago Plan Commission. The tentative ordinance differs from that proposed by the Illinois Central, an outline of which was published in the *Railway Age Gazette* of December 22, 1916, in that it calls for complete electrification of the company's lines in the city instead of the electrification of the suburban service only. Electrification is provided for through periods of years; the first step will be the electrification of the entire suburban service and during the next period, according to the ordinance, the road would electrify all its freight tracks north of twelfth street; during the third period all the freight service between Twelfth street and the city limits would be taken in, and in the fourth period, all through passenger trains. In addition the ordinance stipulates that the railroad company provide railroad connections across its tracks to a new harbor which is to be created between Sixteenth and Thirty-first streets.

Senate Hearings on Railroad Problem

On another page will be found an article concerning the attitude of Congress toward Mr. McAdoo's proposal to extend government control for five years. Just as this paper was going to press, the following message was telephoned from Washington:

At a meeting Thursday morning of the Senate committee on interstate commerce, Senator Smith of South Carolina, chairman, was instructed by resolution to announce that an inquiry into every phase of the railroad situation would be conducted, the hearings to begin Thursday, January 2, 1919. Senator Smith stated that in the order named representatives would be heard from the Railroad Administration, Mr. McAdoo, the Interstate Commerce Commission, the railroads, state railroad commissions, shippers, chambers of commerce, and other interested organizations. He made it plain that it was desired to have one responsible representative nominated by each body as the committee would not have time to hear every individual who might want to express his views. Senator Smith asked that those organizations desiring to send representatives to the hearing notify him as promptly as possible in order that he may inform them as to the time they will be expected to appear before the committee. Committee members were unanimous for the most thorough investigation possible into the railway situation. The hearings will be before the full committee.

The Train Despatchers

John F. Mackie, of Chicago, the long time secretary of the Train Despatchers' Association of America, is out some \$1,800 by his unselfish devotion to the interests of the association, and the present secretary, J. P. Finan, of Needles, California, is engaged in a laudable effort to raise the money necessary to repay the debt. He has issued an appeal to railroad officers and in response thereto he has received numerous ten-dollar checks from general managers and other prominent officers, but is still far short of the desired total. Mr. Mackie's too-hopeful endeavors to vitalize the association, against insuperable obstacles, are well known to our readers, and no urging should be necessary to induce those of his friends who are willing and able to contribute to this fund. Mr. Finan suggests that any one who does not want his money to waste time in traveling to California and back, can send a check direct to Mr. Mackie, 7122 Stewart avenue, Chicago. To those unacquainted with the facts it may be proper to add that the "T. D. A. of A." went to pieces because those train despatchers who are truly and intelligently devoted to the elevation and improvement of the despatchers' calling are too few and too scattered to carry on an association for that purpose; whereas, the new association, to which a large percentage of the membership has seceded, makes the securing of increased salaries its main object, and, of course,

attracts every individual who is willing to advance the amount of a year's dues on the chance of getting back many times the sum expended. This is not the official explanation, but it seems the reasonable one.

Western Railway Club Meeting

The Western Railway Club met at the Hotel Sherman on December 16. R. H. Aishton, regional director of the Northwestern regional district, gave an informal talk and Dr. Hermann Von Schrenk, consulting timber engineer, St. Louis, spoke on the "Selection and Proper Utilization of Lumber in Car Construction." Mr. Aishton reviewed briefly some of the more important changes that have been made by the government in the operation of the roads in the West. He spoke particularly of the reduction in passenger service, of the unification of ticket offices and terminals, of the train-let plan of moving carload freight, and the introduction of sailing days for l. c. l. freight. He also mentioned the pooling of repair facilities and the short routing of traffic and cited statistics to show how the amount of business handled in 1918 had increased over previous years.

Mr. Aishton said that many of the changes made by the Railroad Administration should be retained permanently, as they benefited both the railroads and the shippers. He urged all railroad men to give careful consideration to the problems involved in the readjustment of the railroads. The settlement of this problem must be made without regard to partisan prejudice. The shippers, the railroad employees, the railway supply employees and the great body of people whose financial standing depends on the stability of railroad securities must all be considered. The question is a large one and on its proper solution depends not only the future prosperity of the railroads, but the prosperity of the entire country.

Dr. Von Schrenk outlined the field for various species of wood in car construction. The number of varieties usually specified is very limited and by substituting wood with similar properties for some of those commonly used, considerable savings can be effected. Dr. Von Schrenk advocated the more thorough study of the properties of timber. The ordinary railroad specifications for lumber are stated in very general terms and if they were made more specific it would insure the selection of material suitable for the purpose for which it is intended. He also advocated the more general use of preservative treatment for parts of cars which normally failed because of decay of the timbers.

Berlin-Bagdad Line

One of the greatest German schemes which the war has overthrown was the ambition for a German-controlled railway line from Hamburg to Bagdad. Its eventual history rests with the peace conference to decide.

As to the actual condition of the line, the tunnels through the Taurus Mountains were opened for broad-gage traffic last month and trains can now run as far as Neisbin, 100 miles west of Mosul (about 600 miles from Constantinople and two-thirds the distance from Constantinople to Bagdad). The rolling stock has been much deteriorated by overwork.

There are still plenty of freight cars serviceable, but two-thirds of the engines are unfit for work because of lack of spare parts, which Germany has not supplied. Nevertheless, a limited daily traffic from Constantinople to Neisbin would be possible, together with a larger service of trains in Western Asia Minor, from which the food supplies of Constantinople are drawn, if it were not for a lack of coal, which has brought the working of the line to extremely reduced and irregular proportions.

Most of the locomotive engineers are German civilians who have been in the country thirty years.

As to the probable time required to complete the railway to the Persian Gulf, Edouard Haguénin, director general of railways, says that depends on what the British have done in Mesopotamia. Several hundred miles of track laid by the Turks beyond Neisbin would need to be reconstructed, as the work was hastily done with poor materials. Working from both ends with adequate supplies of material and labor and with the use of the British military railways in Mesopotamia

as lines of supply, he thought that trains might be running through to the Persian Gulf in two years.—*Constantinople despatch in the New York Times.*

National Transportation Conference

The first of a series of conferences of representatives of all the country's interests affected by transportation, called by the railroad committee of the Chamber of Commerce of the United States with a view to the eventual formulation of a statement of fundamental principles to serve as a basis for public discussion was held in Washington on December 12 and 13. The conference was authorized by the chamber at the annual meeting in Chicago last April. The conference was informal and each member was free to place before the meeting his individual views. There was a general discussion from various viewpoints, but no effort was made to reach any conclusions and no vote was taken on any question of transportation policy. Another conference is to be held in about a month.

Walker D. Hines, assistant director general of railroads, attended in place of Mr. McAdoo, and explained his reasons for proposing a five-year extension of the period of federal control. His address appears elsewhere. Those present were:

Financial Group.—Harry A. Wheeler, president, Chamber of Commerce of the United States; Paul M. Warburg, formerly vice-governor Federal Reserve Board; Robert F. Maddox, president, American Bankers' Association; Nathan L. Amster, president, Investors' Protective Association of America.

Commercial and Industrial Group.—Frederick J. Koster, president, San Francisco Chamber of Commerce; W. W. Salmon, president, General Railway Signal Company; Charles S. Keene, vice-president, American Tobacco Company.

Agricultural Group.—Eugene D. Funk, Funk Brothers Seed Company; R. L. Munce, president, Pennsylvania Good Roads Association; H. C. Stuart, chairman National Agricultural Advisory Committee.

Civic and Social Group.—R. G. Rhett, banker, formerly president Chamber of Commerce of the United States; Charles P. Neill, chairman, Board of Adjustment No. 1, United States Railroad Administration.

Labor Group.—Frank Morrison, secretary, American Federation of Labor; B. M. Jewell, acting president, Department Railroad Employees, American Federation of Labor; Henry Sterling, legislative committeeman, American Federation of Labor; W. N. Doak, vice-president, Brotherhood of Railroad Trainmen; S. E. Heberling, international president, Switchmen's Union of North America.

Economic Group.—E. R. A. Seligman, professor of economics, Columbia University; Henry W. Farnam, professor of Political Economy, Yale University; John R. Commons, professor of economics, University of Wisconsin; Frederick A. Cleveland, secretary, Industrial Service and Equipment Company.

Transportation Group.—Walter S. Dickey, W. S. Dickey Clay Manufacturing Company, member Inland Waterways Committee, United States Railroad Administration; John T. Stockton, president, Joseph Stockton Transfer Company; J. N. Shannahan, president, Newport News & Hampton Gas and Electric Company.

Government Group.—Winthrop M. Daniels, chairman, Interstate Commerce Commission; Charles E. Elmqvist, president, National Association of Railway and Utilities Commissioners.

Railroad Committee.—George A. Post, chairman Railroad Committee, Chamber of Commerce of the United States; F. C. Dillard, lawyer; Edward J. Frost, vice-president, William Filene's Sons Company; Emory R. Johnson, professor of transportation, University of Pennsylvania; Charles E. Lee, traffic manager, Ford, Bacon & Davis Corporation; W. Z. Ripley, professor of transportation, Harvard University; Alexander W. Smith, lawyer.

Chamber of Commerce.—Elliot H. Goodwin, general secretary; Richard Waterman, secretary, railroad committee; John M. Redpath, chief of research bureau; F. N. Shepherd, field manager.

Traffic News

A total of 199,245 cars of coal of all kinds were loaded by the railroads during the week ended November 30, as compared with 221,159 during the corresponding week of 1917. The total increase in 1918 up to December 7 is estimated at 590,715 cars.

Navigation on the New York State barge canal was discontinued on December 12, for the winter. The estimated total amount of freight carried on the canal during the past season is 1,165,000 tons, which is slightly less than the total volume carried in 1917.

R. H. Aishton, Northwestern regional director, together with members of his staff and St. Paul railroad officers, conferred with members of the Minnesota Railroad and Warehouse Commission at St. Paul, Minn., on December 10. It was agreed that present transportation conditions demand maximum loading of cars despite the petitions from shippers that lighter loading be permitted. Mr. Aishton stated that he had no objection to the commission's order that state inspectors remove linings in grain cars when necessary in unloading.

The Mansfield Sheet & Tin Plate Company, Mansfield, Ohio, has filed with the Public Utilities Commission of Ohio a complaint against the Railroad Administration and the Pennsylvania Railroad, contending that the defendants are exacting switching charges in Mansfield in excess of the published rate. The rate in question covers the switching of carload freight between industries located within the switching limits of Mansfield. The defendants have been charging 30 cents a ton (minimum \$.75 per car) or 10 cents a ton higher than the rate named in the defendants' tariff, Ohio F-763. In replying to the complaint, the Pennsylvania Railroad Company argues that it has not been engaged as a common carrier in transportation between points in Ohio since January 1, 1918, and asks that the complaint be dismissed. The Railroad Administration, defendant, has not yet replied.

Freight Passing Through Soo Canal

The freight passing through the Sault Ste. Marie canals in the month of November amounted to 8,513,511 short tons of which 6,355,760 tons were eastbound and 2,157,751 westbound. These totals are all below those of the same month of 1917. The most marked decrease was in eastbound traffic which was 2,398,083 tons short of the movement of a year ago; the westbound movement, on the other hand, showed a decrease of only 242,914 tons. Although there was a falling off in the total freight traffic handled, the movement of wheat eastbound was nearly 15,000,000 bu. in excess of the amount handled in November, 1917. The heaviest westbound traffic was in soft coal, the amount handled being 1,517,020 short tons or 368,566 tons less than were handled in the same period of the previous year. The movement of hard coal on the other hand showed an increase of 155,359 tons.

New Embargo on Loading of Hogs to Chicago

The standing embargo on hogs, together with the permit system of handling shipments under it, was cancelled recently at the request of the Food Administration and the packers. Recent developments in Chicago make the wisdom of this move questionable. As a result of exceedingly heavy shipments, induced by high prices, 50,000 hogs were left over at the Chicago stock yards on Monday night of this week and 55,000 additional arrived, so as to make a total of over 105,000 on hand before killing began on Tuesday morning, December 17. The normal receipts of hogs per day amount to about 60,000, which can be disposed of unless the receipts of cattle and sheep are exceptionally heavy. The accumulation at the Chicago yards necessitated the placing of an em-

bargo on all shipments of hogs to Chicago until the left-overs at the yards and the 140,000 hogs in transit are taken care of.

Arrangements for Holiday Travel

The Railroad Administration will arrange ample ticketing facilities at the military camps, and, when necessary, will keep consolidated ticket offices open to a reasonable hour at night to permit the advance purchase of tickets for holiday trips. Regional Directors Markham and Winchell have been asked to give careful attention to providing the necessary train service.

In Washington, the consolidated ticket office will be kept open until 9:30 p. m. There will be 28 ticket windows at the Union Station open day and night as against 12 windows in operation last season. The Union Transfer Company has doubled its force and the same is true of the red-cap porters at the station. The passenger representatives assigned to the government departments in Washington have circularized the various buildings and are getting all advance information possible relative to persons who will go on vacations and those who will leave during the holidays permanently.

Additional Passenger Service to South

Additional through sleeping car service from New York to the South will be established on January 1 by the restoration of 15 of the through sleeping car lines that were discontinued north of Washington a year ago as a war measure.

The Pennsylvania train leaving New York at 8:08 a. m. will have sleeping cars to Jacksonville and Port Tampa, via the Atlantic Coast Line. A new train leaving New York at 2:04 p. m. will have sleeping cars to Palm Beach, Miami and St. Petersburg, Fla., via the Atlantic Coast Line, and to Miami and St. Petersburg, via the Seaboard Air Line. Through sleepers to White Sulphur Springs and to Virginia Hot Springs, via the Chesapeake & Ohio and to New Orleans, via the Southern, will leave New York at 3:38 p. m. Northward sleeping cars will be added to corresponding trains. Through baggage cars will be run between New York and Jacksonville, via the Pennsylvania, the Atlantic Coast Line and the Seaboard Air Line. Car via the Atlantic Coast Line will leave New York at 8:35 p. m., and car via the Seaboard Air Line will leave New York at 12:15 midnight. Through baggage car to Atlanta via the Pennsylvania and the Southern will leave New York at 12:30 midnight.

Traffic League's Committee on

Railroad Legislation Appointed

A resolution was adopted at the annual meeting of the National Industrial Traffic League, in November, authorizing the creation of a committee to study the railroad problem and, in particular, to consider such additional legislation as may be deemed necessary to protect the interests of the shippers and the general public upon the return of the railroads to private operation. This committee has been appointed as follows:

F. T. Bentley, traffic manager of the Illinois Steel Company, Chicago (chairman); H. C. Barlow, traffic director, the Chicago Association of Commerce; W. H. Chandler, manager, transportation department, Boston Chamber of Commerce; J. M. Belleville, general freight agent, the Pittsburgh Plate Glass Company, Pittsburgh, Pa.; C. E. Child, manager, traffic bureau, Omaha (Neb.) Chamber of Commerce; J. S. Davant, commissioner, Memphis (Tenn.) Freight Bureau; J. C. Lincoln, manager traffic bureau, Merchants' Association of New York; F. B. Montgomery, manager, traffic department, International Harvester Company, Chicago, and R. M. Robinson, traffic manager, the Greater Dayton Association, Dayton, Ohio. G. M. Freer, president of the league; R. D. Sangster, vice-president, and O. F. Bell, secretary, are ex-officio members of the committee.

PANAMA IMPORTED RAILROAD MATERIAL from the United States during 1917 to the value of \$14,000.—*Commerce Reports.*

Equipment and Supplies

Standard Car Deliveries

A total of 1,058 of the standard cars ordered by the Railroad Administration were turned out during the week of November 30, as follows:

					Total
	12	50	T. Comp. Gond.	A. C. & F. Co.	62
	231	55	T. S. Hopper	Pressed Steel Co.	286
	34	55	T. S. Hopper	Pullman Car Co.	89
	120		T. S. Hopper	A. C. & F. Co.	120
C. & N. W.	103	50	T. Comp. Gond.	A. C. & F. Co.	438
C. & N. W.	74	40	T. D. S. Box	A. C. & F. Co.	114
C. B. & Q.	19	40	T. D. S. Box	A. C. & F. Co.	19
C. C. & St. L.	3	55	T. S. Hopper	A. C. & F. Co.	184
	63	50	T. Comp. Gond.	Pressed Steel Co.	113
	100	55	T. S. Hopper	Ralston Steel Co.	155
Mich. Cent.	155	50	T. Comp. Gond.	Haskell & Barker	205
N. Y. C.	120	40	T. D. S. Box	A. C. & F. Co.	160
N. Y. C.	120	50	T. Comp. Gond.	Pressed Steel Co.	170
N. Y. C.	34	50	T. Comp. Gond.	A. C. & F. Co.	84
Total	1,058				

This brings the total number accepted on the order for 100,000 up to 7,342.

Locomotive Deliveries

There were 67 new locomotives shipped to railroads under federal control during the week ending December 7, of which 49 were of the U. S. R. A. standard types, as follows:

Works	Road	No.	Type	Engine No.
	*N. Y. C.	16	USRA Mikado	5114-29
	C. & O.	2	USRA Mountain	1334
	Penn. L. W.	4	USRA 6-W. Swch.	7300, 7216, 7314, 7641
	Southern	6	USRA 8-W. Swch.	1885-6, 1889-92
	C. & N. W.	12	8-W. Swch.	255-6
	Long Is.	2	USRA 6-W. Swch.	157-8
Total	N. Y. C.	52		
	C. B. & Q.	1	Mikado	5094
	C. & W.	5	USRA Mikado	754-7
	U. S. S.	1	Mallet	3222
	A. I. S. T.	1	Mallet	3222
Total		9		

*Steam L. S. R. A. Mikado locomotives and one new New York standard were sent to Albany, N. Y., to be stored as part of an emergency pool.

Car Deliveries

A total of 1,734 of the standard cars ordered by the Railroad Administration were delivered during the week ending December 7, as follows:

	Road	No.	Type	Manufacturer	Total cars given roads
A. C. L.	15	50	T. Comp. Gond.	A. C. & F. Co.	27
B. R. & P.	23	55	T. S. Hopper	Pressed Steel Co.	500
C. & O.	118	55	T. S. Hopper	A. C. & F. Co.	222
C. & N. W.	59	40	T. D. S. Box	A. C. & F. Co.	1,250
C. & N. W.	55	50	T. S. S. Hopper	A. C. & F. Co.	55
C. & N. W.	62	50	T. Comp. Gond.	A. C. & F. Co.	500
C. B. & Q.	141	40	T. D. S. Box	A. C. & F. Co.	160
Georgia	37	50	T. Comp. Gond.	Pressed Steel Car Co.	272
Mich. Cent.	115	50	T. Comp. Gond.	Haskell & Barker	100
Mich. Cent.	199	50	T. Comp. Gond.	Pressed Steel Car Co.	199
N. Y. C.	105	40	T. D. S. Box	A. C. & F. Co.	251
N. Y. C.	51	50	T. Comp. Gond.	A. C. & F. Co.	51
N. Y. C.	32	50	T. Comp. Gond.	A. C. & F. Co.	119
N. Y. N. H. & H.	200	55	T. S. Hopper	Pullman Car Co.	200
N. Y. N. H. & H.	100	55	T. S. Hopper	Ralston Steel Car Co.	100
N. Y. N. H. & H.	158	55	T. S. Hopper	Standard Steel Car Co.	158
T. & O. C.	12	55	T. S. Hopper	A. C. & F. Co.	12
Total	1,734				

Locomotives

THE CARNEGIE STEEL COMPANY is inquiring for 6 locomotives.

THE EASTERN WISCONSIN ELECTRIC, Sheboygan, Wis., is inquiring for an electric locomotive.

THE UNITED RAILWAYS OF HAWAII have ordered 6 locomotives from the American Locomotive Company.

THE CONSTITUTIONALIST RAILWAYS OF MEXICO have ordered 8 Mikado locomotives from the Lima Locomotive Works.

Freight Cars

THE AMERICAN BRASS COMPANY, Waterbury, Conn., is inquiring for 1 steel flat car.

THE EASTERN WISCONSIN ELECTRIC, Sheboygan, Wis., is inquiring for 3 trailer dump cars.

THE MEXICAN PETROLEUM CORPORATION, New York, has ordered 50 10,000-gal. capacity tank cars from the American Car & Foundry Company.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for four all-steel, 50-ton capacity extension side dump cars.

Passenger Cars

THE PENNSYLVANIA EQUIPMENT COMPANY, Philadelphia, Pa., is in the market for one 42-in. gage combination passenger and baggage car.

Miscellaneous

GILLESPIE BROTHERS, New York, are inquiring for one motor inspection car for export to South America.

THE NEED OF LOCOMOTIVES IN CHINA.—One of the pressing needs of China today is locomotives. The demands upon the railways have far exceeded the expectations of the builders. The locomotives bought in the first instance have proved too small, and it is now clearly realized by the technical advisers of China that they must standardize upon a type that will meet their needs for a long time to come. This question is being earnestly considered at the present time, and the problem arises for British consideration: Will the standardization be along the lines of British design, or will it be made to conform to an American or European model, to the detriment of British interests? Of the fifteen lines composing the system of Chinese Government railways, only one was built by the Chinese themselves; it is financed by the Chinese Government, and is operated exclusively by Chinese. The funds for the construction and equipment of the various other railway lines of China were furnished by foreign capital of various nationalities, but, according to the American authority, Charles Denby, special assistant to the department of state, not in a single instance has America so constructed and equipped any of these lines. As a result, today the Continental—European—design of locomotive is predominant in China. On some of the lines, notably those under English and—hitherto—German influence, not a locomotive other than those built in accordance with the prevailing design common to the nation financing the railway was purchased or even considered, either for initial or subsequent equipment—at least up to the time of the outbreak of the war. Only in the case of the Chinese financed and operated railway have American builders been given a free hand, with the result that an American design was adopted, and a thorough standardization of power effected. Out of the 638 locomotives in service on all lines at that time only 15½ per cent were of American design and manufacture; and on the English, Belgian, and French lines, which operated at that time 365 locomotives, or approximately 60 per cent of the total, only eight, or approximately 2.2 per cent were of American design and manufacture.—*Eastern Engineering*.

THE ENGLISH RAILWAYMEN'S WAR BONUS has been advanced 3s. (\$72) commencing with November 1, making an advance of 3s. (\$7.92) per week. This advance will stand until a meeting in January, when consideration will be given to the question whether any further increase in the cost of living warrants another advance.—*Railway Gazette, London*.

Supply Trade News

B. B. Ayers, advertising manager of the American Steel & Wire Company, has transferred his headquarters from Chicago to 30 Church street, New York.

The Brown Hoisting Machinery Company announces the following changes in its organization: Harvey H. Brown, chairman of the board of directors; Alexander C. Brown, president; Melvin Pattison, vice-president, general manager and director; Robert G. Clapp, director; John F. Price, director; Ewen C. Pierce, general manager of sales.

The Truscon Steel Company, which for many years has been manufacturing pressed steel parts principally for use in its own products, announces the expansion of its business into the manufacture of pressed steel parts of all kinds. The work will be handled by the pressed steel department, headed by G. F. Danielson, as manager, who for 25 years has devoted his entire efforts to the manufacture of pressed steel products.

The Whiting Foundry Equipment Company, Harvey, Ill., announces changes that have been made in its organization. The following men have left the company: F. A. Rundle, general superintendent; C. A. Hardy, sales manager; G. R. Brandon and P. A. Dratz, Chicago representatives. Samuel Moore, formerly general manager of the Bond plant of the American Radiator Company, is now general superintendent, and the company will be represented in Chicago by George Ristine, formerly with the Pressed Steel Car Company; H. A. Wolcott, formerly with the McMyler Interstate Company, Cleveland, O.; E. V. Brown and Walter R. Hans, members of the company's engineering staff.

J. O. Barlow, late head of the department of maintenance (including betterments and improvements) of the Southern Pacific Company, announces the opening of a consulting engineer's office at 822 Phelan building, San Francisco, Cal. Mr. Barlow was formerly associated with the Northern Pacific as assistant engineer for four years; the Union Pacific as division engineer for eight years; for six years he served as chief engineer in various railway irrigation and power enterprises. He was also chief engineer for six years on the Western Maryland, and served as assistant chief engineer and chief of the maintenance department of the Southern Pacific, as above noted, for ten years.

The Western Electric Company's Plan for Former Employees Now in Military Service

The Western Electric Company announced this week the following plan for taking care of its former employees who may soon be discharged from military service.

Former employees who have been given a leave of absence for military service and who have been honorably discharged therefrom and who desire to again take up work in the company, should make application within 30 days after being mustered out of service.

If possible they will be promptly assigned to work for which their previous experience qualified them, at the rate of pay which others are then being paid for similar work.

If it is not possible to assign them to work immediately, they will be placed on a preferred list until such time as business conditions enable the company to place them. During their continuance on this preferred list they will enjoy the same rights with respect to the employees' benefit plan as they had while in the service of the United States, and they may take other employment.

When they are notified of a vacancy they should present themselves for work at the time stated, and failing to present themselves for ten days thereafter their leave of absence shall terminate.

Before assignment to any work, their suitable physical condition for such work must be determined in accordance with the regular routine.

Financial and Construction

Railway Financial News

BOSTON & MAINE.—Stockholders are to vote on January 9 on the question of approving the merger of the Boston & Maine to Concord and Montreal, the Connecticut river, the Fitchburg, the Lowell & Andover, the Boston & Lowell, the Kennebunk & Kennebunkport and the Manchester & Lawrence.

CHICAGO & EASTERN ILLINOIS.—The sale under foreclosure of this property, which has been postponed at various times, has again been postponed, from December 10, for ninety days.

COLORADO MIDLAND.—The supreme court of Colorado has overruled the district court and refused to allow the discontinuance of operation of part of the railroad.

COLORADO & SOUTHERN.—This company has declared a 4 per cent dividend on the second preferred stock and a 2 per cent dividend on the first preferred stock. A dividend of 2 per cent was paid in November, 1918, on the first preferred, so that this makes a regular 4 per cent dividend paid on both first and second preferred for the calendar year, 1918.

LEHIGH VALLEY.—In declaring the regular dividends of 2½ per cent, on the common stock, the directors say that "the company receives from the United States Government an adequate payment of the rental now due."

TOLEDO, ST. LOUIS & WESTERN.—The receiver has asked permission from the court to issue \$1,000,000 receivers' certificates to pay the interest on \$16,500,000 mortgage bonds.

Railway Construction

CANADIAN NORTHERN.—Bids are wanted December 14, for the construction of two concrete abutments at the crossings of the Little Madawaska river, at mile 147.4, Pembroke subdivision, about 67 miles west of Pembroke, Ont. Bids are also wanted on the same date for the removal of the present substructure and the construction of seven concrete piers at the Trent river crossing, mile 43.5, Maynooth subdivision, at Glen Ross, 13 miles north of Trenton, Ont.

EASTLAND, NORTHWESTERN & WICHITA FALLS.—Incorporated in Texas, with headquarters at Eastland, to build a railroad between May, Texas, and Wichita Falls, about 120 miles. It is understood that financial arrangements have been made and that the work will be started as soon as the survey is finished and the right of way secured. H. B. Brelsford, Eastland, and Fred W. Frost, Brackenridge, are incorporators.

ILLINOIS CENTRAL.—This road is asking for bids on a filtration plant at Baton Rouge, La., to cost from \$15,000 to \$20,000. The plant will have a capacity of 25,000 gal. per hour and will be equipped with two horizontal pressure filters and a subsidence tank. It will also be equipped with a chlorinating outfit to sterilize the water for drinking purposes.

This road has awarded a contract for a combination freight and passenger station at Dawson Springs, Ky., to T. S. Leake & Co., Chicago (November 22, page 939).

PENNSYLVANIA RAILROAD WESTERN LINES.—The C. R. Cummins Company, Cleveland, Ohio, has been awarded a contract for improvement work on the Pennsylvania, at Columbus, Ohio, including extensions of the eastward and westward classification yards, the building of a new stock yard, increasing the engine house layout, the extension of the stone yard, and additional improvements to the shops. The work will necessitate the rebuilding of the Cleveland avenue bridge spanning the yard tracks, which will be a concrete structure extending over about 18 tracks.

At Yellow Creek, Ohio, the Cummins company is also building for the Pennsylvania a running track between Yellow Creek and Hammondsville, and later a new "Y" will be constructed. At Terre Haute, Ind., the Cummins company is building an eastbound classification yard.

Railway Officers

Railroad Administration

Central

F. W. Marquise has been appointed assistant to the manager of the Fuel Conservation Section of the United States Railroad Administration, with office at Washington, D. C., succeeding **Edward C. Schmidt**, major, Ordnance Department, United States Army, who was temporarily assigned to service with the Fuel Conservation Section, but has returned to the service of the War Department, effective December 14.

G. W. Kirtley has resigned as assistant director of the Division of Traffic of the Railroad Administration, effective on January 1, and will return to the service of the Erie, with office in New York, instead of becoming connected with the Department of Agriculture, as stated last week. Mr. Kirtley had been in the service of the Erie for 18 years when he resigned in 1917 as assistant to the vice-president in charge of operation to become assistant to the director of priority in transportation, at Washington. When the Railroad Administration was organized he was appointed assistant director of traffic. He was also a member of the United States Highways Council, representing the Railroad Administration.

Regional

C. M. Freeman, traveling engineer on the Sunset-Central Lines, has been appointed assistant fuel supervisor of the Central Western regional district.

Federal and General Managers

Theo. L. Dunn, having assumed duties with the Maine Central Railroad Company (corporation), his former position as assistant to federal manager has been abolished.

W. R. Hudson has been appointed general manager of the Atlanta, Birmingham & Atlantic; the Charleston & Western Carolina; the Augusta & Summerville; the Atlanta & West Point; the Western Railroad of Alabama; the Georgia; the Augusta Union Station; the Atlanta Terminal, and the Augusta Belt, with office at Atlanta, Ga.

Operating

H. W. Purvis has been appointed terminal manager of the Jacksonville Terminal Company, Jacksonville, Fla.

J. P. Walker has been appointed terminal manager of the Charleston Union Station Company, Charleston, S. C.

H. E. Hutchens has been appointed terminal manager of the Birmingham Terminal Company, Birmingham, Ala.

W. E. Booker has been appointed general superintendent of the Silverton Railway and the Silverton Northern Railroad, with headquarters at Silverton, Col.

J. R. Jones, superintendent of the International & Great Northern, at San Antonio, Texas, has been appointed superintendent of terminals of all railroads under federal control at San Antonio, Texas.

M. F. Leamy, superintendent of the Delaware & Hudson, at Albany, N. Y., has been appointed superintendent of the Champlain division, with office at Plattsburg, N. Y., vice **M. W. Sullivan** deceased.

W. H. Johnson has been appointed superintendent of terminals of the Norfolk & Western, with office at Roanoke, Va. The Roanoke terminals are now operated as a separate division in charge of the superintendent of terminals.

The jurisdiction of **D. H. Beatty**, superintendent of safety, with headquarters at Washington, D. C., and of the general safety committee of the Southern Railroad and associated railroads, has been extended to include the Georgia, Southern

and Florida; the Hawkinsville & Florida Southern, and the St. Johns River Terminal.

M. B. Smith, superintendent of the Columbus division of the Central of Georgia, has been appointed superintendent of the Macon and Chattahoochee divisions, with headquarters at Macon, Ga., vice **M. A. Ramsay**, deceased. **Claude Baldwin**, superintendent of terminals at Macon, has been appointed superintendent of the Columbus division with headquarters at Columbus, vice Mr. Smith, and **J. Reichert** has been appointed superintendent of the Macon freight terminals, with headquarters at Macon, vice Mr. Baldwin.

W. H. Hall has been appointed superintendent of telegraph of the Gulf, Colorado & Santa Fe; the Atchison, Topeka & Santa Fe (Shawnee to Pauls Valley; Lindsay and Sulphur Branches); Fort Worth Union Passenger Station; the St. Louis, San Francisco & Texas; the Ft. Worth & Rio Grande; the Brownwood North & South; the Texas Midland; the International & Great Northern (from Spring to Ft. Worth and Madisonville branch); the Missouri, Kansas & Texas of Texas (except Trinity branch and Beaumont & Great Northern); the Wichita Falls & Northwestern; the Ft. Worth & Denver City; the Wichita Valley; the Houston & Texas Central; the Abilene & Southern; the Union Terminal of Dallas; the Houston Belt & Terminal; the Ft. Worth Belt and the Quanah Acme & Pacific, with headquarters at Denison, Texas, effective December 1.

Financial, Legal and Accounting

Edward D. Mohr has been appointed freight claim agent of the Louisville & Nashville, with headquarters at Louisville, Ky., vice **John F. Seger**, transferred.

J. F. Schutte has been appointed auditor of freight claims of the Baltimore & Ohio, eastern lines, and **C. G. Pollock** has been appointed auditor of miscellaneous accounts, with headquarters at Baltimore, Md.

Traffic

R. W. Hockaday, industrial commissioner for the Missouri, Kansas & Texas and the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has resigned to engage in the oil business under the name of Hockaday & Co., with headquarters at Wichita Falls, Texas. Associated with Mr. Hockaday is **C. H. Evans**, formerly industrial agent for the Missouri, Kansas & Texas. Mr. Hockaday has been connected with the Missouri, Kansas & Texas for about 25 years, beginning as a stenographer at Houston, Texas. He was subsequently traveling freight agent at Kansas City, Mo., commercial agent at Denver, Colo., and Cincinnati, Ohio; general freight and ticket agent in Kansas, and industrial commissioner at St. Louis in charge of colonization, agricultural and industrial development. When federal operation of the railways became effective, Mr. Hockaday was appointed industrial commissioner of the Missouri, Kansas & Texas and the St. Louis-San Francisco.

A. C. Irons, whose appointment as general passenger agent of the Chicago Great Western, with headquarters at Chicago, has already been announced in these columns, was born on May 21, 1880, at Chicago. He began railway work in 1898 with the Western Passenger Association, remaining with that organization until January, 1904, when he became assistant rate clerk for the Chicago Great Western. From July, 1904, to January, 1905, he was ticket seller at the Dearborn station, Chicago, and the following four months was chief clerk in the city ticket office of the Chicago, Rock Island & Pacific at Chicago. He then went to the Chicago Great Western as chief rate clerk in the general passenger department at St. Paul, Minn., and from May, 1907, to May, 1910, was successively chief clerk in the general passenger department at St. Paul and Chicago. On the latter date, Mr. Irons was promoted to assistant general passenger agent, which position he held until his appointment on November 19, as general passenger agent.

A. Lindsay Craig, whose appointment as general passenger agent of the Union Pacific, with headquarters at Omaha, Neb., was announced in the *Railway Age* of December 13, was born at St. Paul, Minn., on November 19, 1861. He began

railway work in July 1880, as a rodman on construction on the Northern Pacific, and from July, 1881, to April, 1888, was clerk in the auditor's office. He was then chief clerk in the general passenger and ticket office until September 1, 1891, when he was promoted to assistant general ticket agent, being made assistant general passenger and ticket agent in June, 1900. In February, 1901, he became general passenger agent of the Oregon Railroad & Navigation Company, and in July, 1906, he went with the Great Northern as passenger traffic manager. The following June he was appointed general passenger agent of that road, which office he held until September 1, 1909. He became general passenger agent of the Chicago Great Western on October 15, 1909, in which position he remained until his recent appointment as general passenger agent of the Union Pacific.

Engineering and Rolling Stock

J. L. Campbell, engineer maintenance of way of the El Paso & Southwestern, has been appointed chief engineer, with headquarters as El Paso, Texas.

Zill Pierce has been appointed master mechanic of the Saratoga and Champlain divisions of the Delaware & Hudson, with headquarters at Colonie, N. Y., vice **A. L. Moler**, resigned.

F. M. Graham, division engineer of the Chicago Terminal division of the Pennsylvania Railroad, Western Lines, with headquarters at Chicago, has been transferred to Columbus, Ohio, as supervising engineer, in place of **R. C. Harris**, appointed general storekeeper. **G. R. Barry**, division engineer at Columbus, has been transferred to the Chicago Terminal division to succeed Mr. Graham; **H. T. Sympson**, assistant division engineer of the Eastern division at Pittsburgh, Pa., succeeds Mr. Barry as division engineer at Columbus.

Corporate

Executive, Financial, Legal and Accounting

Frank Lethenstrom has been appointed auditor of the Chicago, Milwaukee & St. Paul for the corporation, with office at Chicago.

Operating

George Reith, superintendent of the Norfolk division of the Virginian Railroad, with office at Victoria, Va., has been appointed general manager of the West Virginia Northern, with headquarters at Tunnelton, W. Va.

Engineering and Rolling Stock

E. S. Pennebaker has been appointed corporate engineer for the receiver of the Texas & Pacific, with headquarters at Dallas, Texas, effective December 1.

G. E. Smart, superintendent of the car department of the Canadian Northern Railway System, has been appointed general master car builder, with jurisdiction over all lines of the Canadian Northern and the Canadian Government Railways, with office at Toronto, Ont.

Major F. L. C. Bond has been appointed chief engineer of the Grand Trunk, to succeed **H. R. Safford**, resigned to accept service with the United States Railroad Administration. Major Bond was division engineer, eastern lines of the Grand Trunk in 1916, when he went overseas with the Canadian Expeditionary Force.

Purchasing

The jurisdiction of **E. Langham**, general purchasing agent of the Canadian Northern Railway System, has been extended to include all the Canadian Government Lines, with headquarters in Toronto, Ont.

Obituary

T. M. Chapman, superintendent of fire prevention of the Central of Georgia, with headquarters at Savannah, Ga., died on December 4 of pneumonia following an attack of influenza, at the age of 45 years.

EDITORIAL

Railway Age

EDITORIAL

Important for Subscribers

In the interest of the conservation of paper, the Railway Age will print at the end of the present volume only a sufficient number of indexes to meet direct requests from its subscribers. Those desiring indexes should, therefore, immediately advise the New York office, 2201 Woolworth Building, New York.

Special tribute was paid at the December meeting of the New York Railroad Club to the railroad men in the American

Railway Men in the A. E. F.

Expeditionary Forces in addresses by Colonel H. C. Booz, corporate engineer of the Pennsylvania Railroad, who until recently was on the staff of Brigadier-General W. W. Atterbury in France, and by Lieutenant-Commander Dexter C. Buell, who had charge of the construction and erection of the naval railway batteries which were described in the *Railway Age* of November 29, page 967. Working in strange surroundings and with inadequate facilities, no task seemed too great for these men. They exercised to the full that ingenuity which is so characteristic of the Yankee and never lost their sense of humor, which often helped them to approach their tasks in a spirit that overcame seemingly insurmountable obstacles. As Lieutenant-Commander Buell said, we ought to give these boys a royal welcome when they return to this country. Moreover, their experience should fit them for bigger and better positions than those that they left to go into service. No better appreciation can be shown to them than by making the very best use of their services when they return to their respective roads.

Railroad men in military service are commencing to return to civilian life, many of them with the expectation of resuming their peace-time occupations. Several incidents which have come to our attention would seem to indicate that some of them are experiencing difficulty in getting back their old jobs.

Re-employing Returned Soldiers

Either for fear of seriously disturbing the existing organization or because of lack of interest, some railroad officers are putting off these men with promises, or are referring them to other departments or railways. It is the opinion of the *Railway Age* that the Railroad Administration and the officers in charge of the individual lines should outline a definite policy to be observed in connection with the re-employment of men who have been in the nation's service which will insure them just treatment. It is not necessary for old employees to give up their seniority rights to make room for returned soldiers, but certainly it is not unfair for those who took the places of army men to give way. Those who answered our country's call have made their sacrifice; now let those who replaced them make theirs. It is true that the reassimilation of thousands of employees will tend to disorganize the railways for a time, but surely to no greater extent than was effected by the loss of these men during the war when labor was scarce and a disturbance of our trans-

portation machinery much more serious in its consequences. There is no dodging the issue—the men who served their country in its time of need must be given what is properly due them.

At a recent meeting of one of the railroad clubs at which the subject of fuel conservation was being discussed, a question

Why We Should Continue to Save Coal

was raised as to what arguments should be put forth to exhort the men to continue to save coal now that the war is practically over. During the war there was no question but that every pound of fuel should be made to perform the greatest amount of work, as it contributed directly towards the winning of the war; but now, with that tremendous incentive removed, how shall the men be encouraged to persist in their fuel economies? There are three important reasons. We must still provide our allies with coal; we must conserve coal on account of its still excessive cost; and we must conserve coal in order to husband our national resources. The price of coal is that which appeals more directly to the individual. This has increased greatly and today railroads are paying anywhere from 10 to 50 per cent more per ton of coal than last year at this time. Some roads are paying over eight dollars a ton for fuel, several over four dollars, and a large number over three dollars. The large amount of money spent for fuel and the splendid opportunities for conserving it make the saving of fuel a ready means for reducing operating expenses. The savings to be accomplished are large enough to warrant material capital expenditures which will result in a reduction in the fuel bill. It is no time now to ease up on the fuel economy campaign. With the high cost of labor and materials, all tending to increase the operating expenses, every available means must be taken to reduce expenses. Anything that will result in fuel conservation should continue to demand the fullest consideration of railway men.

The advocates of government ownership hold up government operation of the railroads during the past year as having

"This Place Has Changed Hands"

directed the elimination of many abuses or shortcomings of private management. They neglect, however, to note those objectionable features of private ownership which are aggravated or intensified by operation of the railroads as a unified whole. For instance, it is an unfortunate fact that changes of management or the election of a new railroad president commonly result in an extensive change of the official personnel, bringing about an objectionable shaking up of the entire organization. Whether such changes are necessary or desirable may be open to controversy, but the fact remains that, other things being equal, the best esprit de corps and most efficient conduct of railway transportation obtain in the case of the road on which one dynasty of officers has had unhampered control for the longest period. That a change of management under government operation is subject to the same abuses as those manifested under similar circumstances in private control is evidenced by contemporaneous history. Following the resignation of the director general two of his department heads

have resigned and there are rumors of still more resignations, and there is no reason to believe that similar changes will not take place every time that a director general decides to quit.

Postal conditions in this country have been bad enough, but the difficulties in obtaining mail from abroad have been much greater. We almost despaired of hearing from our editor, Samuel O. Dunn, until he returned in person, but were finally rewarded by receiving from him a few days ago the first one

Great Britain's

Railway Problem

of two articles on the English railway situation. There is more or less discussion in Great Britain as to the advisability of having the government take over the railways permanently, but for very different reasons than those that have been advanced by the advocates of government ownership in this country. The railways of Great Britain have made a record during the war which they can well be proud of and which is undoubtedly better than that of the railways of any other country. They were taken over by the government at the outbreak of the war, but their operation was left in the hands of skilled railway executives, the government guaranteeing financial returns on the basis of the year just preceding the war, 1913. Government freight has been carried free and no accurate record has been kept of it. Meanwhile, as in this country, wages have been raised and operating costs have gone up by leaps and bounds. Now that the time is approaching when the roads must soon be returned to their owners, the question comes as to how they can keep out of bankruptcy. There promises to be a strong fight against raising rates, which have remained stationary throughout the war, and yet the roads cannot possibly pay the high wages and other costs which are still on a war basis unless the rates are raised. As an alternative it has been proposed that the government take over the roads, which means that the rates, in effect, would have to be raised because the public would have to meet any deficit by taxation. The two articles by Mr. Dunn outline the situation clearly and compare it with conditions as they have existed and now exist on the roads of the United States.

As will be noted elsewhere in this issue, it has been decided to hold the annual conventions of the Master Mechanics' and

The June Mechanical Conventions

Master Car Builders' Associations, including the railway supply exhibit, at Atlantic City next June. Frank McManamy, in charge of the mechanical department, Division of Operation of

the Railroad Administration, was present at the joint meeting of the executive committees and advised with them and approved of their decision to hold the conventions and the exhibit. The two mechanical associations have a remarkable opportunity before them if they will but take advantage of it. While it is of course necessary to conduct a certain amount of routine business and receive the reports of certain standing committees, a large part of the program of both associations ought to be devoted to the larger problems which face the mechanical department, whether the roads are still operating under government control next June or are in the hands of their owners. The executive committees of both associations will do well if they immediately assign to special committees the matter of preparing and presenting certain special reports of this sort. The railway supply companies have not had an opportunity of making an exhibit for three years. The railroad men were insistent that there be an exhibit, because of the developments which have taken place since the last exhibit and because of the great educational value of

the exhibits. Exhibitors should therefore study carefully to prepare and arrange their exhibits in order to make them of the greatest possible educational value to the railroad men, and particularly to those who attend the conventions for the first time or who are specially delegated to make studies and reports of devices and equipment that may be used to advantage on their respective roads. Then, too, the railroad men should co-operate with the railway supply men in encouraging as large an attendance as possible of railroad men from foreign countries. The railroads throughout the world are short of equipment and supplies and many of them are looking to this country to help them out. Where could they find a better opportunity of looking into the possibilities for improving their equipment and of starting negotiations for its purchase than at Atlantic City next June?

An Extra Session of Congress

WITHOUT CONGRESSIONAL ACTION, the director general of railroads and the President can do little, if anything, of a constructive nature in the present railroad situation. Mr. McAdoo betrays signs of rather bitter resentment that he was not able to stampee the expiring Democratic Congress into giving the country public ownership of railroads through the device of extending for five years government control and operation. The difficulties of the Railroad Administration's situation should not be minimized; they are very real and very pressing. A great part of the brilliant pleading of Walker D. Hines as representative of the director general before the railway committee of the United States Chamber of Commerce, is incontrovertible. The net earnings of the roads in recent months are discussed elsewhere, but the difficulties of the distribution of standard equipment and the allocation of its cost to individual corporations are well illustrated in the suit which the receiver of the Toledo, St. Louis & Western has brought. The revolving fund of \$500,000,000 has quite evidently proved inadequate. Much of what Mr. McAdoo and Mr. Hines say about the morale of railroad officers and employees has truth in it. The arguments which Mr. Hines uses in his plea for Mr. McAdoo's five-year proposal are in major part arguments for a prompt settlement of the railroad question.

Prompt settlement does not mean a blind acceptance of one or other horn of a dilemma. Congress must carefully study the railroad situation. This careful study can be made promptly either by calling an extra session of Congress, say, early sometime in April, or by the appointment of another committee to succeed to the duties of the Newland's Committee. There would be certain advantages in the appointment of a committee rather than the calling of an extra session of Congress, the chief of which would be the evidence of the politics which would begin to be played as soon as a Republican Congress was convened. The logical man for chairman of such a committee, if it were to be appointed, would be Senator Cummins, of Iowa.

The danger in appointing the committee to carry on the investigation of the railroad subject, began by the Newlands Committee, would be that the discussion in Congress itself would be postponed until December, 1919, when the regular session would be called, which would bring this discussion on in the midst of a presidential campaign and would project too far into the future a definite action of Congress toward passing the laws necessary to a constructive policy of regulation and operation and financing of the railroads. If it is possible to bring it about, there ought to be an extra session of Congress early next Spring.

President Wilson, when he called an extra session of Congress in 1913 and put through the Federal Reserve Act, demonstrated how quickly and how satisfactorily a great and

complicated question can be handled if the proper leadership is applied. It is not safe, however, to assume that President Wilson will call an extra session of Congress without a clear mandate from a large and influential and representative "voice of the people." Most directly affected by the railroad situation are the railroad executives, the representatives of the railroad securities holders and the railway supply industry. It is only, however, in directness of contact with the problem that these classes of citizens have one whit more at stake than has every business man in the country.

The railway executives, through their standing committee of 28, with its sub-committee of 5, have formulated a tentative plan which, if it meets with approval by the members, may be presented to Congress as a suggestion for the basis on which Congress can work. It aims only to clear up certain preliminary difficulties. The object which the executives must have kept in view is the immediate necessity of making it possible for the roads to be returned to their owners for private operation on a foundation of sound economic laws regulating the railroads.

The organization known as the National Association of Owners of Railroad Securities has, since its formation, been studying the railroad situation and has voiced the opinion of certain representatives of institutions deeply interested financially in railroad securities. Since the President's departure for Europe and his tossing of the railroad problem into the lap of Congress, and since Mr. McAdoo's modification of the toss by demanding and asserting that the problem had a steel cable attached to it in the form of his five-year demand, the National Association of Owners of Railroad Securities has made no public expression of opinion. Its help is needed and needed badly. An expression of opinion by S. Davies Warfield, and the association of which he is president, would be welcomed by Congress and by the public generally, and unquestionably by the railway executives as well.

The Chamber of Commerce of the United States is an impressive body; the result of one of its referendums is impressive. It reflects the judgment of business men over a wide range of country and of industry; it is necessarily cumbersome. The process of getting an expression of opinion is long drawn out and while this adds something to the impressiveness of the result obtained, it detracts greatly from the value of the work of the chamber in a crisis such as the present one. The board of directors of the chamber formulates resolutions which it presents to the national council of the chamber, which in turn may adopt resolutions which come before the annual meeting of the chamber, which in turn adopts resolutions. The board of directors may authorize the submission of a report of a carefully selected committee which is appointed to analyze each question presented to it by members of a referendum of members, and only the vote of the member organizations can commit the Chamber of Commerce for or against any recommendation.

The chamber will doubtless send a referendum out to its members on the question of the advisability of calling an extra session of Congress to discuss the railroad situation. If such action is taken, the question asked the members should be in the simplest form. The chamber held a referendum in 1917 on the labor question, with the object of having an expression of opinion from business men as to whether or not the four brotherhoods of train and enginemen should be compelled to submit their demands to arbitration. The referendum, however, was so complicated as to fail to obtain concrete results. What was needed then was a simple, brief statement which would inform President Wilson of exactly where the business men of the country stood in regard to the hold-up by the railroad brotherhoods. What is wanted now is a simple statement showing that the business men of the country are overwhelmingly in favor of calling an extra session of Congress. It will be some weeks, possibly months,

before the result of a referendum, if now inaugurated, can be put into final shape for presentation to Congress or to the President.

In the present situation, immediate action is of the utmost importance. On an important occasion in the past, the chamber has departed in practice, although not in theory, from its rule and has presented to the government expressions of opinion of its members without waiting for the formalities attendant upon a referendum. In the present case, might it not be a typically American, businesslike and enterprising thing to do for business firms all over the country to write or to telegraph the chamber a full expression of their views on the railroad situation, and especially upon the necessity of calling an extra session of Congress? Were every member of the chamber to give expression to its views without waiting for the slow grind of the referendum, the president of the chamber would have available a mass of evidence which he might present to President Wilson on his return from Europe that would constitute a "voice of the people" unmistakable and compelling.

The Railway Business Association has sent out a questionnaire to its members which is brief enough to print in full elsewhere in this issue. It is admirable in the directness of the questions asked, and the replies to these questions constitute an expression of expert opinion which should carry great weight.

Now is the time to act; action now will be constructive; failure to act and argument and disagreement now will be mere wrangling. Argument has its proper place before the extra session of Congress which ought to be called. Prompt action now, however, is the only method of securing this extra session of Congress.

Can Rates Be Reduced?

RESTRICTIVE LAWS against pooling of facilities was only one of the reasons why it was considered necessary for the government to take over the railroads last December. The financial situation was equally a menace unless the government took some steps to stabilize the credit of the individual railroad corporations. The expedient adopted of guaranteeing a rental equal to the average operating income of each road during the past three years was, of course, a temporary measure only. Railroad stock prices immediately responded by rising on an average for 50 roads of over 7 points, but the average high point for these 50 roads reached in this rise was approximately 60 or 40 points below par and during the year the average prices of these stocks have fluctuated around 60, rising only once, and that in November, above 70; they are now in the neighborhood of 64.

Last Friday the Pennsylvania sold \$50,000,000 of bonds through Kuhn, Loeb & Co. The sale was a great success and the issue was heavily oversubscribed; but even the Pennsylvania could not have sold stock at par. Of the 44 companies having stock listed on the New York Stock Exchange and actively traded in, only 8, namely, the Atlantic Coast Line, Delaware & Hudson, Delaware, Lackawanna & Western, Lehigh Valley, Louisville & Nashville, Norfolk & Western, Reading, and the Union Pacific, have common stock selling at above par. In most states it is unlawful for a corporation to issue its stock at below par. It would be necessary, therefore, for nearly all of the railroad companies of the country to raise new money through the issue and sale of bonds. Most roads have a greater proportion of their capital outstanding in the form of bonds than in the form of stock even now, and to increase the proportion of bonds would be a thoroughly unsound proceeding.

Only a comparatively few roads are going to earn sufficient net in the calendar year, 1918, to meet the government's

guarantee of rental. In other words, most roads will not do as well, so far as net earnings are concerned, in a year of abnormally heavy traffic and with freight and passenger rates for part of the year from 25 to 50 per cent higher than they were in previous years, as they did on an average for the three years prior to June 30, 1917. It is true that the increased rates were effective for only part of the year, while the large increases in rates of wages which have been made under government operation were, most of them, retroactive, so that wage increases extended for a good part or all of the year. Even in the month of October, some roads were charging into the expenses of that month a part of the back wages due on these retroactive awards. It is true that operation under war conditions is not a fair test of the earning power of the roads, but in October war conditions had ceased to exist in so far as hampering railroad operation was concerned, and there was a large amount of government business moving which made gross earnings higher than they would have been otherwise. It is pretty safe to say that for the majority of roads the amount charged in October to expenses for retroactive wage awards was not great enough seriously to effect an assumption of a rough figure based on October net earnings, because there was a heavier freight movement and, therefore, greater gross earnings in October, 1918, than would be likely on an average for the next twelve months.

Mr. McAdoo in urging his plan for the retention of the roads for five years instead of 21 months, makes the claim that he will be able to reduce freight rates within a comparatively short period of time. The October figures, even making full allowance for what back pay there is charged into expenses, do not bear out Mr. McAdoo's claim. It is conceivable, of course, that economies might be introduced into government operation which would tend to hold down expenses and correspondingly increase net operating income above the October figure, but the evidence of government operation in every other country in the world is against such an assumption and the government's management of the post office in this country is most decidedly against it.

Were the roads to be returned to the corporations for private operation, it is not only possible but probable that in time private initiative could get more effective work out of the officers and employees and that gross business could be increased by progressive management and operation without a corresponding increase in expenses, so bringing about somewhat better net operating income. On the other hand, were the roads to be returned to their owners without legislation protecting them from rate reductions by the Interstate Commerce Commission and state commissions, the danger of a reduction in net operating income through a compulsory reduction in rates would be imminent. The credit of the roads, with the exception of possibly a dozen, is such that widespread bankruptcy would be likely to follow a return of the roads to their owners without remedial legislation.

It is essential that if the government is to regulate freight and passenger rates with the prospect of preventing too high rates being charged the public, the government also must be responsible for seeing that high enough rates are charged to stabilize and maintain the credit of all of the well managed railroads which are necessary to the prosperity of the country. The law fixing this responsibility should above all things be definite. Congress should not attempt, by using some such word as "reasonable," to place the interpretation of the law and, therefore, its application, up to the Supreme Court. It should specifically state that earnings should be sufficient to pay a certain rate upon the amount of capitalization approved by Congress.

Were such a law to be enacted and, furthermore, the law specifically to provide that the richer roads should absorb the poorer roads under some form of arbitration, subject to court review, the financial problem of the railroads would be in a fair way of solution.

Government Ownership in England

THE ENGLISH use of the word "nationalization" of railroads is synonymous with what we call government ownership. England is in the throes of a general election and in the campaign which is now being carried on the railroad problem occupies a prominent place. Since Mr. Dunn's article, published in this issue, was written, Lord Churchill has made a speech in which he apparently took the position that he stood for the nationalization of the English railways. Politics in England, as in this country, often leads to statements and claims in campaign speeches that are allowed to be forgotten just as soon as possible after the election takes place. While we have heard nothing directly from Mr. Dunn in regard to Lord Churchill's speech, from other sources it is learned that political exigencies of the moment may well have been responsible for this pronouncement in favor of nationalization. England and English economists and politicians have flirted with nationalization of railroads for a good many years. Sound students of railroad economics, like W. M. Acworth, have opposed the proposal vigorously and convincingly; but, nevertheless, it has raised its head again and again. In England, not only the post office, but the telegraph and telephone are under government ownership and operation. The telegraph system before the war was fairly efficient and the rates were low. The telephone system, however, was exceedingly bad when compared with our own. On the other hand, under private ownership and operation, the service on the railways was wonderfully good, although, of course, as Mr. Dunn points out, the rates were high. So far as it is possible to form any judgment at this distance, it would appear that Lord Churchill's utterances in regard to nationalization of railways did not voice the sentiment of any very large group of English public opinion and were for campaign purposes rather than the statement of a determined upon economic program.

New Books

Hydraulic Experiments By Arthur M. Talbot, Fred B. Seely, Virgil R. Fleming and Melvin L. Enger. Bulletin 105, Engineering Experiment Station. Published by the University of Illinois, Urbana. Price, 35 cents.

The experiments reported in this bulletin cover the loss of hydraulic head in small valves; the flow of water through submerged orifices; fire streams from small hose and nozzles, and the orifice bucket for measuring water. The part covering small valves is of particular interest because of the interesting facts brought out concerning the relative efficiency of globe valves, angle valves and gate valves. The information on fire hose and nozzles, aside from its value from the designing standpoint, is of interest in fire protection studies.

Directory of the American Association of Engineers. 6 in. by 9 in. 192 pages, bound in paper. Published by the American Association of Engineers, 29 South La Salle Street, Chicago. Price, \$2.

This directory goes farther than the usual society year book in that the entry for each member includes a brief synopsis of his experience and training. In consequence a prospective employer or client is given some idea of the qualifications of the man under consideration for the particular purpose in hand. In addition to this roster of the members there is also a classified list subdividing the personnel under the different branches of engineering while indexing them for the character of position held. Some space in the book is also devoted to general information concerning the association; its purpose, growth, activities, etc.

Great Britain Faces Serious Railway Situation

Must Operate More Economically but Almost Insurmountable Difficulties Are to Be Overcome

By Samuel O. Dunn
Editor of the *Railway Age*

LONDON, December 1, 1918.

THE PARTY OF trade paper journalists, of which I am a member, and whose members are here as guests of the British government, has now been in this country almost three weeks. It has been, for us, a fortnight of surprises, shocks and thrills. During the two weeks we were on the sea there occurred more great developments of vital importance to the human race than ever occurred before in an equal period in the history of mankind. When we sailed from New York on October 26 Turkey had not yet laid down her arms. We had no news from that time until we reached Liverpool on November 9. On our arrival there we learned of the great drive of the Italians, in which they took 500,000 Austrians; of the dramatic and overwhelming push of the Americans at Sedan, in which they retook the city whose capitulation to the Prussians almost fifty years ago made possible the creation of the German Empire of the Hohenzollerns; and of the uprisings in Germany and Austria which helped to precipitate the collapse of the autocratic governments of those countries.

Immediately on our arrival we were hurried down to London. Since arriving here we have heard of the signing of the armistice, which undoubtedly has ended the war, of the abdication of the Hohenzollerns and the Hapsburgs; we have been the recipients of the most generous hospitality from the British government and people; we have witnessed almost a week's celebration by the great population of London of the termination of the war in a manner which means so much to Britain, France, Italy, the United States, and, indeed, all the world, and we have seen the British grand fleet, and a large part of this tight little island.

Striking as all these things have been, nothing has impressed us more than the swiftness with which the British press, public men, business men and people have turned from the problems and tasks of war to those of peace. In fact, they began some time ago to consider broadly and deeply the problems of after-war work and created a Ministry of Reconstruction to formulate a programme. The end of the war came sooner than anybody expected, and therefore the progress which had been made with plans for reconstruction was comparatively small; but it was much greater, of course, than the advance which had been made along similar lines in the United States.

Britain's and America's Railway Problems

In the study of reconstruction, consideration of Great Britain's railway problem necessarily has an important part. The United States also has a great and vitally important railway question which the sudden ending of the war will make it necessary speedily to answer; and it is most interesting to survey the ways in which Britain's railway problem resembles ours, the ways in which it differs from ours, and the points of resemblance and contrast between the suggestions which are offered for the solution of the problems in the two countries.

Britain's problem resembles ours in the fact that its most important phase concerns the relations which shall be established in the future between the railways and the Government. It resembles it in the fact that under Government control large advances of wages have been made to railway employees which raise difficult questions regarding the pas-

senger and freight rates which should be charged in future. It is hardly an exaggeration to say that Britain's railway problem differs from ours in almost every other important particular.

It differs so greatly from ours because of the differences between the general conditions in the two countries; because of the widely different ways in which the railways of the two countries have been constructed, developed, operated, and regulated; because of the differences between the ways in which they have been handled during the war, and for numerous other important reasons. In spite of all these differences, however, the United States can learn something from British experience and opinion, and Britain can learn something from American experience and opinion.

Contrast of British and American Conditions

The railway mileage of the United Kingdom of Great Britain and Ireland is only about 25,000 miles. That of the United States is over ten times as great. And yet these doughty islands are so small, that their mileage is much larger in proportion to their area than is that of the United States. On the other hand our mileage is much greater in proportion to our population than is theirs. The British railways were built through settled communities primarily to serve a population and a commerce that already were here. Practically all the American railways were built to populate and develop the resources of new territories. The British were the pioneers of the world in railway construction and development, and pioneers are almost certain to make mistakes which those who come later will be able to avoid. Furthermore, the British railways, being built through settled communities, were originally constructed very strongly and expensively, with the idea of permanency, while ours, being built through unsettled territories, were, in the main, constructed lightly and cheaply, with the expectation that they would be largely or wholly rebuilt as the growth of traffic demanded it and the growth of earnings justified it. In consequence, it has been much easier for our railways than for the British railways to correct early mistakes of design and construction and to make improvements in track, structures, equipment and operating methods.

Finally, largely because this country was settled throughout already, the railways of the United Kingdom were early extended into all sections; while the extensive development of American railways had not become adequate to the country's needs when the restrictive hand of government was laid upon them and new construction was practically stopped. These and other conditions have contributed to making the railway problem of the United Kingdom what it is, and the railway problem of the United States the very different thing it is. In our country the cost of railway transportation had been reduced under private ownership and management before the war to the lowest point which had ever been reached in any country. While the British railways always have been privately owned and managed, they had not succeeded in getting the cost of transportation anywhere near as low as it has been reduced in the United States; indeed, it is much higher here than it is in most other countries, this being very largely due to the conditions—some of which have been mentioned—under which British

railways have been developed and operated. Consequently, in the United States, while it is still as necessary as ever to keep the cost of rendering the service of transportation as low as practicable, it is even more essential to adopt measures which will increase the capacity of our railways to handle business, and which will enable them to add to their mileage, and develop the resources of parts of the country which are now inadequately developed. On the other hand, in Great Britain, while there is need of additional mileage in some agricultural districts, the problem which most urgently demands solution is that of keeping down, or, if possible, reducing the cost of railway transport.

The average freight rate per ton per mile in the United States in 1917 was less than 7.2 mills, and even since the 25 per cent increase in freight rates made under Government control the average rate probably is not more than 9.4 mills. In Great Britain, although practically no ton mileage statistics ever have been kept, it was estimated that the average rate per ton per mile—for a much shorter average haul of course—was three times as high before the war as it was in the United States. Now, in Great Britain, as in the United States, large advances in wages have been made during the war. Before the war the British railways paid approximately \$250,000,000 of return upon their outstanding capital issues. The advances in wages which have been made since the Government took control of the railways in 1914 have been approximately equal to the total return which was paid upon railway capital then—and which is still paid, since the Government guarantees the before-the-war return. Now, while the British Government has increased the passenger rates 50 per cent, it has made no increase in the freight rates. It seems probable that if the railways of the United States should be returned to private management with both the present wages and the present passenger and freight rates in effect, most of them would be able to get along pretty well. On the other hand, while the railway statistics compiled in Great Britain—especially since the Government took control—are very incomplete, it is generally agreed that if the British railways should be returned to private control with the present wages and freight rates, and without any Government guarantees of net return, practically all of them would at once find themselves, in effect, bankrupt.

Why have not the freight rates been increased here, as they have been in the United States and many other countries since the Great War began? Partly because it has reasoned that since the British Government guaranteed the net return, there was no use, since if a deficit was incurred it would be paid in taxes by much the same people who would pay it in higher rates, if the rates were advanced. Probably more largely, however, because it was thought that the rates already were high, that an advance would impose an undue burden upon British commerce; and that any attempt to advance them would meet fierce opposition from the "traders"—or, as we call them, the shippers.

Now that the war is to all practical purposes ended, the question what shall be done with the British railways, their wages and their rates is receiving an increasing amount of attention. Some parts of the discussion move along lines parallel to those followed in the discussion of the railway question in the United States. Some parts of it follow lines which diverge widely from those along which the discussion in our country moves.

"American Methods" Advocated

The main thing for which British students of railway matters are seeking is means of reducing the cost of rendering transportation. In the course of this quest they are using many of the same terms which are being employed very freely in the United States, such as "unification" and "standardization." But the outstanding feature of the discussion—and of course it is a feature which arouses the pride of an

American who has been long somewhat intimately in touch with American railways—is the obvious effort which is being made to find means for applying "American methods" on British railways. By "American methods" I mean especially the methods which have been developed and employed in the United States and Canada to effect the handling of freight in large carloads and large trainloads. In the short time I have been in this country at least three official bodies have made public reports which they have prepared dealing with the railway problem of Great Britain from as many different points of view. The central thought of all of them, however, has been that means must be devised and adopted to enable British railways to handle traffic in larger units. No higher compliment could be paid to the genius with which the railways and the railway equipment and supply concerns of America have been managed, since we have led the world in devising and adopting machinery and methods for handling traffic in large units.

The investigations and discussions going on over here relate mainly to two phases of the railway problem. One of these is as to whether great changes shall be made in the railways physically, and, if so, what changes. The other is as to the extent to which unified operation shall be substituted for individualistic, competitive operation, and Government control for private control.

The Crux of the Physical Problem

The crux of the physical problem is presented by the so-called "structure gages"—what we, in the United States call lateral and overhead clearances—that is the distances from the track vertically to the tops of tunnels, etc., and laterally to structures along the right-of-way. Another important point is the strength of bridges. These and other points regarding the existing physical limitations of British railways were discussed by Sir John A. F. Aspinall, general manager of Lancashire & Yorkshire Railway, in his presidential address to the Institution of Civil Engineers on November 5 last. It is well-known that the average capacity of British freight cars is only about 10 or 12 tons, as compared with about 40 tons in the United States, and that British locomotives and cars, both freight and passenger, are much narrower than those of the United States, although the track gage is the same in the two countries. Sir John Aspinall said in part:

"The capacity of our rolling stock is hampered in an extraordinary degree by the fact that, as pioneers of railway construction, we could not appreciate what the immense growth of railway requirements would be, and what would be the dimensions of the loads we should be asked to carry, or the weight per wheel which our bridges would have to bear. . . .

"The difficulties of altering the structure gages (clearances) are greatest with the small tunnels, . . . but we have many platforms which prevent the widening of any part of our rolling stock at a height of about 3 ft. 6 in. above the rails, while there are numerous girders standing up between the rails which are in the way, and there are many other points of obstruction. . . . On the British railways there are no fewer than 66 loading gages applicable to 150 sections of lines, all of which have to be taken into account when considering the forwarding of rolling stock. . . . There are in England, Scotland and Wales about 100 large and small separate railways with a 4 ft. 8½ in. gage, but the maximum number of railways which can accept loads of one of the largest, though not the largest, loading gages, is 18. Some of our railways have steadily improved their lines to get rid of these difficulties, but the wider and larger rolling stock, whether locomotives, carriages (passenger cars) or wagons (freight cars) which they can use, have to be confined to their own property. . . . The extreme dimensions of the cylinders of outside-cylinder locomotives have been reached on account of these obstructions, and render it difficult to design a more powerful locomotive constructed in this form. . . . Electric locomotives such as already have been designed can haul loads far beyond anything we handle in this

country, though their exterior dimensions at platform level would not foul our largest loading gages."

The ordinary overhead clearance on American railways is 16 ft., while on British railways it is but 13 ft. 6 in. Our ordinary lateral clearance is 10 ft. 6 in., while the maximum on most railways in this country is but 9 ft., although some, such as the Great Western, have a maximum of 10 ft. Unfortunately, however, a railway such as the Great Western, which has provided cars large in proportion to its clearances, cannot send them off its own rails. The difference between the situation in the great area of the United States and Canada, with their 300,000 miles of railway and in this "tight" little island, with its small mileage, may be strikingly illustrated by the statement of two facts. Practically any freight car belonging to any railway in the United States or Canada may be sent anywhere upon any line in either of those countries. On the other hand, in this country it was arranged during the war to send British coal in railway cars to a port on the English channel; take the cars across the channel in a train ferry to France; and then run the loaded cars upon the French railways to destination. It would have been desirable, of course, to have handled this coal in the largest cars available. But the Southeastern & Chatham, the railway over which it was necessary to move the coal in England, has the narrowest among structure gages in England, and could not accommodate the larger French cars, or even the largest cars of the British railways. In consequence, it was necessary to use in this service the smallest cars available, instead of the largest cars.

Difficulties of Increasing Structure Gage

It is becoming recognized by students of railway transportation in Great Britain that the structure gages of the railways should be increased and made uniform to enable them to use larger cars and more powerful locomotives and to haul heavier trainloads. The cost of increasing the structure gages of all, or even most, of the lines, would be extremely large. However, as Sir John A. F. Aspinall pointed out, it would cost no more than a few days of war; and once it was done the saving in operating expenses it would make possible would be enormous.

Even though the railways themselves increase their structure gages, however, the problem of realizing the economies this would render possible will still be far from solution. Freight cars move in and out of innumerable collieries, and manufactories, the structure gages within which also are restricted. How are the owners of these concerns to be induced to so reconstruct their works as to enable larger cars to move in and out of them?

Again, in 1913, the railways of Great Britain owned 790,000 freight cars, while in addition they had upon their lines about 700,000 cars which were owned by shippers. The shippers have in this country a "vested right," enforceable at law, to have cars owned by them used in handling their commodities. Many of these private cars are small; and even if the railways should increase their structure gages and enlarge their own equipment, the shippers ("traders") could largely defeat the efforts to effect economies by standing upon their vested right to have their commodities handled in their own cars.

Finally, it always has been the custom in this country for the shippers to send their commodities, and the railways to handle them, in very small consignments. How are they to be induced to ship in wholesale instead of in retail quantities? Sir John Aspinall suggests the adoption of the continental European system of having one scale of freight rates for fast traffic handled in small consignments, and a much lower scale for slow traffic handled in large consignments.

Practically speaking, Britain today has only a fast goods traffic, handled in small consignments and in consequence the railways cannot afford to make any lower rates.

Plainly, the problem of reducing the cost of transportation in this country is a very complex one, and will not be solved merely by changes in the structures and operating methods of the railways themselves.

Standardization of Rolling Stock

One of the phases of the railway problem in the United States which has been much discussed during the present year has been that of standardization—especially standardization of rolling stock. It is interesting to find that the same subject is being animatedly discussed here, and that the discussion is following lines somewhat similar to those being followed in the United States. Immediately, one gets into the discussion here, however, he finds as regards rolling stock the same general condition that he finds as regards track clearances—viz., that the diversity in design and construction on the 25,000 miles of railway in these islands actually is much greater than it is on the 300,000 miles in the United States and Canada. In view of the criticisms—often based mainly on ignorance—which recently have been visited upon American railways for not having standardized enough, it is somewhat amusing to come over here, and hear much of the standardizing which actually has been done on American railways held up as a model highly worthy to be followed by the British railways. Some time ago the British Government organized a Ministry of Reconstruction to study the many after-the-war problems of industry. Among the numerous committees which this ministry appointed was one to investigate and report upon the subject of "Standardization of Railway Equipment." This committee, of which Charles Metcalfe was acting chairman, heard evidence from several witnesses, including the chief mechanical engineers of the Great Western, the Lancashire & Yorkshire, the Southeastern & Chatham, and the London & North-Western Railways, representatives of the large manufacturers of rolling stock, Sir John Aspinall, and Col. Pringle, the Chief Inspector of Railways of the Board of Trade (a government department). The report which recently has been made by the Committee on Standardization, will, I am sure, be found interesting, both by American railway officers, and by American manufacturers of railway equipment and supplies, and I therefore give it below in full, together with the conclusions reached:

Report of the Standardization Committee

It is evident that standardization of railway equipment where it is possible, by allowing of mass production on repetition work, tends to quicker delivery at a lower cost, because it enables a greater use of machine as against hand labor, and facilitates maintenance. This has been the experience in India, where standardization has been adopted, and we are of opinion that in countries, such as the Argentine, for instance, where the conditions are well suited for it, if the consulting engineers would agree to design standard types of locomotives and rolling stock, the results would be equally good.

The difficulties are much greater in the case of this country. Great Britain was the pioneer of railway construction. Small, independent lines have been linked up into larger systems, and consequently there are differences in structural and clearing gages and in tunnel dimensions. In the existing state of things, any locomotive designed to run on all the various lines would have to be a compromise, and would not be the best possible for each particular railway system, and without state assistance the railway companies could not meet the capital outlay which would be involved in obtaining uniformity of conditions. But so far as the main trunk lines are concerned we were informed that a reasonably efficient engine could be designed for use generally on most of them.

The development of locomotive design has now reached a stage which allows of standard types being adopted when the conditions of the road are similar. The railway companies have recognized this, and have already begun to introduce standardization in so far as each company is concerned, The London and North-Western Railway Company, for instance, which have at

present 33 types of locomotives, have now standardized three types for express passenger, for express passenger and goods, and for heavy goods, respectively, and have also largely standardized locomotive parts, such as connecting rods, coupling rods, piston rods, injectors and cylinders.

Further, the Committee on Locomotive Standardization, which was set up because the members of the Association of Railway Locomotive Engineers were of opinion that standardization was desirable, have now fixed on two standard engines with the intention to design later two engines of each type, one heavy and one light, with many of the parts common to all four. They have also instituted a Committee on Wagon and Carriage Standardization.

The railway companies, therefore, recognize the necessity of standardization, but, in view of the lack of material, they deprecate the immediate introduction of new types of standard locomotives for which new jigs, patterns and templates would be required which would cause delay and increase the number of parts and spaces to be kept in stock. In pre-war times the big railway companies built annually some 450 locomotives out of the 700 required by all the railways. During this war they have been almost wholly occupied in keeping in repair their existing stock, which may therefore be estimated to have a further life of service of probably some 15 years.

The chief mechanical experts of the main systems of British railways, however, stated that undoubtedly economies could be effected and output increased if certain parts of engines purchased from outside firms were made standard for all railway companies. In this connection they referred more particularly to wheels, axles, wheel curves, tires, etc., and also they considered that the standardization of the essential parts, such as running gear, draw gear, buffing gear, bogies, brakes and underframes, was most urgent.

Competition between the big railways has tended to progress on the whole, but has resulted in a quite unnecessary multiplication of types. The evidence before us showed that on British railways there are 200 different types of axle boxes, that every railway company had adopted different types of tires, springs and axles—that there are over 40 variations of the ordinary wagon hand-brake, that, although the railway companies have laid down standard dimensions governing the construction of private owners' wagon stock, as to their own wagons they claim independence of action, and do not comply with the Clearing House Regulations, and we would call attention to the fact that there are two different systems of continuous brakes involving a dual brake fitting in the case of stock that has to run over lines where the systems are different. In no other country has individuality been allowed so much free scope, with the result that British railways are severely handicapped, and the working of them not so economical as it might be.

Other countries have not suffered as much from this riot of individuality because almost without exception locomotives and rolling stock are purchased from private firms of manufacturers.

The only railway company outside Great Britain that manufactures most of its own stock, we were informed, is the Pennsylvania Company, in the United States, and this is done in order to keep check on the private manufacturers.

The Locomotive Manufacturers' Association pointed out that the British railway companies, who at first bought all their locomotives from private firms, first found it necessary to set up their own repair shops, then started building their own locomotives, and from this gradually extended their operations over the whole field of railway machinery. The railway companies state that they can themselves build more cheaply, that they save the manufacturers' profit, cost of advertising, etc., and have not got to build up a reserve of capital, but they allow that in their costs they do not provide for rates and taxes, ground rent and depreciation.

We were impressed with the necessity from a business point of view of having the costs of construction in the railway workshops thoroughly investigated by competent and independent audit. This the locomotive engineers of the railways said they should welcome.

We would call attention to the amount of dead weight carried on British railways. The tare of an eight-ton wagon, built to the Clearing House Regulations, is 70 per cent of the load, as against the 40 to 45 per cent of the wagons of other countries.

CONCLUSIONS

We think it desirable in the national interest to carry out standardization of railway plant as far as it is practicable to do so, and as immediate steps towards this end we recommend:

1. That the standardization of wheels, axles, wheel-centers, tires, running gear, draw gear, buffing gear, bogies, brakes and underframes be dealt with immediately by the Engineering Standards Committee on which all interested, including private builders and makers of materials, should be represented, and that when such essential parts have been standardized, the adoption of the standards should be gradually enforced.

In view of the difficulties of standardizing complete locomotives and other rolling stock under existing circumstances, and of the excessive amount of dead weight now carried on British railways, we recommend:

2. That a committee be formed to investigate the existing conditions of structural gages and clearances of the British railways and the loading and unloading arrangements at works and ports in order to ascertain how far uniformity could be introduced and tares reduced, and at what cost.

3. That the costs of construction of locomotives and rolling stock by the railway workshops and by private firms respectively be investigated and ascertained by competent independent accountants appointed by the government.

In view of the great demand for rolling stock that there will be at the close of the war in this country and elsewhere, we feel that, in order to expedite delivery and to secure production at the lowest possible cost, standardization is very necessary for the export trade. We recommend, therefore:

4. That the consulting engineers and representatives of railways financed by British capital in foreign parts and in the dominions be brought together to confer with the locomotive and wagon manufacturers in this country to determine what standardization can be effected, and that, with a view to the possibility of effecting partial international standardization, the separate committees should take cognizance of each other's investigations.

Among the points in this report which will impress the American reader are the following:

First, the Railroad Administration in the United States entered on a programme of equipment standardization practically without previous investigation, while the British are investigating first. Second, in Great Britain the British railways have built in their own shops about 65 per cent of their locomotives, while in the United States a very large majority of locomotives have been built by companies existing solely for that purpose. Third, there has been far less standardization of parts than there has been on American railways, there even being over 40 variations of the ordinary hand-brake—which is generally used here instead of engine brakes, as in the United States, and two different systems of continuous brakes in use, involving the fitting of many cars with two different kinds of brakes. Fourth, that one important reason why the subject of standardization is being so actively considered is its relationship to export trade; for the private builders of locomotives and cars in this country get about 90 per cent of their business in foreign countries and in parts of the empire outside the British isles.

Why has standardization already been carried so much farther in America than in Great Britain? Partly, undoubtedly, because most American rolling stock has been built by locomotive and car concerns devoting themselves exclusively to this business; even more largely, probably, because there has been much closer co-operation regarding matters of this kind between the railway officers of America than between the railway officers of Great Britain. The railways of the United States owe an incalculable debt to their various operating and technical associations, because it has been largely due to the discussions in their conventions, and to the recommendations they have made, that our railways have secured the standardization of design that they have secured without at the same time hampering progress of design.

As is the case in America, there are some in Britain who see the immediate gains that would be made by standardiza-

tion, but do not appreciate the bar to progress that would be established by over-standardization, while others see the danger of interfering with progress by standardization more clearly than they do the advantages that would be gained by it.

While Sir John Aspinall, in the address already quoted from, advocated a great increase of standardization—largely, I take it, along lines already adopted in America—he added: "In pressing forward the all-important question of further standardization of parts, nothing should be done to prevent the acceptance of new ideas which tend towards the improve-

ment of conditions and the economy of operation, though a nicely-balanced judgment will often be required to decide between the acceptance of some excellent new idea, and the economy to be maintained by the retention of parts which are absolutely interchangeable. In the world of mechanism there can be no finality, and we ought not to look to finality if we are to keep pace with other nations."

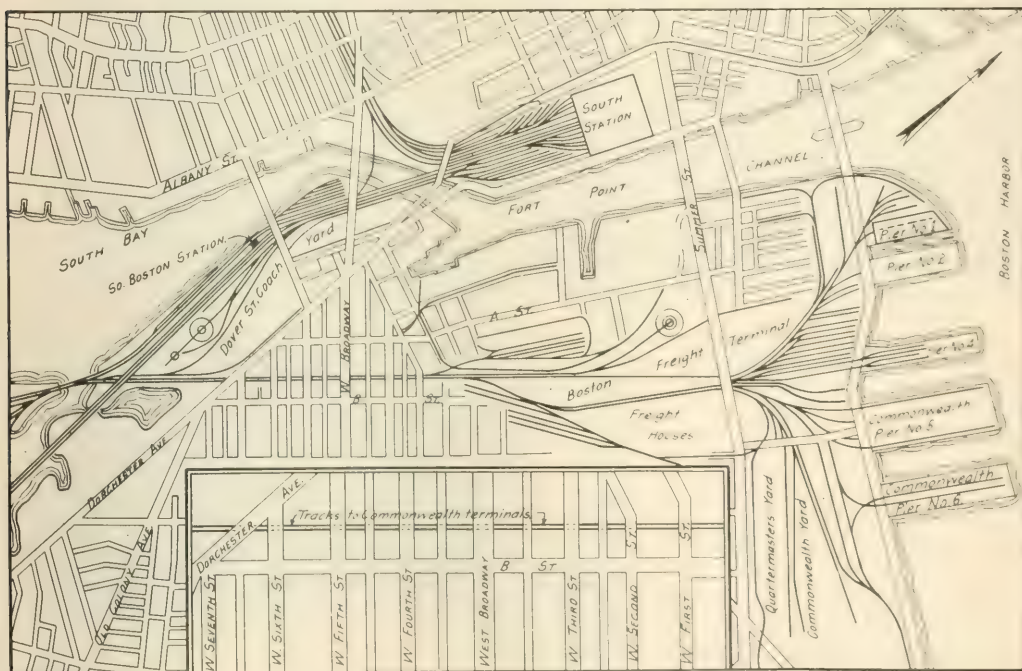
I hope in a later letter to compare the discussion which is going on here regarding the future relations of the railways to one another and to the State with the similar discussion which is going on in America.

New Haven Improvements at South Boston Terminal

Involve the Construction of Two Additional Main Tracks and
Depressing the Old Line. All Done Under Heavy Traffic

WORKING THROUGH a district subjected to a particularly heavy traffic the New York, New Haven & Hartford is now engaged in widening the two-track approach to its South Boston freight terminal for four tracks. This project represents an expenditure of more than \$1,000,000 and involves the placing of 16,000 cu. yd. of concrete in the retaining walls and bridge abutments, the erec-

principal terminal for the New Haven in New England. It comprises one of the most important local freight facilities in the city and a large portion of the export facilities. It is near the site of the Commonwealth and fish piers and also includes an engine terminal. As shown on the map it fronts on Boston harbor and lies adjacent to the Fort Point Channel which leads from South Bay to the harbor.



General and Detailed Locations of the Improvements

tion of 11 concrete and steel overhead highway bridges and the excavation of 110,000 cu. yd. of material, a considerable portion of which was removed from below tidewater. The work, which has been done under the necessity of maintaining an uninterrupted traffic, was begun in October, 1917, and it is now practically completed.

Enlarged capacity in the approach was made necessary by increasing business handled in the terminal. This is the

Since the construction of the Commonwealth pier the South Boston section has had a rapid growth as an industrial and manufacturing center, and this growth has been reflected in a corresponding increase in traffic handled. In addition to this traffic it is necessary to use the main entering and departure tracks as switching leads in connection with the classification of cars in the terminal. This switching involves an average of 1,500 movements every 24 hours.

Under the old arrangements the facilities for handling the traffic in and out of the terminal area consisted of a double track line laid in a walled cut which was built in the days of small equipment. With the introduction of modern motive power and rolling stock the clearance became inadequate. In the old layout the vertical clearance under the bridges was approximately 14 ft. 6 in., the track centers averaged about 10 ft. 10 in., and the side clearance ranged from 5 ft. 3 in. to 6 ft. At points the bulging of the old walls further reduced the clearances, making it impossible to operate the newer and larger types of engines and cars through the cut and making necessary a large amount of transfer of freight to smaller equipment before delivery to the terminal.

With the entrance of this country into the war this terminal was selected as the site for the United States government facilities for handling overseas shipments from New England. It was impossible to handle this traffic in addition to the regular business through the two-track approach and increased capacity became imperative.

As previously mentioned, the two entrance tracks to the terminal were laid in a walled cut. This cut extended from Dorchester avenue on the south, to West First street on the north, a distance of approximately 2,000 ft. In this comparatively short distance 12 streets crossed the tracks. Of



Looking Through the Cut Before Work Was Started

these, 11 were carried overhead by means of timber bridges and West First was crossed at grade.

The base of rail elevation of the old tracks in the cut averaged 6 ft. above low tide. The tide in Boston averages 9 ft., or, in other words, the old base of rail elevation was approximately 3 ft. below high water.

In making plans for the improvement, two objects were essential—the securing of the additional width in the cut necessary to permit the construction of more tracks and ample vertical clearance under the bridges to permit the operation of the largest equipment. The additional width was a problem of securing the necessary right of way, but the securing of the additional vertical clearance could be solved by raising the grade of the streets or depressing the tracks. After exhaustive studies it was decided to depress the tracks and the plans were made accordingly.

These plans provide for the replacement of the two-track approach with four tracks on 13 ft. centers, with a side clearance of 9 ft. and a vertical clearance of 17 ft. The provision of the four tracks largely increases the capacity of the approach, while the increased clearance obviates the necessity for freight transfer. In connection with the enlargement of the approach a modern classification yard is to be provided ahead of the approach tracks where all freight destined for or routed from the terminal will be classified. This further increases the capacity of the approach by doing away with the necessity for using the tracks as switching

leads. The widening of the cut required the reconstruction of the overhead highway bridges and 11 old 22-ft. span structures are being replaced with concrete and steel bridges of 57-ft. span, face to face of walls. The 17-ft. vertical clearance under the bridges was secured by fixing the new base of rail elevation at 6 ft. below high water. To secure



The Temporary Bridge at West Broadway

proper drainage for the roadbed this meant carrying the excavation down to more than 10 ft. below high water. The plans further provide for the closing of West First street across the tracks, diverting the traffic to West Second street.

Construction

Work on this project was begun on the south end and progressed to the north. The first work consisted of widening the cut. This was done by steam shovel and involved the moving of a total of 110,000 cu. yd. of excavation, including the 12,000 cu. yd. of stone removed from the old wall. The extra width was all secured on one side, the old wall on the other side being left undisturbed.

A type 60-C Bucyrus steam shovel was used, equipped with a 3½-yd. bucket. With this equipment it was possible to catch the grade with the first cut. The old wall was undisturbed, tipped over and loaded during the first cut of the shovel, and during the second trip the cut was widened out the required amount and the extra excavation for the bridge abutments was taken out at the same time.

A large part of the excavating was done in cold weather



Steam Shovel Making Final Cut After Walls and Abutments Have Been Completed

with a combination of 5 ft. of frost at the top and a soft bottom complicating the work. Because of the nature of the earth to be moved and the proximity of homes and industrial plants, blasting to break up the frost was not feasible to any extent. Instead it was necessary for the shovel to break up the frozen material and at times it was fitted with new manganese teeth weekly. To prevent the shovel from becoming mired it was necessary to crib it up, from three to five tiers of blocking being required.

Because of the demands of traffic, double track operation through the cut had to be maintained at all times. This complicated the disposal of the material moved, as it was necessary to use the northbound track for the work train, which cleared for all northbound movements. The material from the cut was all utilized as filling at the site of the classification yard, the average haul being approximately one mile.

As the shovel progressed it was followed closely with a new



Typical Abutments and the Superstructure at West Fifth Street

track and at intervals of 500 to 600 ft. 1.5 per cent runoffs on cinders were installed between the old and new grades. The westerly track was then shifted to the position of the easterly one, thus allowing room for the construction of the west abutments of the bridges.

As the shovel progressed the material was removed to subgrade, and provision was made for draining the roadbed. This embraced a specially constructed roadbed, an elaborate system of sewers and drains and a modern pumping plant to raise the water collected in the settling basins and discharge it into the city sewers.

In preparing the roadbed the earth and sand in the cut was taken out to an elevation of nearly three feet below the new grade of the tracks. Then 6 in. or more of cinder filling was placed on the subgrade to choke the sand and mud. This was followed by 6 in. of gravel and the whole finished with 18 in. of rock ballast below the base of rail. Three underdrains, one on each side and one in the center were provided through the entire length of the cut in addition to the main



At the Throat of the Yard

sewer, which was graduated from 15 in. at the ends to 24 in. at the pump house, the drainage being toward the center from the ends of the cut. Concrete drop inlets were provided at intervals along the underdrains, these inlets being connected with the main drains by means of cast iron pipes.

The water collected by the drainage system is discharged into a settling basin located immediately in front of the pump house. This basin is connected with a pumping chamber directly under the pump house. The pumping equipment consists of a battery of two 8-in. centrifugal pumps operated

by 40-hp., float-controlled motors. The operation of the pumping equipment is automatic and requires little attention. The installation is in duplicate and the pumping chamber is also divided into compartments, one for each pumping unit. By this arrangement the pumps can be worked alternately. It also permits of easy repairs. Each pump has a capacity of 3,000 gallons per minute, and they work against a head of 30 ft., discharging the water into the city sewer.

The Concrete Work

In all, this project involved the placing of more than 16,000 cu. yd. of concrete, consisting of the bridge abutments at the intersecting streets, retaining walls between bridges on the east side, where the width of right-of-way is insufficient for sloped cuts, and the reinforcing of the old dry stone wall on the west side of the cut.

The stone and sand for the concrete work were purchased locally and delivered at the street level. Arrangements were also made to deliver cement at this level, although it was brought in in cars. The concreting equipment consisted chiefly of the mixer and engine, the elevation being sufficient to spout the concrete to the forms except for the retaining walls into which it was delivered from the mixer to buckets, which were picked up by a stiff-leg derrick and deposited in the forms. The retaining walls and bridge abutments are of



Steam Shovel Working at West Broadway

gravity section, and because of the poor bottom special footings were provided under the abutments.

On the west side of the cut the plans provided for leaving the old dry masonry wall undisturbed. However, through the track depression it became necessary to carry the old wall down to a new footing. This was done by providing counterforts, built in 5 or 6 ft. sections and 3 to 4 ft. back under the wall. This was done by digging the dirt away from under a section of the wall after proper underpinning had been placed, following this with the concrete footing. To insure against the failure of the old wall the dirt was left undisturbed between sections of the excavation until the concrete had set properly. The intermediate sections were then reinforced in a similar way. The bridge abutments on the west side of the cut were all placed slightly ahead of the face of the old wall and thoroughly tied into it by the same method.

The service wires for the railroads are all cared for in the counterfort walls and westerly bridge abutments in six ducts built into the walls. Two ducts each are provided for the signal department and the telephone, and two for the railroad wires carrying 2,300 volts. The ducts are placed 12 in. apart and thoroughly insulated to prevent induction.

During construction it was necessary to provide means for taking care of vehicle and pedestrian traffic across the tracks as well as the public utility apparatus. For this purpose four

temporary wooden bridges, comprised of frame bents and timber floors, were installed. One at Broadway carried, in addition to a double-track trolley line, the wires of the street railway and the Edison high-tension lines to South Boston. It also carried city water pipes, gas pipes and telephones. Similar conditions were encountered at the other bridges.

All of the 11 bridges are of the through girder type. At the less important and narrow streets the bridges are provided with all-wood floors, the deck consisting of 4 in. of creosoted timber as a base, which is thoroughly waterproofed. This is followed by a sand cushion and the wearing surface of wood blocks. The steel faces exposed to the locomotive gases are wrapped with 2-in. mesh Clinton wire cloth and coated with cement applied with a cement gun. The larger bridges have concrete slab floors with the slabs poured to the bottom flanges which are left exposed and are to be coated with a cement gun. The underside of the slabs over each track are also treated with a cement gun, the treatment being about 3 ft. wide and taking the direct blast from the locomotives.

The bridge steel is being erected by the American Bridge Company with the erection derricks working from the high level of the old track, while the steel is delivered to the derricks on the new track at the lower level. To secure ample clearance to permit operation over the high level track the steel at three of the streets was landed on blocking and slacked down when the track was depressed to the new grade. The remaining bridges were seated in place with a temporary headroom of 15 ft. 6 in.

The plans for this project were developed under instructions from E. J. Pearson, then president and now federal manager of the New Haven and under the general direction of Edward Gagel, chief engineer, and A. S. Tuttle, construction engineer, who is in general charge of the improvement. J. B. Trumbull, assistant engineer, is in direct charge of the work. With the exception of the erection of the steel and the placing of the concrete, which was let to contract, the work has been carried on by the construction department of the New Haven.

Train Accidents in November¹

THE FOLLOWING is a list of the most notable train accidents that occurred on the railways of the United States in the month of November, 1918:

Collisions.						
Date	Road	Place	Kind of accident	Kind of train	Kil'd	Inj'd
*19.	Chicago, B. & Q.	Sugar Grove	bc	P. & F.	2	13
*23.	Pennsylvania	Dewart	bc	F. & F.	6	3
Derailments						
4.	Illinois C.	Newton	..	P.	2	1
11.	Southern	Ayrshire	..	P.	1	2
15.	Pennsylvania	Lockport	bt track	P. & F.	3	8
*21.	Grand Trunk	Falmouth, Me.	b rail	P.	3	31
24.	Atlantic C. L.	Dillon	b rail	P.	0	55
28.	Balt. & Ohio	Philippi	b rail	P.	0	25
29.	Atlantic C. L.	Kingstree	unn	P.	2	0

The trains in collision at Sugar Grove, Illinois, on the 9th, were a westbound regular passenger train, and an eastbound extra passenger train being run from Camp Grant to Chicago for accommodation of soldiers attending a football game. Two passengers were killed and twelve passengers and one employee injured. The trains had orders to meet at Sugar Grove. The westbound train had been instructed by train order to take the siding, but the engineman forgot this order and continued on the main track, and collided with the other

train. He was running at about 10 miles an hour, and the other train about twice as fast. The eastbound engineman was also at fault for running past the block signal at the station. It appears that he expected to receive a "19" order and therefore did not try to stop his train before passing the signal.

The trains in collision near Dewart, Pa., on the 23rd were eastbound and westbound freights, the latter consisting of an engine, a caboose and no cars. Both engines and six cars were wrecked, and the wreck took fire, consuming six cars of oil. Six trainmen were killed and three were injured. The collision was due to the neglect of the signalman at Q block station. He had an order to hold westbound trains until the arrival of this eastbound train on the westbound track. He fell asleep. He awoke on the approach of the westbound train and gave it a clear signal, forgetting the holding orders.

The train derailed at Newton, Ill., on the night of the 4th, was westbound passenger No. 309. The engineman and fireman were killed, and one other employee was injured.

The train derailed on the Southern Railroad at Ayrshire, Ind., on the morning of the 11th, at 3 o'clock, was eastbound passenger No. 1. The locomotive and baggage car fell down a bank, and overturned. The engineman was killed, and the fireman and the baggageman were injured.

The accident on the Pennsylvania Railroad near Lockport, Pa., on the evening of the 15th, involved two trains, an eastbound extra freight and westbound passenger No. 5. A broken truck in the freight train derailed and wrecked twelve cars and the wreck obstructed westbound track No. 3. Train No. 5 ran into this obstruction, and the engine and first four cars were thrown off the track. The baggageman of No. 5 was killed, presumably by baggage falling upon him; and the engineman and fireman were injured. Six passengers were slightly injured.

The train derailed at Falmouth, Me., on the afternoon of the 21st, was an eastbound passenger. The smoking car was overturned. Two passengers and one employee were killed, and about 30 passengers and one employee were injured. The cause of the derailment was a broken rail.

The train derailed near Dillon, S. C., on the evening of the 24th, was northbound passenger No. 78. Fifty-five passengers were injured, all of the injuries being classed as slight. The cause of the derailment was a broken rail.

The train derailed near Philippi, W. Va., on the 28th, was northbound passenger No. 34. Fourteen passengers were slightly injured. The cause of the derailment was a broken rail.

The train derailed near Kingstree, S. C., on the morning of the 29th, about 1 o'clock, was northbound passenger No. 86. The engineman and fireman were killed and 10 employees and six passengers were injured. The cause of the derailment is reported as not determined.

Electric Car Accidents.—In Brooklyn, N. Y., on the evening of the first of November, a heavily loaded passenger train of five cars was derailed by excessive speed at a sharp curve, and 92 passengers were killed and more than 100 injured. This accident was reported in the *Railway Age* of November 8.

Fines for Rebating

In the United States court at Toledo, Ohio, on December 16, a fine of \$5,000 was imposed on the Kanawha & Michigan Railroad Company for giving rebates to Kelly's Creek Colliery Company, and one of \$1,000 on the Colliery Company for accepting the rebates. At the same time the Toledo & Ohio Central Railroad Company, which entered a plea of guilty, was fined \$1,000 for failing, for 39 days, to give the consignee notice of the arrival of a carload of coal at Toledo. These suits were based on transactions which took place more than a year ago.

¹Abbreviations and marks used in Accident List:
rc, Rear collision—bc, Butting collision—xc, Other collisions—b, Broken—d, Defective—unt, Unfrozen track—obst, Obstruction—acc, Accident—derail, Open derailing switch—ms, Misplaced switch—Unexp, Unexplained—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P, or Pass, Passenger train—F, or Ft, Freight train, (including empty engine, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

Doings of the United States Railroad Administration

McAdoo Will Leave Washington About January 4, After Testifying Before Senate Committee

WASHINGTON, D. C.

DIRECTOR GENERAL MCADOO has made preparations for leaving Washington about January 4, after he has presented his testimony before the Senate Committee on Interstate Commerce at the hearing which begins on January 2 regarding the disposition of the railroads. With his family he will take a vacation in southern California. Mr. McAdoo gave a dinner to the directors of his departmental divisions at his home in Washington Saturday night and has planned a reception for other members of his organization.

The appointment of a new director general to succeed Mr. McAdoo has been expected daily by cable or wireless from President Wilson for several days. It is understood that the selection of his successor was left to Mr. McAdoo when the President sailed from this country, but apparently considerable difficulty has been experienced in getting the right kind of man to take the office, as it is understood that at least three prominent men have declined the honor, including Franklin K. Lane, secretary of the interior and former member of the Interstate Commerce Commission, and Judge Robert S. Lovett, who has resigned as director of the division of capital expenditures, effective on January 1, to become president of the Union Pacific. It has been said that President Wilson was very reluctant to appoint a railroad man to the position because of the opposition which such an appointment might arouse among the labor organizations and possibly among the shippers.

On the other hand the present uncertain status of the Railroad Administration is regarded as holding little inducement to a man with a well-established reputation to accept the responsibility, because, according to present indications, the job is likely to consist largely of winding up the affairs of the Railroad Administration, which involves a settlement of the complicated relations between the government and the railroad companies and would afford little opportunity for constructive achievement. Even if the Railroad Administration were likely to be continued for a couple of years it is believed that it might be a thankless task to attempt to follow in the footsteps of a man like Mr. McAdoo, who has enjoyed such close relations with the President, who brought to the office of director general his great prestige as war-time Secretary of the treasury, and who, because of the military necessity, was undoubtedly allowed a greater freedom of action than would be likely to be accorded to his successor. While Mr. McAdoo was called upon to deal with a difficult emergency, the fact that the emergency was so generally recognized gave him certain advantages which he himself might not be able to retain in peace times, such as the power to fix rates and wages, and thereby avoid difficulty with labor, as well as the power to put into effect measures to promote operating efficiency without the amount of pressure which shippers, state commissions, labor organizations and politicians might have been able to bring to bear in ordinary times.

Now that the war is over, shippers and state commissioners are already agitating for a reduction in the freight rates which were established by Director General McAdoo's General Order No. 28, and for a relaxation of the requirements for full loading of cars, while the coal operators are trying to bring about the discontinuance of the zone system of coal transportation, which by eliminating cross hauling is generally credited with most of the improvement in the handling of the coal traffic this year.

Many of the railroad men in the Railroad Administration

organization who have given their best to the handling of the transportation problem during the war as the performance of a patriotic duty and at personal sacrifices, are reluctant to continue their work at Washington under peace conditions and are anxious to return to their own roads and to their homes. Two directors of departmental divisions have already resigned, and there have been many rumors that Edward Chambers, director of the Division of Traffic, would soon follow the example of Judge Lovett and Mr. Gray, while several assistant department heads would like to resign, but are conscientiously waiting to finish their work.

C. R. Gray Resigns as Director of Operation

The resignation of Carl R. Gray as director of the Division of Operation was announced by Director General McAdoo on December 20, to become effective on January 15. Mr. Gray has recently been in poor health and in a letter to Mr. McAdoo explained that he felt obliged on account of his need for a rest, to ask to be released from his duties. As the head of the operating department of the Railroad Administration, Mr. Gray and members of his staff have carried a very large proportion of the load of responsibility for the handling of the war traffic. Mr. Gray, until his appointment with the Railroad Administration, was president of the Western Maryland and the Wheeling & Lake Erie. He resigned all connection with corporate interests at that time and now has no definite plans for the future beyond a vacation. In a letter accepting his resignation, Mr. McAdoo said:

"I am genuinely distressed to learn from your letter that you feel obligated, on account of your need of a rest, to resign as director of the Division of Operation of the United States Railroad Administration, and that you would like to be released on the 15th of January, 1919.

"You have served with such marked ability, loyalty, and patriotism, and have rendered service of such great value in the responsible post you have occupied, that your resignation is a great loss to the Railroad Administration and to the country. Please be assured of my warm appreciation of your loyalty, unflinching zeal and enthusiasm during the whole period of your association with me. You have not only lightened my burdens by your effective co-operation, but you have rendered service of the highest character to your country."

Arrangements for Heavy Holiday Traffic

"Herculean efforts" are being exerted to make every provision possible to take care of the extraordinary travel on the railroads during the holiday season, according to a statement issued by the Railroad Administration. With the large number of enlisted men being furloughed and released from the various camps, coupled with the demands from the general public for railroad accommodations, it is realized that the task to be performed is a difficult one.

Reports received by the director general from the regional directors indicate that arrangements are being perfected to cover all transportation requirements, although in some instances it may not be possible to afford all the relief that will be necessary due solely to a lack of locomotives and rolling stock.

A. H. Smith, director for the Eastern region, reports that while the travel will be heavy in this section and will call for heavy trains, it is hoped to be able to give every one a seat

with the exception, perhaps, of some short haul travel. Arrangements have been made to run light sections, returning with equipment to points where it is needed.

Reports from the Allegheny region show that efforts are being concentrated to provide service and equipment required and that traffic will probably be handled without inconvenience.

From the Pocahontas region reports indicate that the roads will be hard pressed on account of the movement of troops from Camp Lee. Ten thousand men from this camp have been granted furloughs and another 10,000 will be permitted to go to their homes the three days immediately preceding New Year's Day. All coaches available, however, are being furnished the Chesapeake & Ohio and the Norfolk & Western to aid in the movement.

In the Southern region a request has been made for additional coaches to assist in handling the holiday travel.

R. H. Ashton, director for the Northwestern region, reports that no difficulty is anticipated in handling all the traffic in this section during the holidays.

From the Central Western region reports show that everything possible is being done to take care of all demands. There is no reason to believe that there will be any cause for complaint in this section.

In the Southwestern region the Missouri Pacific and Cotton Belt roads will be short approximately 25 coaches due to the demand from the Texas lines for additional equipment to handle troop movement. Everything possible is being done, however, to meet the situation.

The holiday travel for 1918 is much ahead of 1917, being greatly increased by the soldier and sailor business on furlough and discharged from the service. Weather conditions have made it possible to keep trains generally on time. No unusual congestion or complaints are reported in any territory. Reports from New York, Boston, Philadelphia, Chicago and Washington indicate the soldier business was very generally ticketed at camps where ample ticket forces were provided and so did not add to the crowds of travelers at large centers.

As typical of the business and steps taken to care for it, the sales at the Grand Central Station in New York on Saturday were \$73,000. The next largest sales reported on any one day were before Labor Day, when they were \$65,000. The number of extra sleeping cars put in service out of the Grand Central Station December 21 to 24 this year were 280; in 1917, 67; in 1916, 172. On Saturday, December 21, there were 82 extra sleepers in service which is more than the number of extra sleepers in service for four days in 1917, including December 21. The conditions in the Pennsylvania terminals in New York and Philadelphia were the same as at the Grand Central. The amount of ticket sales from December 20 to 22 were 70 per cent above a year ago, namely, \$175,000, as against \$104,000. At Philadelphia the increase was but 20 per cent and at Pittsburgh there was a slight decrease.

The conditions at Washington were probably more extreme this year than at any other city. For the six days ending December 21 the total sales at the Union Station were \$328,000, compared with \$180,000 in 1917. The number of passengers was 49,000, as against 34,000 in 1917. The sales at the Consolidated Ticket Office for the same period this year were \$237,000 and the number of passengers 27,000.

In the matter of coaches there were 2,517 used this year, as against 1,953 a year ago, or an increase of 564. In the matter of sleepers and parlor cars there were 1,384 used this year, as against 923 a year ago. The advantage of advanced buying was freely advertised and responded to, and there were comparatively few cases where the accommodations desired could not be secured. One Consolidated Ticket Office in New York was kept open Sunday, and others kept open until a reasonable hour in the evening. This practice was followed generally and there was none of the crowd and rush before

ticket windows in the last few days before Christmas, the public accepting the conditions cheerfully and helping the railroad employees to avoid confusion and preserve order.

Extra precautions were taken in the matter of handling mail, express and baggage, and the results are generally reported better than last year and in some territories for several years past, there being practically no congestion or delays in the large centers.

The Export Situation

According to the report of the Exports Control Committee for the week ended December 19 the movement of grain and grain products intended for consumption overseas, continued to a marked degree. At the North Atlantic ports elevators are in position to handle all the grain available, and there is ample vessel tonnage on hand for the removal of flour and other foodstuffs. Arrangements have been made to unload on the piers a large number of cars which it is the intention to keep as a reserve supply, the ships to be fed with current arrivals. Sufficient Belgian Relief steamers arrived to clear approximately 1,000,000 bushels of grain, and it is expected that enough vessels will be available to clear about 1,500,000 bushels of grain during the coming week.

A summary of the report follows:

Continued progress is being made in disposing of United States army freight by placing such as is not required overseas in storage, and diverting to interior storage the cars that are in transit. A lot of motor trucks recently received in the East for forwarding abroad were countermanded, and these are being ordered into storage at Port Newark. About 320 cars will be forwarded to that point. The automobile passenger cars, however, will be forwarded overseas.

Owing to the number of cars for the Naval Base, South Brooklyn, now on hand (about 450 cars), further shipments have been stopped and arrangements made to expedite the handling of the cars at the Naval Base by increasing the daily deliveries.

The army will discontinue using Baltimore for overseas traffic. Hereafter all such traffic will be handled by New York and Norfolk.

The total receipts and deliveries at the North Atlantic ports as of December 17 were as follows:

	Received (In cars)	Delivered (In cars)
Export freight at North Atlantic ports, exclusive of U. S. government freight, bulk grain and coal,	8,424	5,845
U. S. government freight on railroad operated terminals	3,882	4,153
Total	12,306	9,998

An accumulation of 2,308 cars.

In accordance with recommendation of the committee the director general has given instructions that high explosive material now in cars, for which suitable storage has not been found, be taken out to sea and dumped.

An increase in the number of vessels allocated to various lines by the Shipping Board has enabled the securing of orders on a considerable quantity of commercial export freight. The British Ministry of Shipping has released for commercial purposes 10 per cent of space on liners. This space, added to the tramp tonnage released for commercial purposes, will aggregate 150,000 tons. A great increase in applications for railroad shipping permits have been filed, covering principally freight for export to South America, South Africa, Australia and the Orient.

The reported release of ocean tonnage by the war department will not be available for commercial purposes for some time yet. The co-operation of the Shipping Board is being enlisted to supply the needs of commercial exporters.

With the storage of approximately 200,000 tons of imported nitrates for account of the government at Southern ports, and with a more active movement of flour and grain for export, together with a more liberal allocation of ocean

tonnage, these ports are now showing increased activity in overseas movement, which activity should further increase during the winter months.

Announcement has been made of the organization of the South Atlantic Maritime Corporation, for the purpose of supplying steamship service from South Atlantic ports, Wilmington to Jacksonville, inclusive, to the West Indies, Central and South America.

The United States army and naval base, Charleston, S. C., now nearing completion, will be used as a debarkation port.

During the week the Southern Export Committee issued permits covering a total of 2,237 cars of grain, cotton and iron and steel articles for movement from interior points to the ports of Galveston, Texas City, Port Arthur, New Orleans, Mobile and Savannah. This does not represent the total movement of export freight through Southern ports, as it has been found necessary to subject to permit control only a limited number of commodities in order to satisfactorily regulate the movement as a whole.

For the week ended December 12 the grain and grain products situation at the various ports was easy, the stock in elevators and amounts cleared during the week being as follows:

	Stock	Clear'd	Percentage
North Atlantic ports	270,622 tons	171,812 tons	63.4
Gulf ports	208,514 tons	27,312 tons	13.0

At the Gulf ports the stocks on hand are still continued at a higher percentage of their capacity, due to less clearance. The vessel allocations for the remainder of the month should meet this situation. At Galveston there are seven vessels in port taking on cargoes, including 371,000 bushels of grain. At Texas City the stock in the elevator is 86 per cent of its normal capacity, with no vessels in sight. At Port Arthur one vessel is in port with grain allocation of 295,000 bushels.

At New Orleans three ships are in port with grain allocations of 400,000 bushels, and eight ships are overdue with grain allocations of 1,440,000 bushels. There is an excess accumulation of loads on wheels at New Orleans account of the Food Administration, brought about largely by the movement of rice and flour to Belgium. Three steamers are due in port this week with total rice allocations of 45,000 tons, and a large quantity of flour will also be transferred from cars direct to steamers, which will relieve the situation.

The situation in the Puget Sound District indicates an additional accumulation in the past week of 333 cars, while the situation in the San Francisco District has improved to the extent of 22 cars.

Director General's Christmas Message to Railroad Men

"Christmas this year will have a special significance to peoples everywhere. For the first time in four years the world is at peace and railroadmen can be happy in the consciousness that they have contributed their full share to this result. I shall always remember the splendid way in which they applied themselves to the task of running the railroads at a time when their efficient operation was absolutely fundamental to the winning of the war. I am proud to have been associated with them in this great job.

"The railroads have not alone carried the tremendous burden thrown upon them by the war, but they are now in better shape than ever before in our history. For the coming winter I have no fear of their ability to do the work required of them.

"And now, as I am about to sever my connections with the officers and employees of the railroads, I want to assure them of my deep regret at being forced to take this step. Among the happiest memories of my life will be those connected with my work as director general of railroads. I shall always cherish the friendships I have formed with railroad officers and employees, and I take this opportunity to assure them that although I shall no longer be their 'boss,' I shall always be their friend."

8,700,000 Troops Moved by Railroads

As demonstrating the enormous drain upon the passenger and freight railroad equipment of the nation during the war, Director General McAdoo has made public figures showing the movement of troops from the time the government took control of the railroads on January 1 to November 10. Of course, equipment while in use for this essential war purpose was not available for civilian service.

The report shows that during this period there were transported over the various government controlled roads 6,496,150 troops, and that a total of 193,002 cars were used for the movement.

From May, 1917, to November 10, 1918, there was a total of 8,714,582 troops moved over the railroads, divided as follows: Drafted men from their homes, 2,287,926; on regular trains, 1,380,564; on special troop trains, 5,046,092. The maximum number of men handled in one month was 1,147,013 in July, 1918.

The equipment furnished in 1918 was divided as follows: Standard and tourist sleeping cars and coaches, 167,232; baggage and express cars, 12,201; freight cars for special troop trains, 13,569.

From May, 1917, to November 10, 1918, the total equipment used amounted to 245,529 cars, consisting of 206,169 standard and tourist sleeping cars; 16,285 baggage and express cars and 23,075 freight cars for special troop trains. The total number of troop trains operated from May, 1917, to November 10, 1918, was 16,535, while the number of trains of the same class operated for the year 1918 amounted to 12,897.

It is estimated that approximately 400,000 men will be moved during the month of December, consisting of discharged soldiers and sailors, and miscellaneous movements between various points in the country of troops remaining in the service.

The Railroad Administration is acting in co-operation with the general staff of the army in shaping plans for moving troops from the seaboard, returning from abroad. Present arrivals are being taken care of from day to day as the necessities demand under the existing machinery and plans of the Troop Movement Section of the Railroad Administration.

The figures show that each troop train carried an average of 12.2 cars, the distance handled being 854.6 miles, the number of miles per hour being 20.0, while the number of men carried per train amounted to 443.4.

The number of men handled in Pullman cars from January 1 to November 10, 1918, was 1,868,210, while those traveling on coaches totaled 4,627,940. The number of men transferred from New York to the various ports for the same period amounted to 1,904,014. A survey made as of November 1, 1918, showed that 26,073 cars had been assigned to camp and industrial service, to regular train service to protect regular trains and to shops.

The director general calls attention to the fact that the creation of the army and the sending of approximately 2,000,000 men to ports of embarkation involved the transportation of upwards of 8,700,000 men. It is estimated that to demobilize these troops will involve the transportation of not less than 7,250,000. Methods for handling this number of troops to the best advantage are being worked out by the Railroad Administration in co-operation with the general staff. While the problems are new and cannot be dealt with upon any precedent, it is not anticipated that any insurmountable difficulty will be encountered.

At the peak of the activities incident to the prosecution of the war, it was necessary to provide for the daily movement to and from industrial plants and camps of 205,587 persons in each direction. To perform this service 2,319 passenger equipment cars were in use daily.

The Railroad Administration's weekly comparative state-

ment showing the traffic handled by the railways under federal control at 25 of the more important railroad termini of the country during the week ending November 23, shows a decrease of 8.94 per cent in the tonnage and a decrease of 12 per cent in the number of cars used, as follows:

	Cars		Tons	
	1917	1918	1917	1918
Atlanta	2,474	1,794	60,383	45,538
Birmingham	5,747	5,350	303,426	245,856
Boston	8,589	7,118	134,803	148,027
Buffalo	8,457	9,216	294,178	351,200
Chicago	50,371	46,015	1,676,659	1,619,946
Charleston	1,432	1,880	28,287	48,005
Cleveland	8,885	8,592	317,915	344,465
Duluth & Superior	22,390	9,279	380,039	351,765
Galveston	1,447	1,025	33,094	23,755
Hampton Roads	11,090	13,004	450,547	548,829
Kansas City	8,846	9,236	203,432	214,402
Los Angeles	1,707	1,735	42,003	39,455
New York	27,197	23,518	671,268	714,819
New Orleans	4,152	5,755	122,866	170,356
Omaha	4,035	3,230	110,566	94,045
Oregon	1,815	1,837	33,262	41,715
Philadelphia	18,716	16,396	528,016	483,967
Pittsburgh	7,143	7,031	266,117	267,772
St. Louis	13,781	12,758	452,788	423,357
Seattle	1,567	2,568	70,017	73,981
San Francisco	3,147	2,706	84,351	80,161
Savannah	2,563	2,048	46,629	48,770
Tacoma	1,316	1,304	41,234	39,561
Twin Cities	10,306	10,339	335,680	269,713
Toledo	9,408	7,227	396,523	308,701
Total	239,621	210,861	7,685,883	6,998,168
Decrease			38.00%	68.71%
Average tons per car			33	33

Repairs to Freight Cars

The Division of Operation has issued a revision of Circular No. 20, regarding the limit of cost for repairs to freight cars in which rule No. 7 is changed to read as follows:

"When the cost of repairs in kind exceeds the amount which may be expended and betterments are not to be applied, repairs will not be made. The federal manager, or general manager on roads having no federal manager, will endeavor to secure an agreement with the owning corporation that such cars may be dismantled upon the basis of settlement established in the current Master Car Builders' Association rules. When such agreements have been secured he may authorize in writing that the car will be dismantled. If such an agreement has not been secured the car will not be dismantled, but will be held for disposition and the regional director advised."

Registering Claims Against Waybills

The claims and property protection section has issued Circular No. 4 as follows:

Inquiry develops that many of the railroads under federal control do not register claims against the billing, while others employ forces at considerable expense for this purpose. General Order 41 provides that loss and damage freight claims must be supported by the original bill of lading and the original paid freight receipt, and this should serve as a check against duplicate payment of claims. Therefore, effective at once, loss and damage freight claims need not be registered against the waybills solely for protection against duplicate payment.

Capital Expenditures

The Division of Capital Expenditures has compiled an additional report of authorizations and expenditures for capital account for 120 switching and terminal companies and the Pullman Car Lines. The report for Class I roads was published in our issue of December 13. The total authorizations for the 120 companies to December 1 amounted to \$54,970,132, chargeable to capital account and \$2,253,554 chargeable to operating expenses. The expenditures to November 1 were \$13,593,305 for capital account and \$494,323 for operating account. This brings the total authorizations for capital expenditures for all companies to December 1 up to \$1,254,396,158, of which \$477,211,012 was expended up to November 1. Of this \$463,617,707 was

expended by Class I roads. The percentage of expenditures was 38 for the total and 38.7 for the Class I roads.

Railroad Headquarters Moved

Director General McAdoo has ordered the removal of the headquarters of the St. Louis Southwestern of Texas from Houston back to Tyler, Texas, and those of the Texas & Pacific from Dallas back to Palestine, Texas, on account of the many protests received from the communities from which the headquarters were removed. Mr. McAdoo explained that it was necessary for this step to be taken during the war, but that he is now glad to comply with their wishes.

Contracts Signed

Director General McAdoo has signed additional contracts for the compensation of the railroads during federal control with the New York, Ontario & Western, providing for an annual payment of \$2,103,589, the Minneapolis & International, \$202,455, the Richmond, Fredericksburg & Potomac, \$1,137,373, and the Northern Pacific and its subsidiaries for \$30,130,068. He has also signed a co-operative short line contract with the Georgia Northern.

P. S. & A. Circular No. 39 Revised

In P. S. & A. Circular No. 39 (Revised) the Division of Public Service and Accounting has issued new instructions to be observed in accounting for expenditures incurred in fitting up consolidated ticket offices and the operating expenses in connection with the operation of such offices.

Group Life Insurance

THE BROOKLYN RAPID TRANSIT COMPANY, operating elevated, surface and subway railroads in Brooklyn, N. Y., has for three years past insured, partly at their own expense and partly at the company's, the lives of 7,000 of its employees. (See *Railway Age Gazette*, September 24, 1915, page 573).

President T. S. Williams, in a recent circular, gives the following notes on the result of the experiment:

"Three years of experience with group insurance among our employees indicates its profitable character to the insured. "Employees have paid in premiums on their certificates of \$1,000 each \$99,581 and the death benefits paid to 207 families and disability benefits to one family during the three years aggregate \$207,136, making the total benefits received by beneficiaries of employees over premiums paid by employees \$107,554.

"The Brooklyn Rapid Transit Company has paid \$97,456 as its share of these premiums, but even with this additional payment the insurance company has paid out in death and disability claims \$8,098 more than it has received.

"Many of our employees have availed themselves of the privilege of taking additional insurance under the group contract by paying the entire premium thereon, which, during the three years has amounted to \$3,844. Two claims, aggregating \$6,000, have been paid on such insurance, the beneficiaries receiving, therefore, \$2,155 in excess of the premiums paid on this class of insurance.

"Clearly this arrangement would not voluntarily be continued long by the insurance company except with the hope that future results would show better returns; but our employees are secured in this insurance at present rate for another 17 years. The last year has been rather an unfortunate one on account of the reduction in the total number insured, by reason of the number of men who have left our service. It is quite evident, however, that the insurance offered to employees is the cheapest group insurance anywhere obtainable, and all of our employees who are eligible ought to take advantage of its opportunities."

Railroading Two Miles Above Sea Level

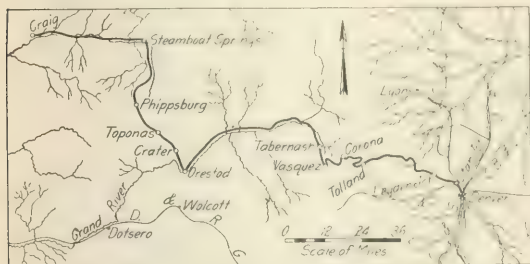
Difficulties Encountered in Raising Coal 6,900 Feet Over Summit Where Capacity of Line Is 300 Cars Per Day

A STANDARD-GAGE RAILROAD on which a movement of 150 cars each way per day requires 40 to 50 engine movements and taxes the capacity of the line is unusual among American roads. A line on which the principal traffic has to be raised vertically nearly 6,900 ft. and lowered over 8,000 ft. from origin to destination, all within a distance of 254 miles, is even more unusual. When operation is maintained throughout the year over a line with an average elevation of 8,000 ft. and a maximum of 11,660 ft. under climatic

pleted in 1905, and an extension to Steamboat Springs, 105 miles further west, was placed in service in January, 1909. In 1912 the line was again extended to Craig, 42 miles west of Steamboat Springs.

Line Has Heavy Grades

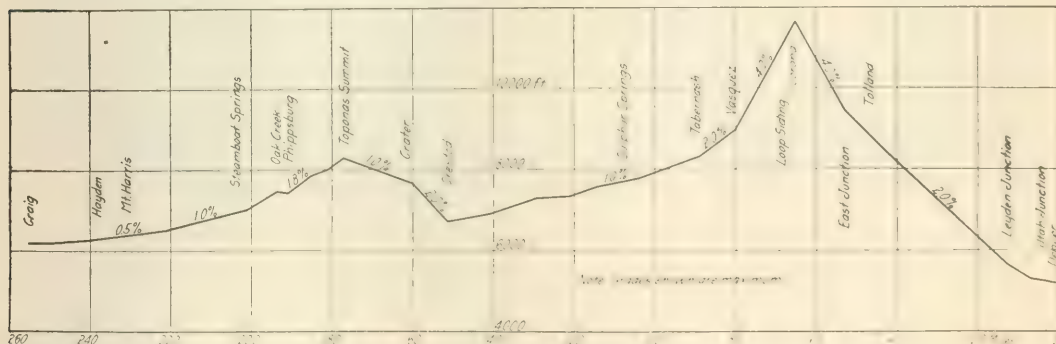
Starting from its own terminal in Denver (owned by the Northwestern Terminal Company, a subsidiary of the Denver & Salt Lake) the line plunges directly into the mountains, crossing the intervening mesas on 3.3 miles of 0.7 per cent and 9.5 miles of 1.65 per cent maximum grade. At Leyden Junction the line starts on a nearly continuous 2.00 per cent compensated grade 40.4 miles long to East Junction, a point about 6 miles beyond Tolland. Through this portion of the line the route follows the canyon of South Boulder Creek and involves heavy construction with numerous tunnels and bridges. At the end of the 2 per cent line the grade increases to 4 per cent, which is nearly continuous for over 12 miles to the summit of Rollins Pass which is crossed at Corona on an elevation of 11,660 ft. On the western slope of the Continental divide the line descends on a 4 per cent grade almost continuously for 15.22 miles to Vasquez where the grade changes to 2 per cent for 4 miles and then to 1.76 per cent for almost 10 miles through Tabernash. Beyond this point the line follows the valley of the Grand river 62 miles with a continuous descending grade of 1 per cent maximum. At Orested where the line leaves the Grand river a minimum elevation of 6,700 ft. is reached. From this point the line again ascends to a secondary summit at Toponas, which is crossed at an elevation of 8,283 ft. This climb is negotiated by means of 10.23 miles of 2 per cent and 15.38 miles of 1 per cent grade. Beyond Toponas the line descends on grades ranging from 1.8 per cent between Toponas and Oak Hills to a maximum of 0.5 per cent west of Steamboat Springs un-



Map of the Moffat Line

conditions so severe that 19 per cent of all maintenance of way expenses for the entire year and 41 per cent of such expenses for the six months period from October to March inclusive are for the handling of snow and ice, the line stands out as unique among the railroads of this country. Such are the conditions on the Denver & Salt Lake, commonly known as the Moffat line.

The Denver & Salt Lake extends northwest from Denver



Profile of the Operated Line

to Craig, Col., 255 miles. It was chartered on May 1, 1902, as the Denver, Northwestern & Pacific and was promoted by a group of Denver capitalists headed by D. H. Moffat for the development of extensive coal fields, timber, oil, shale, and agricultural areas in northwestern Colorado and eventual extension west to Salt Lake City, Utah, to form a short line between Denver and Salt Lake. The first section of the line from Denver to Sulphur Springs, 109 miles, was com-

til at Craig the elevation is 6,175 ft. or 1,000 ft. higher than Denver.

It will be noted that the maximum grade over the entire line is 2 per cent except for 27.63 miles between East Junction and Vasquez. When the road was built this limit was set as a maximum for the entire line and the 4 per cent grade over the summit was inserted only as a temporary expedient until a tunnel six miles long could be driven through the

continental divide. Since the line has been opened it has never been possible to finance the construction of this tunnel so the 4 per cent grade over the summit has remained in service to the present time.

The maximum degree of curve is 12 deg. except on the 4 per cent line where 16 deg. curves were permitted. Over 50 per cent of the entire mileage is curved line and on the 27.65 miles of 4 per cent line 78.3 per cent of the line is on curves and 31 per cent of this distance is on curves of 16 deg.

This road is equally remarkable with respect to tunnels. In the 215 miles east of Steamboat Springs there are 55 tunnels, 22 of which are on the 65 miles on the eastern slope. The longest tunnel is 1,729 ft. in length. The rough character of the country is indicated by the fact that in one

largely to Kansas and Nebraska points as far east as the Missouri river.

All of the coal originates west of Phippsburg (mile 191) and must be hauled over two summits into Denver. That from Mt. Harris, one of the largest shipping points, must be lifted 6,895 ft. and lowered 8,133 ft. in a distance of 231 miles, while that from Oak Creek must be raised approximately 1,000 ft. less and lowered the same amount. It is this condition combined with climatic conditions incident to the high elevation which gives rise to the operating problems encountered on this line.

Operating Conditions Are Unusual

The road is operated in three districts, the first extending from Denver over the summit to Tabernash, a distance of



On the Four Per Cent Line Between Tolland and Corona

stretch of 8 miles in South Boulder canyon on the eastern slope of the continental divide there are 11 tunnels and 22 bridges, ranging from 40 to 90 ft. in height.

Coal Is Principal Freight Handled

The gross revenues of the road approximated \$2,041,508 in 1917, about 15 per cent of which was derived from passenger and the remainder from freight business. The passenger traffic is that local to the line with a considerable tourist travel during the summer months. Approximately 90 per cent of the freight handled consists of coal originating in the vicinity of Mt. Harris and Oak Creek. This traffic aggregates up to 130 cars daily and could be increased considerably if the road was able to handle it. All of the coal is moved to Denver and about 80 per cent of it goes beyond,

89 miles; the second from Tabernash to Phippsburg, 102 miles; and the third to the end of the line, 64 miles. One passenger train is operated each way daily for the entire distance while freight trains are run as the traffic demands, no freight trains being scheduled.

Consolidation, Mikado and Mallet locomotives are used in freight service, their size being limited by the wheel base permissible on the sharp curves of the 4 per cent line. The Consolidation engines which are employed in road service on the first district have a rigid wheel base of 15 ft. 8 in.; weigh 219,000 lb. exclusive of tender, with 195,000 lb. on the drivers and have a tractive force of 43,980 lb. The Mikado engines which are operated on the second and third districts, have a rigid wheel base of 15 ft. 9 in.; weigh 306,000 lb. with 232,000 lb. on the drivers and have a tractive power

of 58,000 lb. The Mallet locomotives which are used in helper service between Tolland and Tabernash have a rigid wheel base of 10 ft., weigh 362,000 lb. with a weight on drivers of 332,000 lb. and have a maximum tractive effort of 78,400 lb.

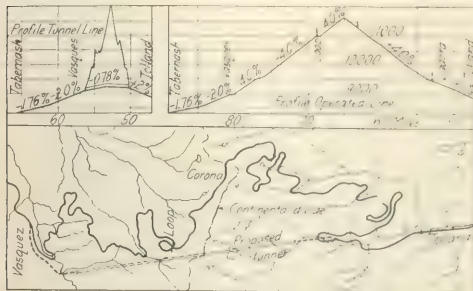
From 5 to 8 freight trains are moved over the summit in each direction daily. Some of these are operated as turn-arounds between Tabernash and Tolland, setting out their cars at the latter point to fill up other trains descending to Denver. Including helper engines and one passenger train each way, this involves from 40 to 50 separate movements

needs help from Tolland to Corona the helper engines on the second train are commonly sent over the summit to bring this train up to Corona, after which these helper engines proceed to Tabernash. The aim is for each set of helper engines to assist two eastbound trains or one eastbound and one westbound in each turn whenever possible. Owing to the empty movement westbound and the resulting lighter trains, only one helper, placed in the center of the train, is ordinarily used on the eastern slope.

Winter Problems Add to Complications

Severe as the operating problems are over the summit at the most favorable season, they are greatly intensified during the winter. With an average elevation of over 8,000 ft. and a maximum of 11,660 ft., severe weather conditions are to be expected. The total snowfall on the mountains throughout the year averages 64 ft., while temperatures of 40 to 50 deg. below zero are not unusual on the slope. At the summit the temperature rarely falls below 20 deg. below zero, but the winds blow continuously for days at a time at from 40 to 90 miles per hour. This not only fills the cuts, but drives the snow into the smallest crevices in the snowsheds. Instances have been reported where sufficient snow has entered the sheds through a nail hole to form a drift across the track 7 ft. deep. This makes necessary the complete closing of even very small openings in the sides or top of the sheds during the winter.

The sealing of the sheds during the winter makes it necessary to provide some means for the escape of locomotive gases, particularly at Corona, where a considerable amount of switching is done incident to the cutting out and turning of helper engines. Several plans for the ventilation of the sheds have been tried and a complete ventilation system with two 16-in. fans was installed a couple of years ago, although even this installation is effective only in the immediate vicinity of the fans. The variable direction of the wind and its intensity have made this problem one of unusual severity and particularly difficult of solution. In the summer the

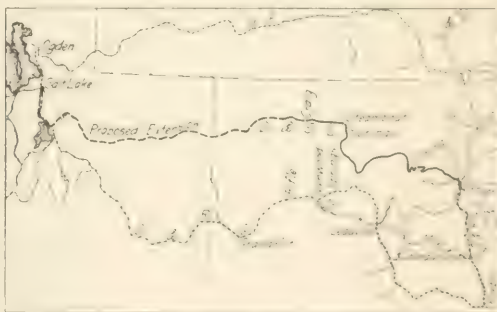


Map and Profile of the Line Between Tolland and Vasquez, Showing Present Route and Proposed Tunnel

over the mountain daily and taxes the capacity of this section and, therefore, that of the entire line.

The critical problem in the operation of trains on descending grades is the braking power of the equipment. The system cars are built to operate under these severe conditions and they are, therefore, equipped with more powerful brakes than some foreign cars which come on the line. For this reason freight trains made up of loaded cars for the 4 per cent grade between M. P. 53 and M. P. 80 are required to have 25 per cent system cars with air gage showing 100 lb. brake pipe pressure and 130 lb. main reservoir pressure: on light loaded and empty cars the air gage must show 80 lb. brake pipe pressure before leaving Corona. This requires much additional switching in making up trains and frequently makes it necessary to hold foreign cars at Tabernash until a sufficient number of system cars can be secured. This condition has been greatly aggravated during the past year since the rule providing for the prompt return to the home lines of foreign cars has been suspended. To insure the braking pressure on all cars stub retainers are placed on nearly all foreign cars at Tabernash. These retainers are removed at Utah Junction (Denver) and are returned to Tabernash by passenger train. A train line pressure of 100 lb. is carried on the caboose on all trains descending the mountains.

One of the most interesting operating problems arises from the adjustment of helper service to avoid excess mileage on the first district and a great deal of attention has been given to the arrangement of schedules which will accomplish this most satisfactorily. As a result in normal times it is the practice to send trains east out of Tabernash pulled by a Consolidation road engine with one Mallet helper in the center of the train and another just ahead of the caboose. Two such trains are sent up the mountain $1\frac{1}{2}$ hr. apart. The two helper engines on the first train are cut out at Corona and drop back to Loop Siding at the west end of the snowshed at the summit where they meet the second train coming up the mountain. After this train passes the two helper engines continue down to the end of the 4 per cent grade at Irving, where they meet a third Consolidation engine with a train and help it up the summit, after which they return to Tabernash and lay up. If a westbound train



The Denver & Salt Lake and the Proposed Extension to Salt Lake City in Relation to the Denver-Salt Lake Routes of the Union Pacific and the Denver & Rio Grande

sheds are opened at the sides and triangular ventilators are also placed in the roof at intervals so that there is no trouble at this season. The necessity of sealing the sheds so completely in the winter makes it necessary for bridge gangs to spend approximately two months in the fall and one month in the spring closing and opening the sheds, the openings in the sides and roof being made so the sun may thaw the accumulation of ice and snow.

Under normal conditions during the winter freight trains are run in fleets with a rotary snowplow ahead of each two

or more trains. For this purpose two rotary plows are stationed at Corona throughout the winter. The frequent use of the rotary is necessary because of the rapidity with which the cuts drift full of snow. Even with the most aggressive work the line is sometimes blocked and it is then necessary to disregard all restrictions relative to hours of service, etc., until the blockade is lifted.

The difficulty of winter operating conditions is evidenced in no way more effectively than in the precautions which are taken to insure continuity of operation. A trainmaster is stationed at Corona at the first approach of winter and he assumes charge of all trains and snowplow movements on the mountains. Special men of long experience in the mountains are also taken from section gangs about November 1 and are stationed in pairs in houses at four or five particularly troublesome points on the mountain side. They remain on duty continuously throughout the winter, subject to call at any time and are in charge of the track about one mile each way from their headquarters. They are in telephone communication with Corona and are called before any trains are started down the mountains to ascertain that the line is open. They keep the trainmaster at Corona informed regarding the velocity and direction of the wind, the depth of snow over the rail, etc.

An idea of the severity of winter conditions is obtained by the fact that 18.7 per cent of all maintenance of way expenditures for the calendar year 1916 were chargeable to the removal of snow and ice. From October, 1916, to March, 1917, inclusive, 41.6 per cent of all expenditures were for this account and they were largely incurred on the 27.65 miles of 4 per cent line. Furthermore 54 per cent of all maintenance charges were incurred during the six winter months when no renewal work was under way and efforts were being directed solely to keeping the line open.

The normal season for current renewal work is from May 1 to November 1. On about the latter date the forces are re-organized on a winter basis. While approximately the same number of men are employed on maintenance work in the winter as during the summer, a considerable number are transferred from the more level to the mountain sections to assist in keeping that section of the line open.

With the exception of a well 635 ft. deep at the eastern terminus of the line at Utah Junction, all of the supplies are from surface waters. The character of the water along the entire line is excellent and it is not necessary to treat it at any point. A number of the stations are operated by gravity. The most severe pumping problem encountered on the line is at Corona, where it is necessary to lift the water 425 ft. The consumption at this point is also very heavy, particularly during the winter.

The extreme weather conditions over the summit makes necessary the adoption of an unusual expedient to protect the telegraph lines. For a considerable distance difficulty is encountered with sleet during severe storms. To prevent this from tearing the wires down an idler pole is inserted midway between each two poles carrying the wires. These idler poles carry no crossarms, but the wires whip against them and knock the sleet off before it becomes sufficiently heavy to carry the wires down. An extra wire is also carried on the pole line near the ground for use if the others should go down.

It is evident from the above that the main problems in the operation of this line arise because of the limitations of the 4 per cent line. Not only has the traffic reached the capacity of this part of the line, but the high cost of operation and the expense of keeping the line open in winter arise very largely because of conditions existing between Tolland and Vasquez. At the time the road was built it was the expectation that the 4 per cent line would be only temporary to enable work to proceed on the western slope while a tunnel

was being driven through the main divide. Although this tunnel has been located definitely, it has not been possible to finance its construction up to the present time. The tunnel will be 6.04 miles long and its estimated cost is placed at approximately \$6,000,000.

As shown in one of the drawings, the tunnel line will leave the present line about two miles west of Tolland and will emerge about two miles southeast of Vasquez. The tunnel requires a connecting line 1.20 miles long at the east end and one 2.01 miles long at the west end, a total of 9.25 miles.

It will replace 32 miles of the present line and effect a net reduction in distance of 23 miles. It will eliminate all but two curves over 12 deg. and all of the 4 per cent grade, while it will lower the summit 2,432 ft. It will also eliminate all of the snowsheds and the severe snow troubles. From an operating standpoint it will release 25 engines at once and will double the capacity of the entire line.

Various attempts have been made to finance the construction of this tunnel during the last six years, the most conspicuous of which was an agreement ratified by the voters of Denver whereby the city was to advance part of the money in return for the right to carry water through the tunnel. The right of the city to devote funds to this purpose was later denied by the Supreme Court of the state in the year 1914, since which time the project has remained dormant until recently.

Store-Door Delivery in London

THE DELIVERY OF FREIGHT by wagon from railroad stations to merchants and manufacturers in a city, a problem now agitating New York City, is in England a well-settled industry; and yet it is not so well settled that the operations are not susceptible of improvement. The Railway Gazette, in a recent issue, contains a long account of a clearing house as despatching system which has recently been adopted by the Midland Railway for the management of its trucks which deliver and collect freight in the 43 districts of the city of London. The central control office for this despatching system is at Somers Town, and the wagons and drivers are communicated with by wire at nine main depots and numerous sub-depots. The teamsters, called carmen, report to the central office by telephone at every step of their work during the day; that is to say, usually, from every point at which they begin or end an important movement. Orders for collecting outbound freight are sent to the central office by telephone, and a principal function of this central office is to secure the execution of each such order by a cart which already is near the store or factory where the freight must be picked up. The control staff consists of a chief controller, one assistant, and six clerks, (women). Two of these attend telephones, and four are engaged in summarizing the data received from the stations. Besides the main telephone system the offices and branch offices are connected to the public telephone service; and by a special arrangement the controller can speak to all of his stations at one time.

On the long table where the women do their work there is an endless belt conveyor, by which the slips of paper, one slip to record each teamster's journey, are moved from one end of the table to the other, or to different clerks.

Records of the work done are kept in great detail, and, by means of Hollerith machines the facts contained in the records are classified in all desirable or necessary detail.

This scheme for economizing the time of the teamsters has been developed by Mr. Pepper, district goods manager for London, and very considerable economies have already been effected.

Opinion of Railway Supply Industry Sought

What Are the Views of Those Who Sell Goods or Services to Railways on a Future Transportation System?

THE COMMITTEE ON RAILWAYS after the War of the Railway Business Association has sent out the following questionnaire to its members:

President Wilson's message of December 2 and Director General McAdoo's letter of December 11 advocating a five-year period of government control have brought the country to a point where an early disposition of the railway problem is called for.

To obtain national concurrence in a solution it is desirable that the several industrial groups shall each consider the problem from the point of view not only of the national interest, but also of its own special interest, and that all groups shall then in concert endeavor to harmonize their ideas.

For us the first step is to ascertain the views of the business group which is served by the Railway Business Association.

The association will hold a railway supply men's convention at the Hotel La Salle, Chicago, in the morning, afternoon and evening of January 9, 1919. The Committee on Railways After the War will be called upon at that time to report recommendations of policy and hopes to present a consensus of opinion in the industry for discussion by those inside and outside the association who attend the meeting.

Under whatever leadership industry and commerce may take part in the discussion—and this committee assumes that the Railway Business Association will not consider itself the appropriate sponsor for a legislative program with the public—it seems essential that our officers be authorized by their constituency to stimulate public discussion along constructive and responsible lines, to record the industry within certain limits when called upon to do so, and to co-operate with members of our craft who may have occasion to participate in activities of trades or communities to which they belong as well as to co-operate with organizations in which effort may head up.

The President defined three possible alternatives—(1) restoration of conditions as they were before government control; (2) government operation and perhaps government ownership; (3) "modified private control." The director general proposes a fourth—a five-year period of government operation under an amended act.

As among these alternatives, which do those in our industry approve?

Grave objections are urged to presidential relinquishment of the roads without remedial legislation for correction of regulation. It is argued that without new conditions affecting revenue many companies under private control could not solvently cope with the financial burdens which the war emergency, through government control, has placed upon operating expenses and apparently upon income. It is asked whether the "President-made" transportation rates, if permitted to stand, would yield, in case of a moderate slump in traffic, sufficient revenue to avert numerous railway receiverships. Another inquiry is whether the "President-made" rates, lacking adoption of "a new element of policy," would be allowed to continue in force under private control in time of peace. In any event, many assert, mere cessation of government control and consequent ending of government-decreed additions and betterments charged to the corporations at war prices would not solve the problem of proceeding back even to the pre-war basis, since new capital can only be had through net earnings which will sustain credit. It is remembered that every past depression in volume of traffic has been followed but tardily and slowly by retrenchment. How much more formidable would be this obstacle

with the level of costs now prevailing and the conditions what they are as impeding readjustment? The President and the director general both volunteer the opinion that a release to the owners without modification of conditions would be a mistake, and there seems to be general concurrence in that conclusion.

Concerning government operation, with or without government ownership or government guarantee, the active propaganda in its favor has served to bring about a disclosure of how deep-seated and pervasive in this country and specifically in our industry is the conviction that for government to give up regulation is a confession of impotency and that such a course would lead to the emergence of a new America based not on the self-reliance of the citizens but upon a Prussian-like machine which would undertake to do everything for the citizens instead of providing conditions under which they could do things for themselves. Who, it is asked, have more reason than those interested in railroad-ing or in equipping railroads to be proud of their contributions toward knitting mankind closer together, or give brighter promise of affording further advancement to civilization in the same direction if permitted the necessary liberty of initiative and experiment?

"Modified private control," the third and "intermediate" alternative listed by the President, would be postponed, under the director general's five-year project, until January 1, 1924, or prevented altogether. Instant and general comment upon this proposal was that it meant the roads would never go back to private management and would ultimately pass to government ownership. This prediction was proclaimed alike by advocates and opponents of government ownership and operation. Mr. McAdoo renews his declaration of openmindedness toward the question of ultimate public or private control, but we are reminded that those who embark upon a given adventure cannot be certain of controlling its course; and that the question is not what the sponsors for a five-year control now think would be the outcome, but what would happen under the inexorable "control" of actual events. It is pointed to as significant that the open advocates of government operation and ownership are among the warmest in their espousal of the five-year control. To the suggestion that the people are entitled to a trial of government operation in peace-time the answer has been made that the people are equally entitled to a trial of non-government operation under modified regulation, and that moreover the people are entitled to say which trial they desire made, or if both, which first.

Our industry has a stake both in the ultimate disposition and in commercial conditions during any period of experiment.

We are told that in some countries state management of railways has been followed by government fostering, absorption or creation of equipment and supply industries. Some think that even though the United States government as a war measure has built munitions works, the Railroad Administration during a five-year control will refrain from the manufacture of material and parts or the assembling of cars, locomotives or other implements. There were, on the other hand, at the beginning of the present government control those who did not believe control would become operation. General anxiety, at least, is manifest over the prospect of a steady trend toward rigid and unified standardization of design and specification and toward centralization of purchases.

Interpreting what has come to it from some in the industry as an indication that our special constituency favors early return of railways to private management following remedial legislation, the committee solicits your view on the following specific aspects as to when and how such return should be accomplished:

Prompt Remedial Legislation

If the roads are to be released to their owners without needless delay and such release is to follow correction of regulatory statute and practice, what course should be pursued?

Committees of the present Congress have proceeded with preparations for the organization of information and the ascertainment of opinion and there is a wide-spread expression in favor of an extra session if necessary in order to define a policy and enact a constructive measure.

The present control act the director general declares to be unworkable; but if the present Congress can, as he proposes, provide by amendment a workable act for a five-year control we are asked why it cannot pass a control act workable for the 21 months, or for such part of that period if any as may elapse before private control has been modified and the owners have resumed management?

As for protraction of debate in the new Congress, it is recalled that an extra session was called after March 4, 1913, and that before the end of that calendar year the federal reserve act was on the statute book.

The committee requests your view upon the conclusion which follows from these considerations:

Proposition I: That if the present Congress does not reach the stage of enactment the President should call an extra session to enact provisions for modified private control, and that upon the enactment of such legislation the railroads should be restored to their owners.

Co-Operation Among Competing Roads

It is urged by railway supply men that in the general interest as well as in their special interest:

Any joint use of facilities and avoidance of wasteful duplication that are to be sanctioned should be so applied as to preserve competition among independent corporate railway organizations.

The President suggested consideration of "regional corporations under which the railways of definable areas would be in effect combined into single systems." Construction of locomotives and cars under the present government control has been carried on through unified design, specification and purchase, while in the buying of staples and parts throughout the country there has been some regional centralization.

It is inquired what would be the effect of unified determination of design and specification upon the inventor and the developer of improvements; also how would centralization of purchases affect employment of some of the many worthy competitive appliances now largely used. These apprehensions do not extend to joint use and to discontinuance of needless duplication or to concerted standardization of dimensions. Some in our craft who are the most ardent advocates of joint use and dimensional standardization are apprehensive about over-standardization of design and convinced adherents of many-minded procurement and upkeep of facilities.

Those who urge this view upon us insist that regional monopolies or any further mergers should be embraced only after it has been shown that there is no other satisfactory solution of the "rich and poor road" rate problem.

The committee would like to get your opinion upon the conclusion which follows these considerations:

Proposition II: That while permitted to co-operate with one another so as to eliminate duplication of service and facilities and to secure the most efficient and economical use

of routes, terminals and vehicles, and permitted under federal sanction to effect consolidations if essential, the properties should be operated by independent organizations as numerous as may be consistent with financial strength and stability.

Purchasing Power

The "old conditions" to which the President is unwilling to see the railways returned, were "conditions of restraint without development." They had "nothing affirmative or helpful about them." He spoke for "some new element of policy," and said, "What the country needs is that all its means of transportation be developed."

Responsibility of the government for the financial results of its regulation is for the first time actual under the present government control. The President (director general) has power to make new rates effective without suspension or investigation when in his judgment a change in total revenue is desirable. The Interstate Commerce Commission on the other hand retains its jurisdiction over the relation between one rate and another. It is being asked whether the practical response to the President's call "for a new element of policy" is not to preserve under "modified private control" this wartime practice in the regulation of rates.

We are reminded that experience during a number of years' before the war demonstrated how difficult it is for foresight and forehandedness through rate-making to be secured from a tribunal specially selected and trained for what the President terms "restraint." The Interstate Commerce Commission in dealing with the rights of litigants has, in almost unprecedented degree, won the public confidence as an honest, judicially-minded body. The criticism which has been visited upon it for studying the past instead of the future in determining revenue cases was merely a way of saying that a just and wise judge is not necessarily or probably a capable executive—that the administration of justice and the supervision of preparation for traffic growth are incompatible and not likely to be performed satisfactorily by one and the same person or body.

Like other shippers those in our industry prefer a reasonable stability of rates and reasonable immunity from discrimination, with prompt removal of it when created through revenue revision or otherwise; but they also require a reasonably elastic and prompt adaptation of rates to emergent and seasonal commercial conditions, adequacy of service and such stability of industry and trade as is promoted when railways can confidently plan and estimate projects of addition and betterment and the opening up of new country. It is service and prosperity that loom paramount to the minds of manufacturing and mercantile executives, alike in our craft and elsewhere. This is the consideration which leads to the proposal of an "affirmative" (to use the President's word) functionary held accountable through the commission for observance of citizens' legal rights, but primarily appointed to accomplish paramount positive results and clothed with the necessary power.

The committee requests your impression of the conclusion which follows these suggestions:

Proposition III: That Congress should adopt a policy of federal rate regulation under which a separate functionary would consider carriers' estimates of future railway traffic needs and, subject to abatement of discriminations by the Interstate Commerce Commission, would fix rates designed to yield revenue sufficient for future operations and credit.

Alba B. Johnson, president of the Railway Business Association, has filed with Ellison D. Smith, chairman of the Senate Committee on Interstate Commerce, a request for opportunity to be heard upon proposed legislation affecting railways upon some date not earlier than January 13. The association holds its convention at Chicago, January 9. Mr. Johnson says: "As a result we believe our witnesses will be put in position to speak to you with the authentic sanction

of an industry estimated to employ when times are good about as many men as do the railways, or in the neighborhood of a million and three-quarters. The association maintains entire independence of the railway corporations and managers and discusses only those phases upon which its members as business men can testify with knowledge."

Orders of Regional Directors

WORKING HOURS IN SHOPS.—In Supplement 1 to Order 141 the Southwestern regional director issued instructions regarding the period to be allowed for meals in roundhouses and other places where three eight-hour shifts are worked. Most of the agreements under which shop men provide for a lunch period of not to exceed 20 minutes, with pay, for men who are working one of the three-hour shifts. Men who are employed in shops or roundhouses or other places where less than three shifts are worked generally have a meal period of not to exceed one hour without pay. These practices, pending further action by the Railroad Administration, will govern except when more favorable conditions are provided by the agreements in effect.

Freight Destroyed in Transit.—In Circular 220 Central Western regional director calls attention to the inconvenience frequently suffered by shippers and consignees because of lack of information as to the whereabouts of their property when it is destroyed by a wreck, fire or other casualty, or is confiscated by a carrier. He directs that the roads under his jurisdiction arrange to have the operating department notify the freight claim agent immediately in all such cases, furnishing full waybill reference, name and address of shipper, consignee and a description of the freight destroyed or confiscated. Upon receipt of such advice in the claim office, the shipper and consignee should be promptly notified to enable them to make such arrangements as they deem necessary under the circumstances, either by duplication of the shipment or otherwise. The form to be used in notifying the shipper and consignee is attached to the regional director's circular.

Free Transportation.—In Circular 147 the Southwestern regional director quotes a telegram from C. R. Gray, director of the Division of Operation, which states that free transportation should not be granted to railroad men mustered out of military service, as the government allows these men mileage to their homes. The Eastern regional director has issued a similar order.

Agencies: Reconsigning and Diversion Bureau.—The Eastern regional director, file 1200-111A362, states that agencies of the bureau have been established at points as outlined below:

Station	Name of agent	Address
Chicago, Ill.	B. Crawford, Mgr.	58 E. Washington street
Boston, Mass.	A. J. Brown	Room 140 E. & M. North St.
New York, N. Y.	G. C. Spangler	Room 47, 50 Church street
Buffalo, N. Y.	J. Lewis	Room 140 E. & M. North St.
Cleveland, O.	E. V. Banning	Room 411, Big Four, General Office Bldg.
Cincinnati, O.	E. Hare	Room 411, Big Four, General Office Bldg.
Detroit, Mich.	Geo. H. Hill	Michigan Central, General Office Bldg.
Indianapolis, Ind.	C. W. Hicks	Big Four, South & Delaware streets.
Pittsburgh, Pa.	C. J. Weber	613 Resner Bldg.
St. Louis, Mo.	Geo. A. Dearborn	408 Rialto Bldg.

The bureau is now transmitting passing information to shippers and consignees, and will handle all inquiries regarding the location of individual cars of fruits and vegetables moving from the West to Eastern destinations.

Effective January 1, the bureau will assume charge of the handling of reconsignments and diversions on shipments of fruits and vegetables in refrigerator equipment moving from the West to Eastern destinations.

Diversions or reconsignments on shipments at points where agencies are maintained, will be received by such agent direct from shipper or consignee. Shippers or consignees located at points where no agencies are maintained may place diver-

sions or reconsignments with proper railroad official as heretofore. Report of such diversions or reconsignments must be mailed to J. B. Crawford.

When railroad representatives receive requests from bureau agents to reassign or divert the request should be promptly acted upon; the bureau will have required all necessary papers for the protection of the carriers.

Recognition of the Federal Manager as the Chief Operating Officer.—The Eastern regional director, file 1500-96A-360, quotes from a letter received from the director, Division of Operation, dated December 19, relative to the authority of the federal manager as chief operating officer in wage adjustment cases as follows:

"Recommendations with respect to the settlement of cases by Boards of Adjustment Nos. 1, 2 and 3, are that it shall be by the chief operating officer."

"The chief operating officer, as far as we are concerned, is the federal manager. It will be understood, however, that the federal manager may delegate to his general manager or general managers, as he may see fit, the authority to certify cases to the adjustment boards, provided he files with the Division of Labor such advice, naming specifically the officer or officers to whom he delegates the authority."

The Hazard of Smoking.—In Order 142 the Southwestern regional director calls attention to the tremendous loss in railroad property and property in the care or custody of railroads as carriers which is destroyed by fire due to carelessness and indifference on the part of the employees in connection with smoking in shops, freight stations, warehouses, etc. He recommends that each federal, general or terminal manager issue a general order prohibiting smoking in shops, coaling stations, warehouses, piers, storehouses, freight houses, offices, including record rooms, and around freight platforms and in all places where inflammable materials are handled or stored. "No Smoking" signs should be posted and all watchmen and guards, officers and other employees in charge of the property must be instructed to see that the rule is rigidly enforced. The only exception to the rigid enforcement of the rule may be made in such parts of shop plants as a blacksmith shop, foundry and other places where it has been recognized that smoking does not produce any increased hazard. These exceptions may be made only at the discretion of federal managers.

Transportation for Pensioned or Furloughed Officers of Railroads.—The Eastern regional director, file 2100-50A357, states that within reasonable limits annual transportation may be given to pensioned or furloughed officers of railroads extending beyond the lines of their own railroads. Wives of deceased officers of railroads, during widowhood, may be given annual passes over the lines with which their husbands were last connected, and to a reasonable extent over other lines. In the case of pensioned officers the idea is to grant approximately such transportation as they enjoyed during the period of their last employment, and in the case of the widows of deceased officers to grant approximately the transportation they enjoyed during the lifetime, or at the time of the death of the husband; with the understanding that, when required, trip passes may be issued beyond the limits of the annual pass.

M. C. B. Brake Shoe Keys.—The Eastern regional director, file 500-70A348, advises that the executive committee of the Master Car Builders' Association, calls attention to the fact that a great number of brake shoe keys are being made which do not conform to the Master Car Builders' standard, and which are made, in many cases, of inferior material. The substitute brake shoe keys are of numerous types, with the result that they work down from the lugs of the brake head and shoe, resulting in loss of the shoe and key. Brake shoes should not be applied unless the key is provided with a head, and of sufficient strength for the service, as is shown on Master Car Builders' Sheet No. 17, Volume 51, of the Master Car Builders' Association proceedings.

Placing of Common and Semi-Skilled Labor on an Eight-Hour Basis.—The Eastern regional director, file 1200-4-56A352, states that it has been brought to his attention that

in applying Interpretations No. 1 to Supplements Nos. 7 and 8 to General Order No. 27 very substantial increases will be given to the various classes of common labor where heretofore paid on an hourly or daily basis. The indications are that labor conditions will be very much improved within the next week or two, and it appears that this would be an opportune time to place all maintenance of way common and semi-skilled labor, also other classes of common labor, on an eight-hour basis.

Rail Contracts.—The Eastern regional director, file 2800-11A359, is as follows: Please cancel any arrangement which may exist with steel mills as a war emergency to accept rails rolled from Bessemer steel upon contracts which specified open hearth steel; hereafter accept only open hearth steel upon such contracts.

Handling Expenses of American Chemical Society.—The Eastern regional director, file 102-22A361, states that under date of December 19, the American Chemical Society was advised that, until further ordered, the director general approved that society making assessments and the carriers paying the same, as may be necessary, for the current expenses of the association, such payments to be charged to operating expenses.

Uniform Highway Crossing Signs in Connecticut

ACTING UNDER A LAW adopted on May 16, 1917, the Public Utilities Commission of Connecticut last year ordered the general installation of distant cautionary signs at highway grade crossings throughout that state, and the work has been substantially carried out according to the plans; and the commission has issued regulations standardizing the practice at all classes of crossings. It has also undertaken an educational campaign to familiarize users of the highway with the meanings of the signs and the right method of approaching a crossing.

The first step toward a uniform system of marking was made when the flagmen were provided with a small disk bearing the word "STOP" instead of the white flag, which, being accepted by the driver of an automobile as a proceed signal, contributed toward a fatal accident at Berlin, Conn., in 1914. Following the action of the American Railway Association, the National Association of Railway and Utilities Commissioners, the Automobile Association and a Conference Committee of the New England Public Utilities Commissioners, a uniform system of protection was enacted into law by the Connecticut Legislature in May, 1917.

The law requires the town, city, or borough, to place and maintain the distant sign; the signs, however, to be furnished by the railroad company. Any municipality neglecting for sixty days to comply with the law must forfeit one dollar for each day of neglect.

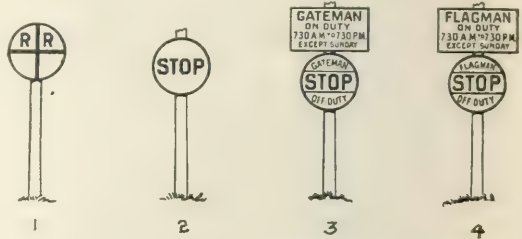
The distant warning consists of a metal disk 24 in. in diameter with white enamel field and "R. R." in black enamel. These signs are placed at the right hand side of the highway approaching the crossing and distant therefrom 300 ft. to 500 ft. In some cases of less important crossings with an unobstructed view, or in cities where the crossing is protected by gates, the statutory requirement that the town or city shall provide this distant warning is suspended by the Public Utilities Commission. Out of a total of 734 grade crossings in Connecticut this exemption has been granted in 130 cases, 44 of which are city street crossings protected by gates or flagmen.

The "stop" signs, located at the crossings, are of the same size and read either: "stop," or "stop flagman off duty," or "stop gateman off duty," or "when red, stop; train coming." All of these signs except the distant, are lighted at night by reflected light and in a number of cases where the traffic density

warrants, or where a clear view of the crossing is not obtainable, this sign is lighted also. The "flagman or gateman off duty" signs are set up by the flagman or gateman when he goes off duty, as a warning to travellers upon the highway that the crossing is not being guarded. The "When red, stop, train coming" sign is placed upon the mast supporting the "visible-audible" signal (like an enclosed-disk block signal), as an explanation of its red indication.

The type of protection to be installed at the several crossings, in addition to the approach signs, was determined through an inspection of each crossing by the chief engineer of the commission in company with the railroad officers, due weight being given to the density of traffic on the highway and on the railroad, and the view afforded the traveller on the highway and the engineer on an approaching train.

Posters, on cardboard 11 in. by 14 in., printed in two colors, showing all these types of signs have been displayed



Connecticut Standard Highway Crossing Signs

in railroad stations, garages, and hotels throughout the state. In addition, leaflets were placed in the annual report of the commission and in the registration book issued by the Motor Vehicle Commissioner of the state, and these were also distributed to persons to whom licenses were issued. The posters have been furnished to night schools for use in their courses of instruction in traffic laws.

At the present time practically all of the protective signs required by the Commissioners have been installed in the state of Connecticut, and as the travelling public becomes more and more familiar with their meaning and use, and as other states adopt this uniform system of marking crossings it may be hoped that the number of accidents at these crossings will be materially reduced.

The prescribed signs are shown in the engraving. The bulletin issued by the commission also recognizes and gives illustrations of the ordinary highway crossing signs, these presumably to be used at those minor crossings at which the provisions of this statute are suspended by the commission. The bulletin also shows highway crossing gates, diagonally striped, and a colored picture of the enclosed disk on which the lettered disk is fixed below the movable disk.

The signs which we illustrate are accompanied on the bulletin by the following explanations: (1) "Distant Warning. Reduce Speed, R. R. Crossing 300 to 500 Ft. Ahead." (2) "Caution. Dangerous. Stop, Look and Listen Before Crossing the Tracks." (3 and 4) "Caution. Dangerous Crossing. Flagman or Gateman Off Duty. Stop, Look and Listen Before Proceeding."

For the foregoing information we are indebted to E. Irvine Rudd, engineer of the Public Utilities Commission.

Marked improvement in the operation of passenger trains in the eastern section of the country is reported for November, 1918. On one division of the Pennsylvania Lines, east of Pittsburgh and Erie, for November, 88.1 per cent of the trains made schedule time as against 77.1 per cent in November, 1917.

What Time Saved by Signals Means in Equipment

A Study of Conditions on One Division of the Northern Pacific Shows Some Remarkable Results

A SAVING OF ONE HOUR in running time over a division for each freight train by the use of automatic signals may appear to be a small item, but an analysis of what such a saving means in equipment, men and money on a 100-mile division shows that it is highly important. With an average of 16 trains a day over the division this means a total saving of 16 train hours, which, as will be shown below, is equivalent to over three freight locomotives being made available for other uses, while 278 freight cars are also released, aggregating a saving involving an equipment investment of \$904,400, with a saving in overtime of approximately \$13,359.

Applying the result of this study to the lines in this country at present unsignaled, and assuming an average number of freight trains over such roads daily as 7, it is found that the total freight train hours which can be saved each day by the use of automatic block signals will amount to 17,004 hours. Such a saving is equivalent to the release of 2,902 freight locomotives and 190,138 freight cars.

Conditions Affecting the Study

In order to determine what effect automatic block signals on single track had on the speed of freight trains in an actual installation, a study has been made of train operation on the first subdivision of the Montana division of the Northern Pacific before and after the installation of signals. This division extends from Billings, Mont., to Livingston, and is 115.7 miles in length; from Billings to Laurel, a distance of 15.3 miles, the line is double track; the line between Livingston and Laurel, a distance of 100.4 miles, is single track. On this piece of single track there are 20 passing points, so that passing tracks average a little less than five miles apart. Of these 20 passing points seven have lap sidings and the capacity of each siding was 75 cars at the time automatic signals were installed, and for some time after.

The line rises almost continuously to the west, there being only seven miles of level track or descending grade westbound in this entire distance. The maximum grade westbound is 0.5 per cent, and there is over 30 miles in which the grade is 0.45 per cent or heavier.

Three-position upper-quadrant automatic signals, with a standard overlap scheme of control, were installed during 1910. There were 175 of these signals on the single-track portion of the line, or approximately 1.7 signals per mile. The maximum length of blocks between sidings is about $2\frac{1}{2}$ miles.

Between 1908 and 1912 no change was made in the number or lengths of passing sidings, but between 1912 and 1916 some passing sidings were lengthened, and during the summer of 1917 the remainder were lengthened so as to give them a capacity of 99 cars each. At the same time the signals were reinstalled and the control changed to the A. P. B. system. During 1908 and 1909 the freight engine division extended from Billings to Livingston. In 1910 a new yard was built at Laurel, and the engine division was shortened to extend from Laurel Yard to Livingston, a distance of 101.6 miles.

For more than 10 years the Northern Pacific has used "19" orders for despatching trains, the "31" orders being almost entirely unknown. For a part of 1909, however, an experiment was made with the A. B. C. system of train despatching. This, however, was discontinued in 1910 and the old method returned to. There are nine telegraph offices between Laurel and Livingston which are open both day and night.

In making a comparison of train speeds with and without automatic block signals, it is obvious that all conditions other

than block signals should be equal. Not only should the number and length of passing tracks be the same and the same method of despatching be followed, but the comparison should be made for periods in which the density of traffic is equal. Owing to the fact that the A. B. C. system of train despatching was used during the year previous to the installation of the automatic block signals, the year 1908 was used as typical of operation before the installation of signals.

Comparative Conditions

It was found that the greatest density of traffic on this part of the road usually occurred during the month of October. Consequently this month was used in making the comparative study. An examination of the trains recorded show that while the traffic during the months of October, 1908 and 1909, was substantially the same, that during 1911, or the first year after the installation of block signals, was considerably less. However, the traffic during the month of October, 1912, was substantially the same as in 1909. A comparison of the train sheets for these months shows that there were 20 days in the month of October, 1908, in which the number of trains of all classes operated in each day was exactly the same as on similar days in October, 1912. For example, there was one day in 1908 and one day in 1912 when 19 trains were operated; there were four days in 1908 and in 1912 when 20 trains were run, and so on, the greatest number of trains operated in one day being 25 in each case. The total number of trains handled during these 20 days was 439 in each year, an average of 21.95 trains per day. The number of passenger trains operated during this period was four each way, or a total of eight a day.

Three classes of engines were used in freight service during the period under discussion; the Class T engine with a westbound rating of 1,500 tons; the Class W engine with a westbound rating of 2,200 tons, and the Class Y-4 engine with a westbound rating of 1,800 tons. The eastbound rating for all engines was the car limit of 75 cars.

In 1908, 27.3 per cent of the trains were hauled by Class T, 53.5 per cent by Class W, and 19.2 per cent by Class Y-4 engines. In 1909 the distribution of engines was 4 per cent Class T engines, 94 per cent Class W engines, and only 2 per cent Class Y-4 engines. In 1912 no Class T engines were used; 83.3 per cent of the trains were hauled by Class W engines and 16.7 per cent by Class Y-4 engines. The average percentage of loading of all engines in 1908 was 62.5 per cent, in 1909 69.4 per cent, and in 1912 68.8 per cent.

As a basis for the comparison of speeds, the total time consumed by freight trains on the single track portion of the division was taken from the train sheet, the difference between the leaving time for westbound trains at Laurel, which is the end of double track, and the arriving time at Livingston, which includes all stops and delays, being used for arriving at the average speed of westbound trains. For eastbound trains, the difference between the time of leaving Livingston and arriving at Laurel was used in determining their average speed.

In 1908, during the 20 days which are used for comparison, 256 freight trains were operated. The total time consumed by these trains on the single track portion of the division was 2,088 hours and 28 minutes. The average time, therefore, for both eastbound and westbound freight trains during this period in 1908 was 8 hours and 9 minutes, equivalent to an average speed of 12.3 miles per hour. In 1909 225 freight trains were operated in both directions, and the time which they consumed on the single track was 1,819

Average hours per freight car a day in freight trains between terminals	2.53
Average freight train-miles a day in unsignaled territory:	
$43,917 \times 7$	1,700,419
Freight train hours saved a day by automatic block signals:	17,004.2
$1,700,419 \div 100 \div 1$	
Freight locomotives required to produce 17,004.2 freight train hours a day:	
$17,004.2 \div 5.05$	3,367
Additional freight locomotives available for service, by saving 17,004.2 freight train hours:	2,902
$3,367 - 80,376$	
Revenue ton-miles a day that could be produced by 2,902 freight locomotives:	89,198,802
$30,951 \times 2,902$	
Train car hours saved a day by saving 17,004.2 freight train hours:	
$17,004.2 \times 30 =$	510,126
Freight cars required to produce 510,126 train car hours a day:	201,631
$510,126 \div 2.53 =$	
Additional freight cars available for service due to saving 17,004.2 freight train hours a day:	190,138
$201,631 \times 94.37$	
Revenue ton-miles a day that could be produced by 190,138 freight cars:	84,611,403
$190,138 \times 445 =$	

Again applying this study to a typical 100-mile division the following interesting results are obtained:

Average number of freight trains a day.....	16
Average number of cars per train.....	40
Average speed in miles an hour of freight trains, terminal to terminal.....	11
Average saving in freight train hours per 100 freight train miles affected by automatic block signals.....	1

Then:		
Average hours per freight locomotive a day producing freight train hours:		
$50.47 \div 11 =$		4.59
Average hours per freight car a day in freight trains between terminals:		
$25.3 \div 11 =$		2.30
Freight train-miles a day on the 100-mile division:		
$16 \times 100 =$		1,600
Freight locomotives required to produce a day by automatic block signals:		
$(1,600 \div 100) \times 1 =$		16
Freight locomotives required to produce 16 freight train hours a day:		
$16 \div 4.59 =$		3.49
Additional freight locomotives available for service by saving 16 freight train hours:		
$3.49 \times 86.20 =$		3.00
Train car hours saved a day due to saving 16 freight train hours:		
$16 \times 40 =$		640
Freight cars required to produce 640 train car hours a day:		
$640 \div 2.30 =$		278
Additional freight cars available for service due to saving 16 freight train hours a day:		
$278 \times 94.3 =$		26.2

As a basis for still another comparison, George M. Basford, in the *Railway Age* of September 19, 1916, says that the average time a locomotive is in service a day is 4 hr. 19 min. Then, from this information and the data above, the average speed of freight trains for the nine months in 1917 in miles an hour would be

$$50.47 \div 4.31 = 11.7.$$

Average train hrs per freight car a day would be:	25.3	± 11.7	2.16
Under these assumptions:			
Freight train locomotives required to produce 17,004.2 freight train hours a day:	17,004.2	÷ 4.31	3,945
Additional freight locomotives available for service due to saving 17,004.2 freight train hours would be:	3,945	× 86.27	3,400
Revenue ton-miles a day that could be produced by 3,400 freight locomotives would be:	30,951	× 3,400	105,333,400
Freight cars required to produce 510,126 train car hours a day would be:	510,126	÷ 2.16	236,170
Additional freight cars available for service due to saving 17,004.2 freight train hours a day would be:	236,170	× 94.3	22,270,800
Revenue ton-miles a day that could be produced by 222,708 freight cars would be:	222,708	× 445	99,105,000

Saving in Equipment and Cost of Automatic Block

Cost of equipment saved per 100 mile division:	
3.49 freight locomotives at \$60,000.....	\$204,500
278 freight cars at \$2,500.....	695,000
Total	\$904,000
Cost of automatic block:	
100 miles of line at \$2,500.....	\$250,000
Cost of operating and maintaining automatic block a year:	
100 miles of line at \$115.....	11,500
Saving in crew overtime, due to saving one hour per 100 freight train miles:	
Total hours saved a day.....	16
Total hours saved a year.....	3,440
Average overtime 75% of total hours saved.....	4,480
At \$3.05 per hour =	\$13,350

A saving of 17,004 freight train hours a day means also

a saving of 17,004 crew hours, or on an 8 hour a day basis, a saving of 2,127 crew days, so that the additional men available for service due to installation of automatic block signals will be

$$2,127 \times 5 = 10,635.$$

Saving of 16 freight train hours a day on a 100-mile division means a saving of 16 crew hours, or on an 8 hour a day basis, two crew days, so that 10 additional men are available for service due to installation of automatic block signals on 100 miles of line on which there is an average of 16 freight trains a day.

Timetables in Border Territory

THE ORDER of the Interstate Commerce Commission, of October 24, fixing the boundaries of the different standard time zones allowed exceptions, in certain cases, whereby a railroad was permitted to run its trains, for example, from the Eastern standard zone into the Central standard zone while yet retaining Eastern time; but in such cases

37	39	43	41	Central Time		42	44	40	39
Daily	Daily	Daily	Daily	Mo	Mo	Daily	Daily	Daily	Daily
6 50	11 20	2 20	6 30	0	Lin	41	12 50	12 15	4 10
7 09	11 25			1	Emerald	41			10 20
7 21	11 35			4	Pleasant Dale	42			9 40
7 35	11 49			2	Milford	42			9 30
7 43	12 05			3	Ruby	42			9 20
7 58	12 20	3 12	7 22	4	Seward, 55	41	11 54	11 25	9 05
8 10	12 35			26	Tamora	40			8 55
8 22	12 48			42	Utica	39			8 45
8 35	12 55			40	Waco	39			8 35
8 48	1 20	3 57	8 06	56	York, 66	38	11 12	10 37	8 15
8 59	1 33			64	Bradshaw	37			8 05
9 16	1 56			71	Hampden	37			7 55
9 33	2 24	4 32	8 41	77	Ar	36	10 37	10 01	7 45
9 47	2 35	4 32	8 41	77	Ar	36	10 37	10 01	7 35
9 59	2 44			83	Murphy	35			7 20
10 02	2 55			89	Phillips	35			7 10
10 15	3 05	5 10	9 15	95	Grand Island	34	10 00	9 15	6 55
10 30	3 29			103	Taylor's Spur	33			6 14
10 43	3 45			105	Abbott	32			6 08
10 57	4 04			110	Calire	32			5 55
11 10	4 30			111	St. Michael	32			5 42
11 25	4 30	6 15	10 20	128	Ravenna	31	9 06	8 20	5 25
PM	4 42			133	Hazard	30			5 20
	4 58			144	Litchfield	29			5 08
	5 08	7 05		154	Mason	28		7 10	5 00
	5 47	7 20		164	Ansel	27		6 57	4 50
	5 58			166	Berwyn	26			4 40
	6 30	8 00	11 50	170	Broken Bow	26	7 18	6 30	4 18
	6 43			181	Ernst	26			4 06
	6 53	8 19		185	Merna	25		6 05	4 00
					185	Ly			
Mountain Time									
3 30	5 11	7 20	12 15	Ar	Ravenna	41	8 50	7 20	10 05
3 42	5 20			133	Hazard	30			9 57
3 54	5 29			144	Litchfield	29			9 45
4 08	5 44			154	Mason	28		6 10	9 05
4 30	6 05			164	Ansel	27		5 57	8 50
4 52	6 20			166	Berwyn	26			8 40
5 02	6 30	10 00	10 50	170	Broken Bow	26	6 12	5 30	8 18
5 15				181	Ernst	26			8 06
5 33	7 19			185	Merna	25		5 08	7 33
					185	Ly			

C., B. & O. R. R. Timetable

the railroads were called upon to prepare their public timetables so as to show the time prescribed for the Central zone; in other words to use two times, one for the operation of trains and one for the information of the public. Bulletin boards at stations would also have to follow the same rule.

An extract from a timetable prepared to comply with this requirement of the Commission, that of the Chicago, Burlington & Quincy, is shown herewith. In this case the road is authorized to extend Mountain time eastward into Central territory, 57 miles, from Merna, Neb., to Ravenna. The only town of considerable size in this section is Broken Bow, the population of which is about 4,000. The folder shows two complete tables for the ten stations affected. In these stations the clocks will show Central time; but in the operation of trains Mountain time will be used.

Anselmo, the station next west of Merna, appears at the

top of the next column of the folder. The new arrangement goes into effect on January 1, at 2 a. m.

A prominent road in Ohio which is to extend Central time eastward, about 50 miles, into the Eastern zone proposes to print its folders just as before except that in the Eastern zone, where Central time is used by the trainmen, the figures in the folders (showing Eastern time) shall appear in italics, with a notice, in bold type, calling attention to the italics.

Experiences of an American Railroad Engineer in France

ANY RAILROAD MAN in the operating or mechanical departments inclined to feel at all discouraged at the increased difficulties of his job due to war conditions, should find a strong tonic in the following extracts from a letter written to W. O. Thompson, secretary of the Traveling Engineers' Association, by a member of the association now serving in an engineering regiment overseas. The letter was written "Somewhere in France," on July 29, 1918.

"The first work that fell to my lot was the unloading of American and Baldwin locomotives from transports. . . . I was assistant in charge of the unloading docks, and also had the honor of unloading some of the first locomotives that arrived on this side.

"During the time that I was employed on the docks, we had at times as high as eight transports having locomotives on board awaiting a berth at a dock for unloading. Considering the number of packages that the locomotive parts are encased in and the facilities for handling them, it was considered a fair day's work if we unloaded between two and three complete locomotives. . . .

"The first yard and switching work by the Americans was done with French locomotives, and certain tracks were assigned to them for their own operation. The men for these crews were furnished by this regiment and assigned to the Railway Transportation Corps for duty, they at that time not having any enlisted men. As our shipping tonnage increased, our yard facilities had to increase correspondingly, until finally all of the yard trackage was turned over to us for operation, with the exception of the receiving and departure yards, which are still being handled by the French.

"The majority of our boys who were engineers in the States were fortunate or unfortunate enough to be running a modern American locomotive when they enlisted. Then to come over here and to climb upon one of these French locomotives was enough to almost break some of them. The majority of French locomotives, and especially the ones in yard service, are not equipped with air brakes, having only a hand brake, and that connected to only one pair of drivers; if the locomotive is equipped with a tender the brakes are then on the tender instead of the drivers. The reversing gear is of the screw type. The throttle levers are of all types, and are not connected in the same place on any two locomotives.

"The speed of a moving locomotive or cut of cars in the yards is four miles per hour, and a flagman must precede the locomotive or cars on foot and at least 65 ft. in advance, waving a red flag and blowing a tin horn. From this you might judge what a good time some of our hoggers and switchmen had breaking in over here.

"After the first of the year I was recalled to my regiment and sent out to this place for duty with them. This is to be one of the largest storage and railway yards that the Americans will have over here. . . .

"We had only one locomotive in service here at that time. It was being used for work train and switching service and was of French type, built in the year 1862, and weighed

about sixty tons—so evidently it was some "baby" in its day. In addition to three locomotive cranes, this made up the mechanical department of this regiment, and I was sent out here to look after it; but it did not remain this size long—in fact, it began to grow immediately. The work was soon too heavy for one locomotive, and we had to make arrangements for another one.

"This new addition arrived a few days after I did, and it sure was a sight to look at—hardly larger than a push car, and resembled a watch charm more than it did a locomotive. It was entirely too small for the work it was to do; but it was the best we could get just at that time, so we had to make it do.

"It was of French pattern of the 2-4-0 type having only 10 in. cylinders and 60 in. drivers with side tanks and equipped with the Walschaert valve gear. This gear being put up backwards, to go ahead the reverse lever had to be in the back motion, and the reverse to back up. It also was equipped with an 8½-in. Westinghouse air pump, brake valve, train and air signal line, but no brakes on the engine, except the hand brakes. We were using very bad water at this time, but "very bad" is a mild term for it—in fact, it was the very worst that I had ever been obliged to try to use in the boiler of a locomotive, and you can believe me, I have handled some bad water in my time. I had the water analyzed, and if one of our American boiler water chemists could have seen the complete analysis, he would have thrown up both hands and yelled, "Bloody murder!" But it was all that we had to use, it being impossible to obtain good water at that time. We now have a pipe line extended out to here, and are getting fairly good water at present.

"It was not long before the boilers began to suffer from the use of this water. When we tried to work the flues of this little "bird," we found that the smallest man we had could not get into the fire-box through the fire-door, so we had to drop the ash-pans and take out the grates, to enable the boilermaker to get at the flues. As this was almost a daily occurrence and as the engine could only handle three or four French wagons at a time, it was more of a hindrance than a help.

"This was the beginning. In the meantime, warehouses began to spring up like mushrooms over night. As the work of construction increased, so did the mechanical end, we having the erection of steam shovels, pile drivers and locomotive cranes to do, together with the repairs of the machinery already in service. The question of labor became a serious one; competent and experienced machinists and operators were scarce, and we finally had to begin to make a few. In the meantime this regiment began to attach casual companies, labor battalions, German prisoners and civilian laborers of all nationalities for work on this one project.

"The French equipment, as I have stated before, is not what our men have been used to. In doing switching, the switchman has to crawl under the bumpers and unhook the link from the hook, and then kick the cars. The French use the hump in doing their switching and classifying. As a cut of cars come up over the hump, a switchman goes along the cut of cars with a long pole and reaches over the bumpers with it and lifts the link off the hook. This saves him from the danger of crawling under the bumpers and between the cars. As the wagons (this is the name the French have for cars) have no brakes, handholds or ladders on which to hold or stop a car with, they have what is called a "shoe" to do the stopping with. As a car or cut of cars comes down the hump, a shoe is placed on the rail a short distance from where they want the car to stop. As the wheels of the car strike this shoe, they are locked and the car skids to a stop. How would such a method as this work out in the States? Not a success, I should say, and the French have found out the same thing. When the U. S. A. cars began to arrive,

the French tried this system on them. They stopped all right, but also succeeded in tying up the yards for about 12 hours.

"As the freight cars have no air on them and very few have hand brakes, the trains are made up in such a manner as to have the brake cars spaced about 10 cars apart and a brakeman stationed on each one of them. A car having hand brakes is easily recognized, as it is equipped with a lookout or cupola. It is in this that the brakeman rides over the road, and from all appearances I don't think that it is a very comfortable job, especially in the winter time.

"Some of the locomotives are equipped with air. The equipment is of the Westinghouse European type and is very old. Some have the old three-way brake valve and others the D-5 valve, and I have yet to see my first locomotive over here equipped with the G-6 brake valve.

"The steam valves are mostly of the plug type, and the steam pipes and boiler connections are flanged joints; in fact, all of the boiler connections are flanged.

"The running gear is of all types, some with the main rods on the inside and some on the outside of the frames. Some have the side rods connected to cranks, and this type have the frames and boxes on the outside of the drivers, though a few have the frames, boxes, valve gear, main and side rods on the outside of the drivers. The same can be said of the valve gears.

"As to valve and cylinder trouble, we have so far had none, but I am sorry to say that other parts of the machinery have suffered some. On one, a Belgian locomotive (of which several hundred were loaned to the American Expeditionary Forces by the Belgian government), we had a driver loosen up and slip out on the axle. This engine was of the type having the side rods, boxes and frames on the outside of the drivers, the balance of the running and valve gear being between the frames. As this engine was forever getting off the track, we could not figure out where the trouble was, as everything seemed to be all right; but upon tramping the drivers, we found the main drivers considerably out of tram. As we could not get the oil cellar out of the right main driving box, we had to break it. This cellar was of the type that fitted up between the jaws of the box, and was held in place by two cellar bolts running through the lower end of the box and under the cellar. Another peculiarity of this type of engine is that when a box has to be packed, the frames and boiler have to be jacked up until the pedestal jaws clear the cellar bolt heads, before they can be gotten out and the cellar let down. When we broke the cellar, we found that the driver had slipped out about an inch on the axle, wearing a lip on the inner edge of the wheel hub, this in turn wearing and cutting into the box, brass and cellar. As the box was between the side rod crank and driver, you can readily see that there was small chance of getting the box off of the journal. This lip had to be chiseled off before we could get the box out. As we had no drop pits, we had to jack the frames and boiler up clear of the drivers. The job of facing off the hub and bolting on the liners had to be done by hand, as we had no lathe large enough to take this pair of drivers. The pressing of the wheel back onto the axle was accomplished by four makeshift pull jacks—four 1½-in. steel rods well threaded, and run through the spokes of the drivers, the nuts placed on and then tightened up. It took a six-foot bar on the wrench and two husky men to turn the trick, but it finally slipped back into place. The crown brass had to be worked over by splicing onto it the amount that was worn off, as there was no other brass of this type available. With some other repairs, the engine was again assembled and placed in service. It has now been in service about two months and so far we have not had any trouble with it. This locomotive was out of service all told fourteen days. The total labor required was 110 hours; as this was all hard work and was done by what might be termed apprentice labor, I think that it was done in record time.

"I have met and talked with members of the other railway regiments, and have heard their stories, and have reasons for envying them their experience and their good fortune in being able to see some real action; but until our work is completed here and we have new fields to go to, I guess that we will have to be contented to remain behind the S. O. S., as this work has to be done and it is up to some one to do it, and it seems as though we are the "fall guys." We have all kicked and tried our best to get out of here, but don't seem to make a go of it. I don't believe there is a man in this regiment who would not give his right hand to be able to get to the front and participate in the great struggle; but our time will come sooner or later, and when it does come I firmly believe that it will not find a man jack of the Old Seventeenth wanting.

Fraternally yours,

J. N. McVEY,
 Major, Engineer,
 17th Railway Engineers,
 American Expeditionary Forces, France.

Railway Notes From China

REPORTS COVERING THE OPERATIONS of the Chinese-Peking Government Railways during the first six months of the current year indicate an increase of about 11 per cent in operating revenue over the same period of the preceding year. It is possible that this increase will be continued during the remainder of the year, for during the late summer months of 1917 the railways suffered from disastrous floods and from military interference. Military interference continues, but the rainfall has been providentially well distributed. While the rainfall for the season is up to normal, there have been no long continued storms and the surface waters from one could drain off before another came. The Peking-Hankow line especially has been unable to rehabilitate itself, and one week of steady rain, as so often happens in interior China, would have broken up that line as badly as at the close of last season. Beyond some minor breaks, it has come through the summer whole.

The early beginning and late ending of the rainy season have produced the biggest crop in recent Chinese history. This fact instead of producing traffic is acting in the opposite direction, temporarily, at least. Last year the famine, caused in so many districts either by drought or flood, or both, required large shipments of grain into the stricken districts. This year every region is self-supporting. Buyers are offering prices much reduced, which inclines farmers to hold on to their supplies for a time. Furthermore, there is considerable impression in railway circles that the difficulty in securing cars last year has influenced "up-river" shippers to depend upon the water route entirely, whereas last year there was a large tonnage delivered to the railways by these water carriers. There is considerable evidence that Chinese shippers appreciate the regularity and certainty of railway service, but when the railway fails to provide these, they will return to the use of the slower and cheaper boats.

* * *

The departure next month from Peking of George A. Kyle, chief engineer of the lines under contract for construction by Siems-Carey Company, marks definitely the suspension of all railway construction enterprise in China for the time being. Not only internal disturbances but prices for materials have influenced the decision to cease work. In addition, the rate of exchange is prohibitive. If China were in a position to produce her own funds, this would be favorable in the extreme. But her funds must be borrowed from abroad, and when a gold dollar is converted into Chinese silver it now brings only one cent more on a dollar and much less than three years ago.

* * *

On September 17 the Peking-Hankow line started the

first agricultural demonstration train ever attempted in China. It carries with it a band of 12 pieces, three lecturers, exhibits of various sorts, and other educational material. The Peking-Hankow earns nearly half of the revenue from the carriage of agricultural products in China. Some 40 per cent of its own revenue from goods traffic is derived from products of agriculture. While the Chinese farmer has a reputation for industry, methods of intensive cultivation, and successful conservation of soil fertility that is well deserved, he is woefully deficient in some other particulars. His instruments of cultivation are, many of them, clumsy and inefficient. American plows, harrows and small tools are among the exhibits. Selection of seeds is an unknown practice. Invariably seed grains are those left over from market. Vegetable seeds are those grown from plants which matured too late for market. The effect of this in generations is well known in America, but not appreciated in China. Insect pests have been considered a dispensation of Providence rather than something which could be prevented, or at least combated. Selected seeds, charts showing relative production, and varieties of spraying apparatus are among the materials on exhibition. The train is in charge of a Chinese returned student, a graduate of Cornell.

* * *

After an interruption of months the section of the Canton-Hankow line built through as far as Changsha from Wuchang has resumed passenger traffic to the extent of one passenger train each way per day.

* * *

The prosperous suburban line running out of Canton, known as the Canton-Samshui line, has been seized by representatives of the rebellious southern provinces, and its revenues diverted to their purposes. Though only 25 miles long, and doing nothing but a passenger business, its net profits were over \$300,000 per annum.

American Railway Men in Siberia

[From the Peking Leader of September 18]

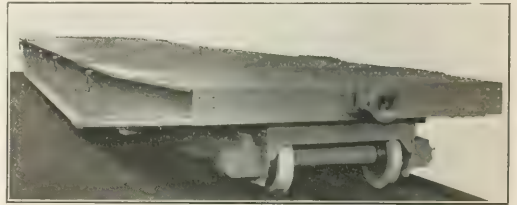
Though the American Railway Commission which was accepted by the Kerensky government have been able to do little in Russia, it has achieved wonders in an unobtrusive

the demands occasioned by the setting up of another front in Russia against the German foe. For instance, the time between Harbin and Vladivostok can be reduced by 19 hours when the service is resumed under the new conditions. That is typical of what has been done in this comparatively small section. Yet the American railway men complain that they have accomplished nothing! Now that the party of 80 men who were staying at Nagasaki awaiting the call for their services are in Siberia, working behind the Allied advance, greater things may be expected.

A Car for Carrying Whales

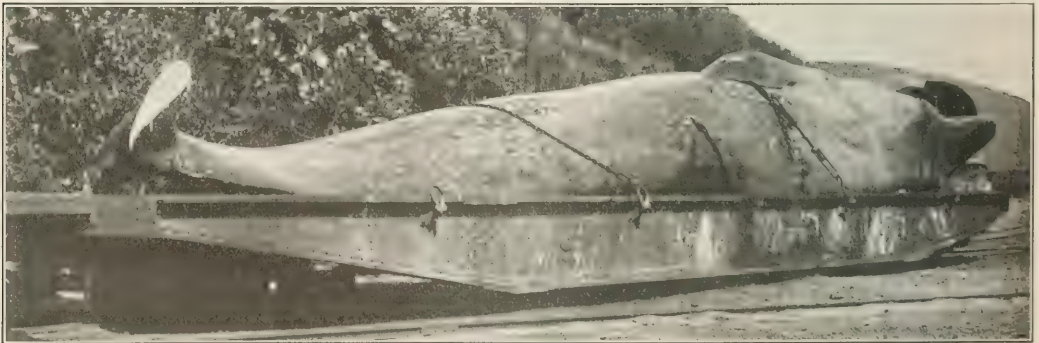
By Frederick C. Coleman

THE ADMINISTRATION of the Union of South Africa Railways has recently put in service a specially designed 160,000-lb. capacity all-steel bogie car for the purpose of transporting whales over a 3-ft. 6-in. gage line from the point where they are brought ashore to the factory, where they are dealt with for the extraction of oil, etc., a short distance from Durban, Natal. As shown in the photographs, the length and extraordinary width of the car are the outstanding features of the design, the length



Whale Car for the South African Railways

over buffers being 68 ft., while the width overall is no less than 12 ft. 6¼ in.; these are claimed to be records as far as 3 ft. 6 in. gage rolling stock is concerned. The bodies



The South African Whale Car with Its Load

manner in Siberia during the past few months. Having no authority, it did not attempt to assume any, but members going among the Russian workmen engaged on the Siberian Railway, talking to them in breezy American style, showing them things, has brought about results which have materially enhanced the efficiency of the line. American methods have been introduced in place of antiquated methods, which will enable the railway to deal with the increased demands following its reopening to traffic and especially

are hauled on to and off the wagon by windlasses. The section of line over which the car travels is very uneven, and it was necessary to design the car with six-wheel bogie trucks in order to keep the axleloads down to the required limits and ensure the necessary flexibility. The car was built by the Leeds Forge Company, Limited, of Leeds, England, under the direction of W. S. Sim, of Victoria Street, London, the supervisory engineer of the Union of South Africa Railways.

General News Department

Carrying letters by airplane regularly from New York to Chicago has not yet been accomplished. A start was made by the flyers of the Post Office department on each of four different days last week, but difficulties with engines, or with the weather, prevented satisfactory work, and the letters which started on wings had to be turned over to ordinary mail cars to complete their journey.

E. S. Rice, chief clerk to the chief engineer of the Santa Fe System, has sent to each of the 54 members of his office force, now in military or naval service, an ingenious Christmas greeting, consisting of a blue-print folder bearing the names of the honor men and containing some verses entitled "The Engineer—If," by Robert Isham Randolph. The folder is profusely illustrated with appropriate drawings.

A civil suit against an engineman, for causing a rear collision, is the latest novelty in court news. This item comes from Pittsburgh, Pa., where it is said the Pittsburgh & Lake Erie has entered suit for \$30,586 against Louis Kleitz, a former engineman of the company, who ran past an automatic block signal, set against him, and collided with a preceding train. Two men were killed. The attorney for the road says that the company desires not only to obtain reparation for its losses, but to make an example for the benefit of other employees.

Canada's Part in the War

When the war commenced in 1914, Canada had a permanent army of only 3,000 men and an active militia of 60,000. When hostilities ceased on November 11, last, the Dominion had sent overseas 418,980 men. Of the Royal Air Forces some 15,000 were recruited and trained in Canada; in addition, many joined that branch after going overseas in the Canadian Expeditionary Force. The much prized mark of valor, the Victoria Cross, was won by 43 Canadians; 491 bear the Distinguished Service Order; 1,657 the Military Cross; 6,500 others wear Military Medals, and 1,000 the Distinguished Conduct Medal. These interesting facts are contained in a pamphlet issued by the passenger department of the Canadian Pacific Railway and entitled "Their Glory Cannot Fade." The booklet also contains a list of important battles in which Canadians fought, and illustrations in colors showing the insignia of the Canadian Army.

Protest Against Consolidated Purchases

The National Bureau of Wholesale Lumber Distributors has filed a formal protest with the Central Advisory Purchasing Committee of the Railroad Administration against the centralization of the purchase of fir in the three western railroad regions. The letter says that all purchases of fir for western roads are made by a representative of the Railroad Administration at Seattle, Washington. The action of the Northwestern regional purchasing committee and that of the similar committees in the Central Western and Southwestern regions are declared to be contrary to the procedure followed in other regions and, therefore, a discrimination against the fir lumber industry.

The inevitable result of the permanent adoption of such a centralized purchasing policy, the bureau says, will be to seriously injure the lumber industry and ultimately to prejudice the best interests of the railroads. The plan will make it impossible for many of the smaller saw mills and dealers, regardless of their efficiency, to make bids. The bulk of the business will go to the large mills, driving out of the industry the smaller mills, which produce nearly 50 per cent of the fir lumber output of the country. The purchasing agents of the different lines have an acquaintance and knowledge of certain mills and distributors with whom they have been dealing, and by permitting each road to distribute its business,

as it has in the past, a much broader distribution of orders will result.

The National Bureau requests the Central Advisory Purchasing Committee to direct the regional purchasing committees to return to the old method of buying lumber through the individual railway purchasing departments.

Extension of Sailing Day Plan in Chicago

The sailing day plan, which was introduced in the Chicago terminal district on September 23, for the purpose of controlling l. c. l. movements to points in the Northwestern region, will be extended to apply to business destined to points in the Central Western and Southwestern regions, beginning December 30. The sailing day schedule and the plan for the consolidation of l. c. l. freight over definite routes to designated destinations have been modified and corrected under the direction of J. H. Brinkerhoff, terminal manager of the Chicago switching district, on the basis of experience in handling business moving to the Northwestern region.

Railway Age Representative Cited for Gallantry

George E. Goldthwait, one of the associate editors of the *Railway Age*, was enrolled in the first officers' training camp at Plattsburg immediately after the outbreak of the war. After completing the three months' course there he was assigned to the aviation section, and attended the ground school at the Massachusetts Institute of Technology. He was then sent abroad, and after a number of months' further training received his commission as first lieutenant. The following information is taken from the *Marion* (Ind.) Chronicle of December 14:

"Another young man from Marion has added glory to the record of Grant county's fighting men. Lieutenant George E. Goldthwait, son of Mrs. E. L. Goldthwait, Gallatin and Fifth streets, has been recommended for a distinguished service cross in France.

"The word has come first in an indirect way to his relatives. Miss Alice Goldthwait, of North Washington street, a cousin of Lieutenant Goldthwait, has received a letter from an old friend, William S. Biddle, adjutant-general of the personnel bureau of the general headquarters of the American expeditionary forces. Major Biddle is in the decoration section. It is by his kindly thought and remembrance of the family that he was inspired to tell them this good news even before Lieutenant Goldthwait had forwarded the word. Lieutenant Goldthwait is in the aviation section."

Why Not Help the Railroads Now?

In a leading editorial the *Manufacturers' News* (Chicago) of December 19, recommends a prompt disposition of the railroad question so that the roads may be rehabilitated promptly. It reads as follows:

"Why not do something now? Why wait for the evil day? Why wait for a tremendous loss of life and property? A stitch in time will save nine. Mr. McAdoo wants to try a five-year unification plan. It will take just as much money—yes, we believe it will take more money—under government direction to put the various lines in shape than if the stockholders are given their property back and permitted to do the financing. If the government wants to do the patriotic thing, let it help out in the hearts of those responsible.

"Why not do something now? Why wait for the evil day? Why wait for a tremendous loss of life and property? A stitch in time will save nine. Mr. McAdoo wants to try a five-year unification plan. It will take just as much money—yes, we believe it will take more money—under government direction to put the various lines in shape than if the stockholders are given their property back and permitted to do the financing. If the government wants to do the patriotic thing, let it help out in the

finance. Under the McAdoo plan it will have to furnish the money; so why squabble about it?

It was said early in the war that John Philip Sousa's band was the best organization in connection with the government because John Philip Sousa when he wanted a piccolo player hired a piccolo player. Let the same principle be applied to the carriers. There is hardly any way the business fabric of this country can be brought to grief quicker than by letting the transportation system fall down. Every branch of business is dependent on transportation. The railroads are the arteries of industry and commerce. So far as we are able to judge public sentiment it is opposed to government ownership, and this opinion is supported by the hesitation of the government to apply that remedy to the situation. The present administration has not been slow to act on any line of policy during its incumbency in office when public sentiment was pronounced, and we do not understand why it hesitates in the case of the railroads, even though its inclination toward a government ownership policy has been clearly indicated in many questions that have confronted it.

One Hundred Per Cent Lines in

Central Western Loan Drive

The final returns from roads in the Central Western region show that 100 per cent of the employees of one-half of the lines in the district subscribed to the Fourth Liberty Loan. Of roads with more than 1,000 employees, the Los Angeles & Salt Lake showed the largest average individual subscription, namely \$209.60. The Northwestern Pacific was second with \$191.31. The road showing the largest total subscription was the Southern Pacific, with \$6,369,350.

SUBSCRIPTIONS TO FOURTH LIBERTY LOAN IN CENTRAL WESTERN REGION

Road	Rank	Number employees	Number subscribers	Amount subscribed to date	Per cent emp. sub-scriber	Average amount per subscriber
Un. Trml. (St. Jos.)	1	67	67	\$24,750	100	\$369.40
St. Joseph Belt.....	2	94	94	30,200	100	321.68
L. & S. L.	3	3,778	3,716	773,900	100	209.60
Northwestern Pac....	4	1,915	1,915	366,550	100	191.31
E. P. & S. W.	5	3,524	3,524	448,600	100	127.30
Iowa Transfer.....	6	10	10	1,250	100	125.00
Denver Union Trml..	7	207	207	25,600	100	123.67
C. R. & P. W.	8	26,416	26,416	3,124,100	100	119.23
Hannibal Union D. .	9	19	19	2,200	100	115.78
Oregon Short Line..	10	15,76	10,576	1,187,150	100	112.25
Salt Lake U.D.&R..	11	29	29	3,250	100	111.07
Pueblo U. D. & R. .	12	52	42	6,600	100	106.45
Arizona Eastern ..	13	1,407	1,407	147,300	100	104.69
Kansas City Trml..	14	2,603	2,603	263,650	100	101.29
C. T. H. & S. E. .	15	1,992	1,992	198,700	100	99.75
D. R. L. & N. W. .	16	174	174	17,400	100	99.13
St. Joseph U. D. .	17	76	76	6,950	100	91.45
Mo. & Ill. B. & B. .	18	25	25	2,150	100	86.00
St. Joseph Trml..	19	120	120	10,200	100	85.00
El Paso Union Depot.	20	53	53	4,500	100	84.90
Des Moines Union..	21	442	442	33,600	100	76.02
C. & E. I.	22	10,510	10,500	1,261,500	99.9	120.14
Colorado & Southern.	23	5,051	5,046	610,000	99.9	120.88
Wabash.....	24	8,232	8,203	1,006,100	99.6	122.65
C. & N. W.	25	50,672	50,301	5,426,300	99.3	107.88
St. J. & G. I.	26	1,268	1,257	121,800	99.1	96.90
P. & P. U.	27	1,546	1,524	157,200	98.6	103.15
Southern Pacific ..	28	46,735	45,753	6,369,350	97.9	139.21
Chicago & Alton ..	29	8,769	8,631	1,006,750	98.4	116.64
Denver & Salt Lake	30	1,269	1,230	182,950	96.9	148.74
Illinois Terminal ..	31	215	208	13,800	96.7	66.34
Peoria Ry. Term..	32	131	126	11,250	96.2	89.28
Union Pacific.....	33	27,723	26,556	3,344,300	95.8	125.93
A. T. & S. F.	34	52,993	50,493	5,505,700	95.6	109.04
T. P. & W.	35	735	682	71,600	92.8	104.98
Illinois Central ..	36	30,663	28,448	2,505,550	92.8	88.07
C. P. & St. L.	37	1,071	982	112,550	91.7	114.61
Atchafalaya Union.	38	22	20	2,050	90.9	102.50
R. C. B. H. & W. .	39	28	25	2,250	89.2	90.00
Rio Grande Sou..	40	218	190	20,650	87.2	108.68
Western Pacific ..	41	3,648	3,083	393,450	84.5	127.63
Denver & Rio Grande	42	13,141	10,675	1,134,050	81.2	106.23
Total		317,967	307,460	\$36,016,550	96.7	\$117.14

June Mechanical Conventions

At the meeting of the executive committees of the American Railway Master Mechanics' Association, the Railway Master Car Builders' Association, and the Railway Supply Manufacturers' Association at the Hotel Biltmore, New York, last Friday, arrangements were made for the holding of a mechanical convention at Atlantic City in June. Inasmuch as the convention is a postponed one, the previous decision to meet at Atlantic City was adhered to and the dates set are June 18 to June 25; the Master Car Builders' Association held held first, June 18 to 21, and the Master Mechanics' Association from June 23 to 25. While the executive committees felt that it would be advisable to hold all the sessions during one calendar week, it was not found feasible to make such an arrangement. Frank McManamy, assistant director, Division of Operation of the Railroad Administration, was present. The decision in favor of holding the usual exhibit

of the Railway Supply Manufacturers' Association was strongly favored by all those present, the advantages to the younger men in railroad service and for visitors from other countries being very strongly presented. It was decided that all three associations unite in invitations to the representatives of foreign countries to attend the convention.

Headquarters, as in former years, will be in the Marlborough-Blenheim Hotel, and sessions will be held on the Million Dollar Pier. At a separate meeting of the executive committee of the Railway Supply Manufacturers' Association, J. D. Conway was elected secretary-treasurer.

No Store-Door Delivery in New York

Store-door delivery is not to be tried in New York City at present. This is the announcement of the Railroad Administration, after six months' preliminary work in a persistent attempt to secure the necessary agreements and concessions. Fears of small trucking concerns that under the proposed pooling arrangements their earnings would be reduced, and the claims of some merchants that the proposed new standard cartage rates would be disastrous to their business, appear to have been prominent among the reasons for the present decision. The lessening of the congestion of freight on the railroads' piers has made economy in storage space and in trucking less imperatively necessary than was the case during the war, and so the project has failed.

Wood Preserving and Tie Men

The fifteenth annual meeting of the American Wood Preservers' Association will be held at the Hotel Statler, St. Louis, on January 28 and 29. The tie and timber division of the St. Louis Chamber of Commerce has called a meeting of the tie producers of the country for the two following days to perfect a national organization. Users and producers of cross ties will correlate their programs, the meeting of the Wood Preservers' Association being curtailed to two days with three sessions on Tuesday and two on Wednesday. On Wednesday evening there will be a joint dinner with the National Tie Producers' Association, at which it is expected that one of the officers prominent in the United States Railway Administration will be the speaker. The session on Tuesday evening will be devoted to the consideration of the preservative materials situation, and Wednesday afternoon to the tie problem.

The program for the convention of the Wood Preservers' Association is as follows:

TUESDAY MORNING

Report of committee on publications, John Foley, chairman.
Report of committee on promotion and education, C. G. Crawford, chairman.
Report of committee on terminology, W. A. Fisher, chairman.

TUESDAY AFTERNOON

Report of committee on plant operation, W. H. Grady, chairman.
Paper on Fuel Economics, by Jos. W. Hays, combustion engineer.
Report of committee on service tests, flooring and paving, A. W. Dow, chairman.
Report of committee on wood block flooring and paving, Walter Buehler, chairman.
Report of committee on preservatives, E. B. Fuks, chairman.
Paper on Marine Wood Preservation, Dr. L. F. Shackelf.
The Timber Treating Plant Chemist, C. Marshall Taylor.

TUESDAY EVENING

The Sodium Fluoride Situation, by Galen Wood.
The Zinc Chloride Situation, by J. H. Jordan.
The Creosote Oil Situation, by representative manufacturers and importers.
The Transition from Creosote Oil to Zinc Chloride in the Treatment of Cross Ties, by Dr. Hermann Von Schrenk.

WEDNESDAY MORNING

Report of committee on purchase and preservation of treatable timber, H. S. Sackett, chairman.
Report of committee on non-pressure treatments, R. A. Griffin, chairman.
Election and installation of new officers.

WEDNESDAY AFTERNOON

The Car Situation, by E. H. DeGroot, Jr., assistant manager car service section, U. S. Railroad Administration.
Report of committee on service tests, ties and timber, J. H. Waterman, chairman.
Development of Uniform Practices in Procuring and Preserving Cross Ties, by John Foley, associate manager, forest products section, U. S. Railroad Administration.

REVENUES AND EXPENSES OF RAILWAYS

TEN MONTHS OF CALENDAR YEAR 1918

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of—			Operating expenses			Net from railway operation.	Operating income (or loss).	Increase (or decrease) last year.
		Freight.	Passenger.	Total.	Way and structures.	Equip-ment.	Equip-ment.	Traffic.	Trans-portion.	Totals.			
Toledo, Peoria & Western.....	247	\$887,201	\$379,770	\$1,347,618	\$242,041	\$395,980	\$35,512	\$6,904,410	\$1,357,158	\$83,199	\$9,720	\$92,754	—\$103,474
Toledo, St. Louis & Western.....	454	5,741,396	797,318	6,801,989	1,103,311	1,458,373	109,466	2,583,716	107,590	5,357,994	78,77	1,221,625	—337,180
Trinity & Brazos Valley.....	368	706,618	135,582	947,427	267,235	408,105	18,216	492,847	90,029	1,266,437	133.66	65,318	—384,382
Union Pacific.....	3,626	59,242,025	15,157,652	80,756,487	8,599,609	13,079,809	653,217	22,167,340	2,068,639	48,083,464	59.54	32,672,844	7,308,183
Union R. R. of Pennsylvania.....	35	.....	.....	5,818,278	540,847	1,664,350	2,806	3,093,283	61,299	5,382,149	92.50	435,849	395,950
Utah Railway.....	98	1,162,510	6,200	1,175,274	138,632	143,437	1,691	226,593	56,175	1,669,372	48.20	618,757	574,815
Vicksburg, Shawport & Pac.....	171	1,209,487	633,190	2,167,720	276,417	502,304	41,980	792,971	74,375	1,769,072	81.68	387,648	291,013
Virginian.....	518	8,746,093	521,637	9,911,593	1,152,831	2,136,639	58,511	3,853,699	155,831	7,342,411	74.07	2,560,183	2,174,726
Wallach.....	2,519	28,941,002	8,470,232	39,418,660	4,874,215	7,909,481	620,605	18,294,387	896,000	42,784,225	83.16	6,634,383	—3,612,167
Washington Southern.....	35	867,016	1,719,579	3,100,350	206,524	305,893	17,981	1,032,418	49,350	1,432,833	53.66	1,468,017	549,193
West Jersey & Seaside.....	359	2,250,948	5,672,128	8,980,763	1,843,596	1,576,068	78,777	4,242,456	194,306	7,956,014	88.02	580,606	—662,939
Western Pacific.....	1,011	7,266,161	1,533,623	9,414,199	1,548,770	1,776,131	160,885	3,200,586	231,725	6,332,234	67.27	2,621,628	—144,119
Western Ry. of Alabama.....	133	1,133,683	2,070,897	2,494,477	424,045	38,719	603,288	38,719	603,288	1,494,7	73.15	527,528	506,442
Whitcomb & Lake Erie.....	511	10,157,099	3,767,703	11,511,848	1,691,098	2,684,269	73,117	4,593,562	284,885	9,977,508	80.50	2,244,250	—869,015
Yazoo & Mississippi Valley.....	1,382	13,668,596	3,474,579	17,043,312	2,454,769	3,787,423	157,814	6,592,583	457,556	13,477,002	71.90	3,849,616	78,267

Traffic News

The Railroad Administration's consolidated ticket office in San Francisco was opened on December 23. It was announced that the office in Los Angeles, California, would also be open on that day.

A total of 713,235 cars of grain have been loaded this year by the railroads under federal control up to December 14, as compared with 552,092 the corresponding period of last year.

The embargo which was placed on the movement of hogs to the Chicago stock yards last week was lifted on December 23, to the extent of permitting a limited number of shipments during the remainder of this week.

Coal loading for the week ending December 7, as reported by the Railroad Administration, amounted to 227,782 cars, as compared with 205,110 during the corresponding week of 1917. The total increase this year up to December 14 is estimated at 546,766 cars.

Fines amounting to \$900 have been imposed on the Cleveland, Cincinnati, Chicago & St. Louis Railway Company in the Federal Court at Indianapolis for violation of the quarantine law in transporting hogs without labeling the cars to show that the animals had been exposed to cholera.

Cash in advance for all freight shipments is to be a rule on the railroads of Canada beginning March 1, next, according to a recent order of the Railway Board; exceptions to be made only in the case of large shippers and receivers of freight. These, by giving bonds, can have three days' credit.

Average passenger receipts in September of all the railroads, as estimated by the Bureau of Railway News and Statistics, Chicago, were 2.520 cents a mile, as compared with 1.966 cents for September, 1917; and freight receipts per ton per mile were 9.29 mills, as compared with 7.22 mills in the same month in 1917; average increase in both cases about 28 per cent.

The western passenger traffic committee, acting on the recommendation of the territorial passenger traffic committee, which has been investigating passenger service generally, has recommended the restoration of the through passenger train on the Chicago, Milwaukee & St. Paul, leaving Chicago for Omaha at 5.30 p. m. In connection with this addition, there will be some changes in local passenger trains.

Maximum prices on coal and zone regulations will not be removed before February 1. The coal operators have been trying to bring about the discontinuance of the zone system in order to broaden their markets. The Fuel Administration has permitted the further shipment of bituminous coal from parts of West Virginia, Maryland and Pennsylvania and into sections of Maryland, the District of Columbia and New England. One order permits the all-rail shipment of bituminous coal on the Baltimore & Ohio, the Western Maryland and the Coal & Coke railroads in West Virginia, Maryland and Pennsylvania to all points in New England. The other provides for the shipment of bituminous coal from all districts of Pennsylvania to Baltimore and vicinity and to the District of Columbia.

Director General's Authority Over Intra State Rates Challenged

The authority of the director general over intra state rates has been challenged by the Nebraska State Railway Commission in an application filed by it in the state court at Columbus, Neb., for an injunction forbidding the Chicago, Burlington & Quincy to charge more than \$4.50 per car—the Commission's rate—on clay from Kairo Clay Pit, Neb.,

to Columbus. The application ignores the director general entirely and makes the Burlington the only respondent.

Uniformity in Drayage Charges

A uniform basis for the determination of drayage or transfer charges between railroad stations at junction points is recommended in a letter from Edward Chambers, director of the Division of Traffic, which is being distributed among the chairmen of district freight committees and freight traffic officers of all lines in western territory by A. C. Johnson, chairman of the western freight traffic committee, Chicago. The letter was occasioned by the large number of applications for freight rate authority recently received proposing advances in drayage charges.

Mr. Chambers says that no attempt will be made to change the practice of absorption or non-absorption of these charges by the railroads as it exists in different places. He believes, however, that instead of having a separate publication for practically every junction point in the country, these charges could be put on a uniform basis, either throughout the country or at least in each section or territory, and not be dependent on the bargain which some local railroad officer is able to get from some individual drayman. This would save a great amount of printing; and if the charges were fixed on a fair average they would not materially affect the railroads' revenue one way or the other.

Applications for freight rate authority to change such transfer charges should always be submitted by the general freight traffic committee to the regional director for approval before forwarding to Washington—this because these charges are nearly always absorbed by the carrier and therefore represent charges against operating expenses.

The practice of making charges by the hundred pounds or the ton, with a minimum charge per shipment, with special exceptions on pianos, etc., should be discontinued, and all such charges should be published on a basis of a flat rate per 100 lb. This change is recommended because it is not fair to publish a minimum charge per shipment when, as a matter of fact, the drayman does not often haul the single shipment separately. The railroads should take some bitter with the sweet, and it will greatly simplify publication to have a flat rate which will represent a fair average of the railroads' out-of-pocket expense for transfer of all the freight.

In instructions accompanying Mr. Chambers' letter, Mr. Johnson asks traffic officers of individual lines to report, through the chairmen of the district freight committees, as to the feasibility of working out a uniform basis of fixing drayage charges, at the same time supplying full information concerning the arrangements now in force on their lines with respect to the payment of transfer charges and the extent to which these charges are borne by shippers or consignees.

PERU AUTHORIZES RAILWAY EXTENSION.—The Peruvian congress has passed a law authorizing the construction of a railroad from Paita to the Marañon River, with a branch to Ferrenafe and another to Hualgayoc.

SURRENDER OF GERMAN LOCOMOTIVES DELAYED.—The Lokai Anzeiger, of Berlin, says it learns from competent sources that Marshal Foch has agreed to postpone the date for the surrender of all German locomotives until February 1. Press despatches state that the delivery of German railway material is being carried out very slowly, but without open objection by the Germans. They tried at first to pass off worn out French railway cars, but the commission which was receiving its material was strict in its examinations and accepted only two or three cars out of every ten.

AIR SERVICE BETWEEN ENGLAND AND AUSTRALIA.—Australian commercial and financial interests are discussing a proposal to connect Australia with London and other parts of the British Empire by commercial airplanes. A company has been formed to finance the survey of an aerial route to London by way of Sydney and Port Said. The possibilities of flying from the commercial point of view are dealt with in a report issued by the Civil Aerial Transport Committee. It is declared that nearly five hours could be saved between London and Paris, one day between London and Turin, twelve days between London and Calcutta and thirteen days between London and Johannesburg South.

Commission and Court News

Interstate Commerce Commission

The commission, at the request of the Railroad Administration, has issued an order promulgating rules for constructing combination rates applicable jointly between points located on the lines of carriers operated by the government and points on or reached by way of the lines of carriers not under federal control. These rules provide that where no published through rates are in effect from point of origin to destination on a commodity specified in the order and two or more commodity rate factors are used in arriving at the through rate for a continuous rail shipment, the through rate will be arrived at in the following manner: Each separately established commodity rate factor will be reduced by the amount of a commodity differential shown in a table in the order, and the reduced commodity rate factors will then be added together and the commodity differential will be added to the sum of the separately established commodity rate factors thus obtained.

State Commissions

The advanced rates for merchandise announced by the American Railway Express Company, to go into effect January 1, have been the subject of a conference of the State Railroad Commissions of Iowa, Nebraska and South Dakota; and the Nebraska Commission is to hold a public hearing on December 30 in connection with a tariff for intrastate express traffic which the commission has prepared. If the intrastate rates here proposed are not accepted by the express company, the commission proposes to proceed in the courts for the enforcement of its order.

Personnel of Commissions

Lee Dennis has been appointed a member of the Montana Railroad and Public Service Commission, effective January 1, to succeed **J. R. Hall**.

Frank Milholland has been appointed a member of the Board of Railroad Commissioners of North Dakota, effective January 1, to succeed **M. P. Johnson**.

James H. Wilkerson, of Chicago, formerly United States district attorney, has been appointed a member of the Public Utilities Commission of Illinois to fill the vacancy created by the resignation of **Fred E. Sterling**, state treasurer elect.

Joseph B. Eastman, member of the Massachusetts Public Service Commission and chairman of the Special War Committee of the Association of Railway and Public Utility Commissioners, was nominated by the President last week for appointment as a member of the Interstate Commerce Commission, succeeding **George W. Anderson**, of Massachusetts, resigned.

Court News

Icing of Perishable Freight

The consignee of a carload of fish agreed with the initial carrier to re-ice the car, and appointed an ice company its agent for that purpose. The ice company's driver reached the carrier's yard too late, after it had been closed. After attempting to communicate by telephone with the carrier's officers, and getting no response, the ice company's foreman abandoned all further efforts to re-ice the car. The Massachusetts Supreme Judicial Court holds that the carrier was not liable for damage to the car of fish on the theory that the refusal of its gateman to permit the ice wagon to enter the yard was negligence on its part. There was no evidence that delivery of the ice was to be made except in accordance with the general regulations of the carrier for the transaction of business at the yard.—*Emery v. Boston & Maine (Mass.)*, 120 N. E., 106. Decided May 24, 1918.

Equipment and Supplies

Locomotive Specialties

While the specialties for the recent orders for 600 locomotives placed by the Railroad Administration have not yet been definitely decided, the Central Advisory Purchasing Committee has given the locomotive builders information as to some of the principal specialties authorized for a part of the order. These include the stokers, air brakes, valve gear, safety valves, throttle valves, draft gear yokes, radial buffers, bolsters and side frames, driving box lubricators, grate shakers and fire doors. Although the full quantities have not been fully settled some of the air brakes will be furnished by the Westinghouse Air Brake Company and the New York Air Brake Company. The valve gear will be of the Walschaert and Baker types. Radial buffers, driving box lubricators and grate shakers will be ordered from the Franklin Railway Supply Company. Part of the side frames will be ordered from the Buckeye Steel Castings Company and part of the fire doors from the National Railway Devices Company. The lubricators will be of the Nathan and Detroit types.

Locomotive Deliveries

A total of 62 new locomotives were shipped to railroads under federal control during the week ending December 14, of which 48 were of the U. S. R. A. standard types, as follows:

Works	Roof	Number	Type
	* N. Y. C.	17	USRA Mikado
	Southern	3	USRA Santa Fe
	Southern	3	USRA 8-W. Switch
American	* C. & N. W.	8	Mikado
	T. of St. L.	4	USRA 6-W. Switch
	P. L. W.	2	USRA 6-W. Switch
	Long I.	2	8-W Switch
	C. & O.	1	USRA Mountain
	Total	46	
Lima	N. Y. C.	7	USRA Mikado
	C. G. W.	1	USRA Mikado
	Southern	1	Mallet
Baldwin	C. B. & Q.	1	Mikado
	W. Pac.	4	USRA Mikado
	Penn. R. R.	1	Mikado
	A. T. & S. P.	1	Mikado
	Total	9	
	Grand total	62	

*Sixteen USRA Mikados constructed for the New York Central were sent to Buffalo, N. Y., and two Chicago & Northwestern Mikados were shipped to Potomac Yards, Va., to be stored as parts of emergency pools.

Locomotive Deliveries in November Total 203

The Railroad Administration has issued the following statement of locomotives shipped to railroads under federal control for the month of November, making a total of 203:

[illegible]

Supply Trade News

The records in the offices of the mechanical department of the El Paso & Southwestern, at El Paso, Texas, were lost in a fire on December 5. **F. B. Lister** has requested the Supply Trade to send catalogs to replace those destroyed.

John Sterling Deans, vice-president and consulting engineer of the Phoenix Bridge Company, died at his home in Phoenixville, Pa., on December 16. Mr. Deans was appointed chief engineer of the company in 1892. Among the more important structures which he built are the elevated railways of New York City and the Pecos River viaduct on the Southern Pacific.

Major William L. Allison, who for the past 18 months has been in active military service, has been honorably discharged from the U. S. Army and has resumed his duties as vice-



Major Allison

president of the American Arch Company. In addition, Major Allison has been elected vice president in charge of sales of the Locomotive Feed Water Heater Company. Major Allison was one of ten majors graduated from the first training camp at Fort Sheridan, Ill. That he, along with many others, were denied the opportunity of overseas service was a great disappointment to him. Major Allison was born near Salisbury, N. C. He graduated from the Davis Military School at Winston-Salem, N. C. For over

three years he was in government service as deputy marshal. For six years he was employed in various capacities in the Baldwin Locomotive Works, Philadelphia, and in January, 1904, he became mechanical engineer of the Atchison, Topeka & Santa Fe. He resigned from the Santa Fe to become mechanical engineer of the Franklin Railway Supply Company. He was later western sales manager of that company, the Rome Merchant Iron Mills, the Economy Devices Corporation, and general western sales manager of the American Arch Company. He became vice-president of the latter company in January, 1914, which position he still holds in addition to the vice-presidency of the Locomotive Feed Water Heater Company.

Railway Officers

Railroad Administration

Regional

J. B. Chandler, office manager for the Northwestern regional director, has been promoted to office assistant, with headquarters at Chicago.

C. E. Chambers, superintendent of motive power of the Central of New Jersey, has been appointed mechanical assistant to **Charles H. Markham**, regional director of the Allegheny region of the United States Railroad Administration, with headquarters at Philadelphia, Pa., succeeding **J. T. Carroll**, resigned to go to the Baltimore & Ohio.

Operating

P. G. Walton, division superintendent of the North Carolina division of the Seaboard Air Line, has been appointed general superintendent of the northern district, with headquarters at Hamlet, N. C., vice **W. R. Hudson**, resigned to accept service with another line.

Engineering and Rolling Stock

W. J. Eck has been appointed signal and Electrical superintendent of the Southern Railroad Lines and associated railroads, with headquarters at Washington, D. C.

R. E. Weedon has been appointed superintendent of the Charlotte roadway shop of the Southern Railroad, with headquarters at Charlotte, N. C.

Charles N. Bainbridge, whose appointment as engineer of design of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, was announced in the *Railway Age* for December 13, was born at Philadelphia, Pa., on March 29, 1887. He received the degree of B.S. in civil engineering from the Pennsylvania State College in 1907, and the degree of C.E. in 1910. He began railway work in June, 1909, with the Chicago, Milwaukee & St. Paul. During September of that year he was instructor in civil engineering at the Pennsylvania State College, returning to the Chicago, Milwaukee & St. Paul in October. He remained with that road for two years as designer of steel and reinforced concrete structures. He also was engaged on studies for grade separation work during that period. From November, 1911, to March, 1912, he was with the Baltimore & Ohio at Baltimore, Md., as designer of steel railway bridges, largely in connection with grade separation work. Mr. Bainbridge then returned to the engineering department of the St. Paul, and for two years was squad foreman in charge of detail and design of miscellaneous structures and grade separation studies. The following four and one-half years he was office engineer in charge of detail, design and estimating of miscellaneous structures; and of design and special studies for grade separation problems in Minneapolis, Minn.; Milwaukee, Wis.; Chicago, and Evanston, Ill., involving an expenditure of approximately \$12,000,000. For four months previous to his recent appointment as engineer of design he was assistant engineer, in charge of the erection and maintenance of steel and timber bridges.

Corporate

Executive, Financial, Legal and Accounting

Robert C. Vaughan, whose appointment as assistant to president of the Canadian Northern and the Canadian Government Railways, with headquarters at Toronto, Ont., has already been announced in these columns, was born on December 1, 1883, at Toronto. He began railway work with the Canadian Pacific and four years later entered the service of the Grand Trunk. He remained with that road for one

year and then served in various capacities for 16 years on the Canadian Northern, until his recent appointment as assistant to president of the same road and the Canadian Government Railways, as above noted.

Jerry Welch, whose appointment as controller of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been announced in these columns, was born at Lawler, Iowa, on August 13, 1874. He began railway work in 1890 with the Sioux City & Northern and was employed in a clerical capacity until 1900. The following four years he was agent for the Union Terminal Railway and the Great Northern, and from 1904 to 1910 was successively traveling auditor and auditor for the Montana Railroad. Mr. Welch then became auditor for the Chicago, Milwaukee & St. Paul, and in 1913 he was promoted to assistant general auditor. On January 1, last, he became assistant federal auditor, which position he held at the time of his recent appointment as controller for the corporation.

Engineering and Rolling Stock

Major F. L. C. Bond, whose appointment as chief engineer of the Grand Trunk Railway System, with headquarters at Montreal, Que., was announced in our issue of last week, has



Major Bond

just returned from overseas after two years' service with the Tenth Battalion, Canadian Railway Troops. He was born on February 21, 1877, at Montreal, Que., and was educated in the high schools of his native town; also at Collegiate Institute and at McGill University. In 1898 he entered the service of the Grand Trunk as eastern resident engineer of the Eastern division of the Grand Trunk, and in 1901 was appointed engineer in charge of double track construction. The following year he went to

New York city and was appointed night superintendent on the construction of the Park avenue tunnel of the subway. He subsequently returned to the service of the Grand Trunk as resident engineer, Eastern division, remaining in that position until 1913. He then served as division engineer, Eastern lines, until 1916, when he went overseas with the Canadian Expeditionary Forces, and now becomes chief engineer of the Grand Trunk as above noted.

Operating

J. P. Driscoll, superintendent of car service of the Canadian Northern Railway System, at Winnipeg, Man., has been appointed general superintendent of car service of the Canadian Northern Railway System, and the Canadian Government Railways, with jurisdiction over all lines, and headquarters at Toronto, Ont.

Obituary

J. B. Keefe, formerly assistant general freight agent of the Delaware, Lackawanna & Western, with office at New York, died recently at his home in Orange, N. J.

T. W. Heintzelman, formerly general superintendent of motive power of the Southern Pacific, died in San Francisco, Cal., on December 11. Mr. Heintzelman, after serving the Southern Pacific in various capacities for about 28 years, retired on January 1, 1917, on account of ill health. A few days prior to his death he contracted a severe cold which developed into pneumonia.

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